M.A. Semester –III
ECONOMICS

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AGRICULTURE ECONOMICS

Units: 1 to 21

by : Dr. Dharam Pal
Dr. Ajay Sood

Centre for Distance and Online Education,
Himachal Pradesh University,
Summer Hill, Shimla, 171005

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AGRICULTURAL ECONOMICS

Unit-I

Nature and scope of agricultural economics. Role of agriculture in economic development. Interdependence between agriculture and industrial development. Systems of farming Farm size and productivity debate. Land reforms in India.

Unit-II

Agricultural production functions. Input output relationships; factor-factor relationships and product-product relationships. Measures of farm efficiency. Risk and uncertainty in agriculture.

Unit-III

Models of agricultural development (Lewis, Fei-Ranis, Jorgenson, Mellor, Schultz, and Boserup. Modals). Technological change and new agricultural strategy (green revolution) in India, Agro-climatic zonal planning in India.

Unit-IV

Agricultural price policy in India. Criteria to fix agricultural prices. Intersectoral terms of trade. Measures to increase marketable surplus. Functions of agricultural marketing. Efficiency criteria for agricultural marketing. Problems of Indian agricultural marketing. Measures to improve the efficiency of agricultural marketing in India.

Unit-V

Importance of agricultural finance. Source of agricultural finance, Defects of rural money lending system. Problems of agricultural cooperative societies. Government policy for agricultural credit. Problems and suggestions to improve agricultural finance. Causes of rural indebtedness. Measures to reduce rural indebtedness. Objective and impact of integrated rural development programme. Resource mobilisation from agricultural sector.

CONTENTS

UNIT-01

NATURE AND SCOPE OF AGRICULTURAL ECONOMICS

STRUCTURE

1.0 OBJECTIVES

After going through this lesson you will be able to:

- Define agriculture economics.
- Discuss the Nature and scope of economics.
- Explain the Role of Agriculture in Economic Development
- Explicate the Role of Industry in Agricultural Development.
- Discus the Inter-dependence between Agriculture and Industry

1.1 INTRODUCTION

Every day each of us is confronted with economic choices. Each of us must choose which goods, services, and activities mean most to us. There are limitations to available resources and time for acquiring the goods, services and activities that are wanted. The decision to use the scarce resources to fulfill our unlimited wants is the process of economizing. From the time we receive our first nickels and dimes for treats, we must choose 'among opportunities whether to go with father to the fields or with mother to the well. As we grow older the economizing decisions become more complex-attending college or taking a job, buying a tractor or adding to the barn. Agriculturists, farmers, agro-businessmen, and public administrators are faced with economizing problems every day. Studying the application of economic principles to agriculture is no assurance of success in economic decision making but should give one a better understanding of the economizing process and lead to better decisions.

Before we proceed further to explain the nature and scope of agricultural economics it is necessary to know what exactly the word ‘agriculture’ covers.

Agriculture is the whole complex of producing, processing, and distributing plant and animal raw materials, supplying farm inputs, and providing public services to farmers. Agriculture industry has three parts; the farm sector, the agri-business sector and the public services sub-sector. Farming is on farm part of agriculture and includes producing plant and animal raw material for food, fiber and industrial uses. Agribusiness is the off- farm part of agriculture and includes the processing and distributing of plant and animal raw materials and supplying inputs to farmers. Public service is the central, state, and local government activities that are related to farming and agribusiness and includes education, research, information, regulation, inspection and control. While going through the definition of ‘agricultural economies’, that is given below, the coverage of the word ‘agriculture’ as described above may be kept in view.

1.2 DEFINITION OF AGRICULTURAL ECONOMICS

Agricultural economics is an applied social science in which the principles and analytical methods of economics are used to seek solutions to the economic problems in agriculture.

1. According to Dr. Taylor, Agricultural Economics “deals with the principles which underlie the farmer’s problems of what to produce and how to produce it, what to sell and how to sell it, in order to secure himself the largest net profit consistent with the best interest of the society as a whole”.

2. Goodwin defines Agricultural Economics as “a social science that is connected with human behaviour during the process of producing, processing, distributing and consuming the products on farms and ranches.”
3. Prof. Hibbard, has defined Agricultural Economics as “the study of relationships arising from wealth getting and wealth using activities of man in agriculture.” This definition is based on Prof, Ely’s definition of economics, and is a mere akin to Marshall's conception of economic activities and therefore it is limited in scope.
4. Gray defines agricultural economics, as the science in which the principles and methods of economics are applied to the special conditions of agricultural industry.” No doubt this definition is wider in scope, but this is not explanatory and is characterized by vagueness.
5. According to Heady, “Agricultural economics is an applied field science where in the principles of choice are applied to the use of capital, labour, land and management resources in the fanning industry. As a study of resource efficiency, it is concerned with defining the conditions under which the ends or objectives of farm managers, farm families and the nation s consumer can be attained to the greatest degree.
6. According to Edgars Thomas, ‘‘Agricultural economics is concerned with farming as a business and with agriculture as an industry. In the more restricted sphere of farm management the student of agricultural’ economics is concerned with the business problems of the farm as the producing unit of the industry. In the wider sphere of social economics he is concerned with the general economics pattern of the agricultural industry as a whole and with the forces responsible for the molding of that pattern; he is also concerned with the relation of the agriculture industry to other industries within the national economy as well as with its place in world economy.”

In the end we may define Agricultural Economics as that branch of general economics in which principles of economics are applied to solve agricultural problems to maximize agricultural production.

1.3 NATURE AND SCOPE OF AGRICULTURAL ECONOMICS

The agricultural student seeking to understand the economics of agriculture should be aware that economics cannot be applied to agriculture independent of and separate from the knowledge gained in other courses. Effective use of any specialized knowledge depends upon the user’s ability to integrate the knowledge with all other knowledge required. The principles of economics are too general in nature and the general theory of economics has been considered as an abstraction from reality. Sometimes pure theory is studied; other times theory is applied to solving specific problems, in agricultural economics we must understand

theoretical concepts before we can effectively use theory to solve problems. As a student you should guard against falling into the trap of believing applied economics is more practical than theoretical economics. Application is relevant to a specific problem only so long as the problem lasts. Applied science has shorter usefulness than theoretical science. Theory gives the basis for solving problems. Theory is a general body of knowledge that describes a phenomenon. Theory permits one to abstract from reality, so that one variable can be studied by itself.

So far agriculture is concerned it is presumed that the size of farms is relatively, small, their number is very large, and the crops produced are homogenous, perfect competition is likely to prevail in agricultural produce market. In other words, the study of price formation of agricultural produce under condition of imperfect competition is completely ignored. Then there is a system of tenancy or crop sharing in agriculture—a problem particular to agriculture only. Study of this problem will necessitate modification of the principles of resource allocation as propounded in general economics.

The modification of economic principles, required to be made before being applied to agriculture are so large and varied that there is a complete justification for studying agricultural economics as a 'separate body of knowledge.'

An agricultural economist deals mostly with organizing individual business firms for optimal resource use. Consequently, teaching has emphasized micro economics. But now that the various sectors of the economy have become more interdependent, such economic problems as unemployment, inflation and investment levels have a greater impact on the farmer and agribusiness man. Today's agricultural student needs to understand not only how to organize or business for optimum returns but how changes in the whole economy effect his economic decisions.

Agricultural economists, until recent years, have emphasized the economics of production because they were working with the problems of individual farmers, each of whom found it difficult to recognize the significance of the consumer upon his business. In recent years the consumer has often raised his voice to state his preferences, and farmers becoming more aware of him.

Agricultural economics is a science as it explains the cause and effect relationship between various economic variables operating in agriculture but as is the case with 'General Economies', it is also an 'art'. Observing that farm incomes are lower than non-farm incomes is positive economics. Concluding that farm incomes based on that observation are lower than they should be is normative economics. .

All studies have their own limitations. Expectations beyond these limits result in disappointments by those engaged in the studies. For example, how does one measure satisfaction? In most sciences laboratory experimentation is the usual method of studying identified variables. When studying human behaviour the social scientist cannot bring the

subject into the laboratory. Also, it has been found that observed behaviour is often different from true behaviour. Because social scientists seldom can use laboratory experimentation for ‘their studies, they make greater use of assumptions than do biological and physical scientists.

Regarding sub-fields, agricultural economics is generally divided according to specialization of interests as agricultural production economics; agricultural marketing economics, agricultural finance, agricultural prices, agricultural policy etc.

In the end, we must mention that one thing that the study of agricultural economics does not end in attaining the monetary return or maximum individual satisfaction of the farmer, but its ultimate objective is to secure the maximum social welfare.

1.4 AGRICULTURE AND ECONOMIC DEVELOPMENT

There are developed countries in the world and there are also under-developed countries. The World Bank has divided all the countries of the world into four categories namely the high income countries, upper middle income countries, lower middle income countries. Some of the countries included in the first category are the U.S.A., West Germany, Great Britain and Japan The last category contains countries like Egypt, Philippines and Thailand. One could also say that the countries in the first category represent developed countries i.e. those countries which have been able to exploit its material and human resources in the best possible way so as to have the highest per capita income. The countries in the fourth category could be called under developed countries.

The completely under developed countries, too, want to fully exploit their resources with a view to ensuring the highest possible standard of living for their people. The problem is how to achieve "this objective. And we may answer this question by saying that for most of countries, the relevant strategy is to initiate the development, process in the agricultural sector i.e. develop the agricultural sectors, first of all and then make use of the developed agricultural sector to develop the industrial and other sectors of the economy. The paragraphs that follows, explain why we should develop agriculture first of all and also how agriculture, if developed, can be help in the development of the other sectors of the economy, especially the agricultural sector.

In under developed countries as listed above, agriculture and the industrial sector (as well as the tertiary sector) are under developed. The main question is: Which sector of the economy should be developed first of all? An extremely under developed country cannot make massive investment in the entire sector, the economy simultaneously. There is an utter shortage of resources, especially the capital. A process of unbalanced growth is to be adopted.

Theoretically, the development process could start from any sector agricultural, industrial or the tertiary sector. For example, in the first instance massive investment could be made in the industrial sector and

then the products of this industrial sector e. g. fertilizer etc. could be used to increase the productivity in the agriculture sector. However, some basic problems are likely to be faced in the development of the industrial sector. With an under developed agriculture sufficient marketable, surplus of food grains for sustaining the newly created industrial labour force, may not be available. Secondly, funds for massive investment for the development of industrial sector may not be available.

Thirdly, the necessary entrepreneurial as well as technical skills may not be available in the initial stages for industrial development. Some of these very problems may hinder the smooth development of tertiary sector if efforts are made to develop the tertiary, sector (i.e. roads, power, education scientific institution etc.)

The development of agriculture will not present such problems. It is not that additional capital for agriculture development is not required. However, the labour intensive character of agriculture in most of the under developed countries will need more labour and less of capital in the form of heavy machinery etc. Even otherwise, as we know, in a biological industry like agriculture, use of machinery is limited. Similarly, not much technical knowledge is involved in adopting new crop practices and new agricultural inputs.

So, except in case of some oil based economy, the general process, of development, of both at theoretical, plane as Well as at the empirical plane, has been initiated in the agricultural sector. The industrial revolution in England was preceded by an agricultural revolution. In Asia the industrial development in Japan in the beginning of the twentieth century owes its success to the agricultural development that took place in the last quarter of the nineteenth century and early years of the 20th century. In India, we also tried to follow the same process in the post-independence period; by giving a high priority to agricultural development in our five year plans especially the first plan. The economist who said, “Industrial use at costs’ is not a word of wisdom” was not wrong when he indirectly emphasized the development of the agricultural sector in the first instance.

1.5 ROLE OF AGRICULTURE IN ECONOMIC DEVELOPMENT

So far we have tried to establish that the development process must start from the agricultural sector or as some economists say that development of agriculture should precede the development of other sectors.

Now we have to answer another question. It is that assuming that agricultural sector has developed, how the development process will percolate to other sector of the economy or to put it differently. What are the channels or the ways through which a developed agriculture will help in the development of the other sectors of the economy? The following paragraphs deal with this problem.

1.5.1 Provision of Wage Goods:

If a country is to be industrialized, some of its population so far engaged in agricultural pursuits will have to be, shifted to the newly developed industrial sector. This part of the population is to be provided with food even when it stops producing agricultural goods. In fact, its demand for food products may increase when it get wages which are generally higher than those being earned in the agricultural sector. On the other hand there can be (though not necessarily) a fall in, agricultural production when people shift from agricultural sector to the industrial sector.

Under these circumstances if agriculture has been properly developed and agricultural production has been increased, there will be no difficulty in food for the people now transferred to the industrial sector. An increase in agricultural production will save the people still left in the agricultural sector, from making any additional sacrifice in the form of reducing their own consumption of food-grain, if the economy' is to be industrial.

According to some economists, this is the most important contribution "of the agricultural sector to the development of the rest of the economy in terms of the permanency of these contributors. As we shall see later, while other contributions of agriculture may lose their importance, As the time passes, this contribution will remain as important as ever. Demand for food by people engaged in any occupation can never disappear and there is no possibility, at the same lime, in the foreseeable future for any synthetic food products to displace the agricultural products.

1.5.2 Supply of Raw Materials for Industry

Another important contribution made by the developed agriculture towards the development of the rest of the economy in the initial stages is in the form of supply of raw materials of the industrial sector. Intact an additional reason for developing agriculture in preference to other sectors of the economy lies in the relatively better, suitability of the raw material supplied by the agricultural sector, for industrial development when compared with the minerals which serve as the other group of raw materials for the industry. In the first instance, agricultural raw materials are easier to produce as compared with minerals. Minerals are exhaustible while agricultural raw materials are reproducible.

Nature plays the major role in producing agricultural products-and its help is totally, free. Secondly, (and this is quite important in-the initial stages of economic development) industries based upon agricultural raw materials can have low capital intensive techniques in the initial stages when there is a shortage of capital in the economy. Infact techniques used by industries using agriculture raw material are quite flexible in nature. These range from very low capital intensive technique to a very high capital intensive technique. This is, for example what we find in case

of cloth, sugar and soap manufacturing etc. All mineral based industries are generally high capital intensive. Thirdly, some economists feel that the psychological cost of transfer of labour from the agricultural labour to the industrial sector is very low. A labour will, according to these economics will feel more at home if he works in cotton factory rather than in an electrical factory.

This contribution is again made possible only when agriculture itself is developed in the first instance. Demand for agricultural raw material represents a fresh addition to the first while demand for agricultural product and it can be met only either by increasing the productivity per acre of land, or by bringing more area under cultivation or by diverting land from food or fodder crops to crops to be used as raw material. Obviously the exclusive use of third method is ruled out because production, of food or fodder cannot be decreased. So increase in production by the first two methods is necessary, if the demand for agriculture products is to be met.

1.5.3 Provision of Capital:

It is obvious that in the initial stages when the industrial sector is almost nonexistent and agricultural sector has experienced some development, if savings, as a source of capital, will be generated only in the latter sector. It is the agricultural sector which is the custodian of all income and saving in the initial stages.

So in the absence of any foreign aid, -the newly developing industrial sector will have to depend upon the agricultural sector for funds for setting up various industrial undertakings. Even funds for building up infra-structure for quite some time will go from the agricultural sector.

There are many ways through which savings of the agricultural sector can be mopped up. Some of these methods are as follow:—

1.5.3.1 Agriculture Taxes:

Land Taxes like land revenue. Taxes on agricultural incomes, taxes on agricultural crops, stamp duty on transfer on land etc. are some of the important taxes imposed in the democratic countries of the world. Delivery quotas fixed by the govt, without any payment also represent, type of tax imposed in regimented economics. Land Tax was an important source of State Revenue in Japan during the last two decades of the nineteenth century. About 80% of the slate revenue was collected through such a tax during this period.

1.5.3.2 Mopping up of the Rural Saving:

To encourage the agriculturist to deposit their unutilized surplus savings with some banking institution sector to the industrial sector. Such institution can take the form of commercial lands, regional rural bank etc. These institution after accepting these deposits can decades a part of

them to the industrial sector through lending to the entrepreneurs operating in that sector.

1.5.3.3 Changing in favour of the industrial Sector:

More resources can flow to the industrial sector from the agricultural sector if the government deliberately manipulates the terms for the industrial sector means that prices which the industrial sector pays for the products received by it from the agricultural sector become relatively less when compared with what the agricultural sector pays for the products required from the industrial sector. Such a change in relative price will means a reduction in the cost of production of the industrial products as compared in the cost of production of the industrial products. Profitability of the industrial sector will increase in relative terms. More capital can then flow into this sector.

1.5.3.4 Use of disguisedly unemployed Labour:

Nurkse has suggested another method for providing capital to the industrial sector. According to him, most of the under developed countries are over populated countries and in such countries, there, is a significant portion of population which does not contribute anything to agricultural production. In other words, marginal productivity of a large portion of the agriculture labour force in such countries is zero. This type of labour is called disguisedly unemployed labour because such labour though unemployed, looks busy on the domestic of family farms. Nurkse suggests that such labour can be withdrawn from agriculture without loss of any production and be used for building up some type of capital e.g. roads, canals drains embankment and some crude implements.

It may be noted that though the suggestion is theoretically plausible, it has not been given practical shape in any country, in an organized manner. It has not been possible to identify the disguisedly unemployed labour, not to speak of transferring it through force to the industrial sector.

1.5.3.5 Direct investment

Direct investment by the agriculturists in the industrial sector is another important method. The example of agriculturists of England, landlord of Japan and Zamindars of Gujarat for developing the industrial sector is well known.

1.5.4 Supply of labour for the Industrial sector:

In the initial stages when the industrial sector is not developed most of the labour force is engaged in agriculture per units. Labour for industrialization will obviously have to be obtained from the agricultural sector. We may note here that there are three main sources of labour, supply may to any sector of an economy. These are (1) Natural Population Growth (2) Immigration and (3) diversion from other sectors.

Obviously ability of labour through natural population growth in a country will be a very slow process. Immigration from other countries, too, not supplies all the labour required by the industrial, sector, once it starts growing. Difference in language, religion, customs, restriction on immigration etc. all will hinder the flow of labour to a particular country. Adam Smith was not wrong when he pointed out that of all the luggage man was the most difficult to be transported. So diversion of labour from the agricultural sector to the industrial sector may only be the feasible method for the smooth industrialization of an economy.

The above conclusion needs some further elaboration. If it is a country with disguised unemployment as described by Nurkse transfer of labour will be, effected without any loss of .agricultural production. However, in a country with no surplus labour, transfer of labour will reduced the total agricultural production. This may adversely affect the other contributions of agriculture like supply of wage goods or supply of raw materials. So in such a case, need for the prior development of agriculture will become still stronger. Increase in area under cultivation and increase in productivity per hectare will be the only way through which not only will the loss of production caused by transfer of labour will be neutralized but which will also help in satisfying the increased demand for food-grains by the transferred labour as well as that for raw materials meant for the industrial sector.

1.5.5 Expanded Market for the Industrial Products:

Agriculturists as consumers provide a vast market for the industrial products and as such, an increase in the income of the agriculturists through development of agriculture itself will further expand the market for these products and the provision of this market in the initial stages of industrialization is very important. This is because, in the absence of a domestic market, the industrial sector will have to depend upon foreign markets for the disposal of their products and the face of matter is that entry into a foreign market is not at all easy. Absence of knowledge about the foreign countries, unfavourable commercial policies and regulations of the foreign governments and the intense competition which an industrial concern has to face in a foreign market will also make a foreign market for sale of products, rather unattractive.

1.5.6 Earning of Foreign Exchange:

A developed agriculture not only creates a marketable surplus but also an exportable surplus. In fact, in the present day ‘world such a surplus is very important. Exports will earn foreign exchange which will be used to purchase capital goods with the latest technology for the industrial sector. Even some agricultural inputs like fertilizers and pesticides can be imported with the foreign exchange earned through agricultural exports. This will in turn, help in increasing the agricultural production still further.

1.5.7 Creation of Certain ancillary services:

A developed agriculture will also create demand for various institutions required for marketing of agricultural produce. Institutions engaged in transportation, marketing, storage and distribution of agricultural produce etc. will come into existence. Various institutions engaged in processing of agricultural product will also be set up.

1.6 Role of Industry in Agricultural Development:

The preceding paragraphs explain how agricultural development directly helps in the development of industry and also the tertiary sector in some cases. However, this should not mean that the industrial sector (as well as the tertiary sector) does not help in the development of agricultural sector itself. No doubt, in the initial stage, capital, labour, raw material etc, flow from the agricultural sector to the industrial sector. However, with the passage of time industrial, sector achieves maturity, its dependence on agriculture for these inputs decline. On the other hand, it develops various non-agro based industries which can help in improving agriculture production. It also starts helping agriculture in some other ways. The following paragraphs explain how industry helps the agricultural sector.

1.6.1 Provision of market for the agricultural products:

No doubt, the agricultural sector provides for a vast market for the industrial Products in the initial stages of its development. However, at some later stage the reverse of it also becomes true. After the development of the industrial sector gains momentum, it is no longer necessary for it to depend for its raw materials on the agricultural sector. It can use minerals and salts for its further expansion. This is a stage when the agricultural sector can dispose of its Products especially the raw materials to the industrial sector only to the extent, the latter demands them. Further development of the agricultural sector, thus to a significant extent, will be controlled by the expanding industrial sector.

1.6.2 Provision of modern Agricultural Inputs:

In the absence of a developed industrial sector, agriculture can be developed only by improving the traditional inputs. The pace of development of agriculture in such a situation is rather slow. For a more rapid development, agriculture must be provided with modem inputs like fertilizers, pesticides, high yielding variety seeds and machinery etc-. These will be produced in the country itself when the industrial sector is sufficiently developed and starts producing mineral based and salt based products. The success of green revolution in India is basically due to the supply of the modern inputs to agriculture by the industrial sector. Transport industry and other service which has contributed a-lot in the

movement of agriculture to employ land, and also for the marketing of agriculture produce, is also a gift of the industrial sector.

1.6.3 Reduction of population on land:

No doubt, agriculture supplies labour to the industrial sector in the beginning. This contribution can also be looked at from another angle. It is that the expanding industrial sector will help in withdrawing more and more labour from the agricultural sector when it achieves maturity and starts expanding on its own. This withdraw of- labour 'from the agricultural sector is quite important in those countries where population pressure is rather high and agriculture despite its expansion cannot absorb the additional labour force caused by increase in population. There are examples where the industrial sector has absorbed so much labour unit, that the labour force engaged in agriculture declined is not only in relative terms but also in the absolute sense Countries like U.K., Sweden, Japan and U.S.A. have experienced such a decline. In some of these countries even the average size of holdings has also increased due to the transfer of labour from the agricultural sector to other sectors.

1.6.4 Supply of consumer goods:

The industrial sector not only supplies agricultural inputs to the agriculture sectors but also the goods for consumption purpose. The industrial sector specializes in production of varieties of products. This results in diversification of the consumption pattern. A more satisfying consumption pattern in the rural areas has thus become possible only because of the consumables supplies by the industrial sector. Radios, watches, cars, television sets and modem household goods have found their way into the consumption pattern of many of the well-to-do farmers even in India. Even the small farmers in various countries use industrial products. And an urge to maintain the newly achieved higher standard of living prompts the agriculturalists to put in more efforts to increase the agriculture output.

1.6.5 Provision of Infrastructure:

Infrastructure both in the form of services like banking, insurance etc. as well as material form like roads, power installations, scientific laboratories education and health institutions etc. is very necessary not only for the development of industrial sector but also for the development of agriculture. For example about the importance of roads for agricultural development, Ashby says, “If I could do only one thing in the region to spur agricultural development I would build roads. And if this, I could add a third, I would build still more roads.” Same degree of importance can be attributed to power and scientific laboratories. All these are basically the gift of the industrial sector.

1.6.6 Provision for better Intellectual Environment:

It is obvious that intellectual environments in the urban areas, technical, managerial social and cultural fields are far superior to those in the rural areas. Form these centers, technical and managerial skills information about better living and that about social and critical flows to the rural areas. People in the rural areas shed conservative and superstitious way of life when they come into contact, with people in the urbanized industrial area.

1.7 Inter-dependence between Agriculture and Industry

Form the foregoing analysis, we find that whereas in the initial stages, it is agriculture that helps in the development of the industrial sector, at some later stage the industrial sector also starts helping in the further development of the agricultural sector. Initially, e.g. agriculture supplies raw materials, wage goods, labour and capital for the developing industrial sector. At u later stage the industrial sector starts providing agricultural inputs and other consumables to the agricultural sector. It provides infrastructure for agricultural sector so as to reduce population pressure on land in the rural areas. It also helps in creating better intellectual environment in the rural areas.

In other words, one way traffic changes into two- way traffic. Both agriculture and industry helps each other and indirectly each sector helps itself to grow, by extending help to the other to develop.

1.8 Limit of Interdependence:

We must note that die interdependence between the agricultural sector and the industrial sector implies that it efforts are made to develop one sector, it will also lead to the development of the other sector. It this interdependence was complete and each of the two sectors depended solely on the other for an input, the problems of economic development would have become simple. The government could, in that case, concentrate on the development of any one sector and the other sector would have automatically developed. However, the inter dependence is not complete. Agriculture for example, for its development, depends not only on inputs supplied only by the industrial sector but also us some inputs supplied from other sources like irrigation facilities. Industrial sector, also need, some physical inputs like minerals and machinery which will in no case, be provided by the agricultural sector. Further, different sector have some special problems of their own which will need separate policy measures meant for them. For example, special step will have to be taken to enable the farmer to meet yield uncertainty. Institutional changes like elimination of intermediaries and tenancy reforms have to introduce for the benefit of the agricultural sector. Industry will, similarly need special steps for its development like purchase of machinery from outside. Thus we can say than in view of the limited interdependence between agriculture and industry, government will have to follow a broad based policy for development of the economy.

1.9 Changing Role of Agriculture in Economic Development:

We have so far pointed out that in the initial stages of economic development agriculture helps in the development of industries. Later on industry starts helping agriculture in its development and the inter dependence between the two sector. The two sectors help each other to grow.

With the passage of time this interdependence becomes weak. As the industrial sector grows, its need for capital can be met from with itself. Internal savings can be invested. Minerals instead of agricultural products begin to be used as raw materials can come to an end. Automatic machine may reduce the demand for labour. In the end one can say that only demand for food grains will slay. Demand *for* raw materials from the agricultural sector may also continue though its rate of increase will be progressively down. This is mainly because of emergence of synthetic substitutes for agro based products. On the other hand, demand for inputs for agricultural production like fertilizers, insecticides, 'machinery etc. will continue to grow. The overall result will be that in the end process of dependence will be reversed. Agriculture comes to depend more on agriculture as was the case in the initial stage of economic development.

Exercise 1.1

Q1. Define Agriculture Economics?
Q2. Discuss the Nature and scope of economics?
Q3. Discuss the Inter-dependence between Agriculture and Industry?

1.10 SUMMARY

If an under developed country wishes to move on the developmental path, it should invariability start with the development of its agricultural sector. The developed agricultural sector will then help in the development of other sectors, especially the industrial sector through the provision of wage goods, raw materials, capital labour and expanded market and also through earning of foreign exchange. At a later stage, the industrial sector will start helping the agricultural sector in the development sector, in the development of the overall economy.

1.11 GLOSSARY

- **Disguisedly unemployed Labour:** Unemployment that does not affect aggregate output. Disguised unemployment exists where part of the labor force is either left without work or is working in a redundant manner where worker productivity is essentially zero. An economy demonstrates disguised unemployment where productivity is low and where too many workers are filling too few jobs.

- **Consumer goods:** products that are purchased for consumption by the average consumer. Alternatively called final goods, consumer goods are the end result of production and manufacturing and are what a consumer will see on the store shelf. Clothing, food, automobiles and jewelry are all examples of consumer goods. Basic materials such as copper are not considered consumer goods because they must be transformed into usable products.

- **Immigration: Immigration** is the movement of people into another country or region to which they are not native in order to settle there.[1]Immigration is a result of a number of factors, including economic and/or political reasons, family re-unification, natural disasters or the wish to change one's surroundings voluntarily.

- **Terms of trade:** The value of a country's exports relative to that of its imports. It is calculated by dividing the value of exports by the value of imports, then multiplying the result by 100. If a country's terms of trade (TOT) is less than 100%, there is more capital going out (to buy imports) than there is coming in. A result greater than 100% means the country is accumulating capital (more money is coming in from exports).

1.12 ANSWERS TO SELF-CHECK EXERCISES

Exercise 1.1

Answer 1. Refer to section 1.2.
Answer 2 Refer to section 1.3.
Answer 3. Refer to section 1.7.

1.13 SUGGESTED READINGS

1. R.N. Soni: *Issues in Agricultural Economics*, Shoban Lal Nagin Chand & Co. Jallandhar.
2. Niehols, W.H. Eicher, and L. Wil (ed): "*The Place Of Agriculture In Economics Development*. Bombay, vora & Co.
3. Kuznets, S: Economic growth and Structure. New Delhi, Oxford.

1.14 TERMINAL QUESTIONS

Q1. What do you mean by agriculture economics?
Q2. Explain the Role of Agriculture in Economic Development?
Q3. Explicate the Role of Industry in Agricultural Development?

Unit-02

FARMING SYSTEMS

STRUCTURE

2.0 OBJECTIVES

After going through this lesson you will be able to:

- List the different types of farming.
- Notify the advantages and disadvantages of Traditional system of farming.
- Explain in detail the Essential Features of a Cooperative Joint Farming Society.
- Report the Future of Cooperative Joint Farming in India.

2.1 INTRODUCTION

Though the word ‘system’ has many meanings, we use this term in the present lesson, in the context of enterprising ‘systems’ Description of an enterprising system involves the narration of three elements namely ownership, control and operation.

2.2 TYPES OF FARMING SYSTEM

We distinguish among different enterprising systems in agriculture on the basis of (a) who owns the land (b) who controls its operations i.e. cultivation and (c) who operates it i.e. who actually cultivates it.' Sometimes, these farming systems are also known as farm organizations. On the basis of the above three elements, we shall describe below the following important farming systems:

1. The traditional system
2. The commercial system
3. Collective farming
4. Co-operative farming

2.2.1 The Traditional System:

This is a system which is generally prevalent in a backward, stagnant agriculture. The main feature of this farming system can be traced to the characteristics of an "overall backward economy. Industrial sector is nonexistent and therefore the population mainly depends upon agriculture. Population pressure on agricultural, has resulted in perpetual subdivision of holdings and therefore, size of the farm is very small. In some cases, the size of the farm is so small that it is difficult for the farmer to use the family labour and other resources optimally on the farm. As agriculture is backward, there is no marketable surplus on such small farms. This system is therefore, also called subsistence farming. Large size of the family makes agricultural labour intensive. The capital used on the land is of crude, form.

In terms of the elements which distincts traditional system form other farming we can say that the farm, that is cultivated is generally owned by the farmer himself. He is the controller of the operations on the farm. That is, he decides what should be produced, what should be the quantity of various inputs each of the various crops. He- is also the operator of the farms i.e. he cultivates the land with his labour along with that of his 'family. In other words in such a farming system the farmer combines' in him, the rules of an owner, a controller and an operator of the farm. This system is also known as peasant farming.

One could also visualize a variant of this system with regard to the ownership of land. The farmer cultivating the small piece of land may be a tenant rather than the owner. However in actual practice tenancy is on a very limited scale in such a system. Two factors work against tenancy. One is that the size of the farm is rather small and as such, there is generally no surplus land available with the owner to lease it out. secondly even when the small farmer wishes to lease out his land, he may ultimately decide against doing so simply because he himself will not find suitable job opportunities outside agriculture as the industrial sector is practically, nonexistent.

2.2.1.1 Advantages of peasant Farming:

each farming system has its own advantages an well as disadvantages when compared with other farming system from that angle the traditional farming system has the following advantages.

(a) Better supervision: Unlike in industry, the area of Operation for a worker in agriculture is very large. Supervision in of his work always present a problem. If the size of the farm is small, the owner himself can effectively supervise the work of the labourer and can also guide and direct him to do his job in a particular way if, on the other hand, the size of the farm is large and many workers have to carry on their work, spread over a large area, the supervision of their work on personal basis will become difficult. 'The owner of the farm will have to depend upon various supervisors and managers for purposes of supervision and it is quite possible that the supervisors and managers may not work with full devotion and responsibility.

(b) More employment: In peasant farming there is generally a greater scope for employment on the farm, when compared with other farming systems. There are many reasons for this. Firstly, as the farm is small in size, the use of machinery becomes costly and therefore limited. Labour is thus not displaced. Secondly, the farmer uses the labour of his own family and treats it as free labour. As such, he uses this labour to such an extent that its marginal productivity becomes equal-to zero. On the other hand, farming systems which use hired labour, employ it only up to the point where its marginal productivity is equal to the wage paid to it. The employment on farms under many systems, other than the peasant farming is thus much less, when compared with that under peasant farming.

(c) Greater Productivity: Productivity per area on a farm under peasant farming is large than on farms under other systems, when the farms generally happen to be larger in size. The main reason form this is the greater intensity of cropping which, in turn, is due to greater use of labour per acre on small farms when compared with that on a larger farm. Productivity on a small farm (which is an important feature of peasant farming) is large due to greater use of 'about on such farms. A strong motivation to feed the family from a small piece of land also improves the quality of domestic labour put in. The fact that productivity per acre is higher in small farms, has been amply proved by the farm management studies conducted in India during the fifties.

(d) Tenacity of small farms: The fact that small farms are important feature of peasant farming proves to be a boom from another angle also. In times of emergency, like flood, etc. a small farmer with a sufficient labour force is able to face its onslaught more successfully than a large farmer. Further, as the small farmers generally neither purchase any input from the market, nor sell any output, they remain immune from the fluctuations in the prices of various inputs or crops.

(e) Possibility of quick decision: Frequent weather and climate changes necessitate immediate decisions on the part of a farmer. Such decisions are easier to take when the owner himself controls the farm and easier to implement when he himself is the operator of the farm and when the size of farm is rather small.

2.2.1.2 Disadvantages of peasant farming:

Peasant farming has some disadvantages from which some other farming systems do not suffer. These disadvantages are as follow:

(a) **Difficulty in using improved practices and improved inputs:** Transformation of agriculture is more difficult when the farms are small in size. Some improvement on the farms like fencing and drainage cannot be effected. Rotation of crops is difficult. Construction of farms buildings is relatively more costly on small farms. Digging of a well is uneconomic. Financial stringency makes it difficult for the peasant proprietor to arrange for the purchase of modem inputs for the farm

(b) **Low marketable surplus:** Production of a small farm is sufficient to meet the domestic needs to the farmer only. He has no surplus of food grains to see in market. This, in turn, hinders the growth of the industrial sector because it becomes difficult to sustain those who are working off the farm and are engaged in industrial production.

(c) **No optimum use of available resources:** A small fanner has a pair of bullock and which provides enough of labour for farmer cannot use them optimally because the size of the faun is rather small. 'The resources of the farmer, then either remain unutilized or are mis-utilized. The problem of disguised unemployment, especially on small farms is well known.

(d) **Weak commercial motive:** The small farms are generally off the market. He neither purchases any input from the market, nor sells any surplus in market. They thus remain uninfluenced by the changes in the market facer. The crop pattern, therefore, does not change with the change in prices and it often remains un- remunerative.

2.2.2 Commercial Farming:

Commercial farming represents, as against the peasant farming, the other extreme of farming systems. Here, as against the private ownership of a farm by a single farmer, the ownership is generally in the hands of a large number of persons who form a joint stock company to own the farm. (However, commercial farming is compatible even with a single owner if he can own a large farm-large enough, as to necessitate the use of hired labour), so far as the control of over production i.e. decision making power with regard to production is concerned it is generally in the hands' of employed managers.

The hired labourers operate the farms. They constitute a class different from that of the managers who supervise the work. In India, various tea and coffee plantations are the fine examples of commercial

farming. Commercial farming is quite popular in U.S.A., Australia and U.K. Commercial fanning is also known as estate farming or corporate farming in case a joint stock company owns the farm Another name for commercial farming is capitalistic farming simply because, in this, case production is carried on' with the help of machinery which is generally operated by hired labour. And this system is called commercial farming because; unlike in subsistence farming, the production is meant for the market.

Almost the whole of the product, (except that which is necessary for seeds etc.) is marketed. As the farms purchase most of the inputs from the market and sell most of its produce in the market, the commercial motive of such a farm becomes very strong. The crop pattern becomes totally market oriented and is influenced fully by the changes in the market forces. One is not wrong when one points out that where as the commercial, motive (to get maximum profit) is the guiding force for a commercial farm, the technical motive (to get the maximum physical output) is the guiding force for a subsistence farms.

2.2.2.1 Advantages of Commercial farming:

A commercial farming is free from the main disadvantages from which subsistence farming suffer. A commercial farming, for example, has sufficient financial resources with it. As such, it can purchase new and improved inputs from the market. It can use resources for the purpose but also because the large size of farm can reduce their cost per unit of output. Fencing, drainage ' and leveling of land can be taken up. Rotation of crops can be introduced. Wells can be dug up. Farm building and roads can be built on the farm. Further, the commercial farms provide much marketable surplus of food grain to the industrial sector. Commercial farms thus encourage the development of the industrial sector. Various commercial economies in marketing etc. can also be reaped by the commercial farm due to its large size. As the commercial motive on such farms is quite strong the crop pattern responds to price changes and the allocation of resources becomes optimum.

2.2.2.2 Disadvantages of commercial farming:

Commercial farming is not free from certain drawbacks. The most important flaw with this farms organization is the displacement of labour that takes, place due to excessive use of machinery on the commercial farm. The size of the farm is quite large to permit the use of sophisticated machinery and at the same time, 'free' family labour is not available. Labour has to be hired and paid, for.

Not only is labour displaced on a commercial farm, the labour that is still used is subject to a lot of exploitation. Wages paid are quite low and the fact that most of the hired labour on a commercial farming is of a casual nature adds further to their misery. The distribution of income on

such farms becomes too unfair and it tilts in favour of the owners of the farms.

A commercial farm is also likely to suffer from the malady of poor supervision. A large farm will have to employ a large number of supervisors to look after the work of agricultural labourers whose area of operation is quite large. As they themselves have no incentive of ownership, they may not be fully devoted to their job.

2.2.3 State Farming

This farming system is somewhat similar to the commercial farming or capitalistic farming. The only difference is with regard to the ownership of the farming, Where as in case of a commercial farm the ownership of the farm lies with a joint stock company (or in some cases with a land lord), in case of state farming, the state itself is the owner of the farm. So far as the control over production or operating of the farm is concerned, in both cases, the hired managers have the decision making power with regard to production and the hired workers work on the farm.

2.2.3.1 Advantages of State farming

State farming has all the advantages of capitalistic farming. There are no financial problems for a state farm. Necessary improvements in the land can be made; improved agricultural practices can be adopted, productive assets for efficient production can be procured; wells can be dugs up, tube wells can be installed and necessary buildings and roads on the farm can be built. Commercial economies of various types can be reaped. Market surplus of food grain and raw materials required by the industrial sector are produced on such farms. The state farms, infect in some measures can be an improvement over a commercial farms owned by an individual or a joint stock company.

It can substitute the motive by some social motive. That can result in a lesser use of machinery on the farms, thus displacing labour to a smaller extent when compared with a commercial farm. Exploitation, of the hired labour can also be curbed. Further as the earnings of a state farms go to fill the coffers of the Government, a part of a earned money can be Used for the welfare of the workers working on the farm. The distribution of income thus can be corrected to some extent though indirectly.

Of course as in case of commercial farms managers and Supervisors on a state farm may not be fully-devoted to their jobs due to lack of incentive of ownership. It may be noted that state farming is not suitable for an open and democratic society. It works against the principles of freedom of enterprise.

2.2.4 Collective Farming

This is another farming system which was introduced in U. S .S. R. Sometime after 1917 revolution. This system replaced the feudal system

of farming enforced- by a communist Regime. The revolutionary regime decided that in place the feudal lords owing the land, hence fore. The village community, us a whole would own the land. The community itself would take decisions about production and itself would operate upon the land it possessed. This decision led to the emergence of what are now called collective farming. The land and other production assets are filed jointly by the village's society. There is no individual ownership. The village community as a whole constitutes the general body of the collective farm. Its members out of themselves elect an executive-board which manages the farm. Some nominees of the Government are also represented on the executive board. The board plans the crop production and arranges for various inputs to be used on the farm and also looks after the disposal of the crops produced. It also keeps in touch with the government for seeking advice and guidance from it with regard to production on the farm and also for the produce. The board also makes arrangement for providing various social services like education, health care and entertainments to its member.

Member of the village community work as labourers on the collective farm. There workers are divided into work Brigades and their work is recorded by a foreman who is elected as such by the workers themselves. As the various agricultural operations require different skill and energy, the work put in by them is standardized. Each worker is paid according to the standardized work put in by him. However, we must note that whatever the workers get is not their wages. They do not act as wage earners. They share according to the works put in the surplus which they create on the farm after paying for the intermediate inputs, depreciation and taxes and other demands made by the government.

As there is no individual ownership of land, the incentive generated by ownership is missing. In order to motivate workers to put in their best other types of incentives in the form of money and in kind are offered to the workers.

No doubt, the collective farming have all the advantage of a commercial farming. However they are not popular in open societies. They represent a political system and are confined to the regimented economies of Eastern Europe and China.

2.2.5 Cooperative Farming:

We have earlier mentioned that the traditional system of farming no doubt has certain advantages like higher intensity of cropping, higher employment level and higher productivity per acre, it suffers from certain disadvantages due to the small size of the holding like difficulties in adopting some improved crop practices e.g. rotation of crops and difficulties in carrying out some developmental operation like fencing, digging of a-well, weak bargaining power in the market etc.

To overcome these difficulties associated with small farms and at the same time, to reap the incentives of - ownership, a new system of farming has been suggested. It is known as cooperative farming.

2.2.5.1 Cooperative Farming Society

When various farmers in a village pool their land together and agree to treat the pooled piece of land as one big farm for the purpose of cultivation, purchase the necessary inputs for the cultivation, and market the crops jointly, they are deemed to have formed a cooperative farming society. Such a society, for its proper working elects its office bearers on the basis of one member-one- vote. The office bearers look after the proper cultivation of new farm that emerges after the land of various farmers has been 'pooled. The ownership of the land still lies with the respective members of the society and they can withdraw from the society whenever they so like. Besides land, the farmers also contribute various productive assets as well as their labour for the purpose of cultivations. Whereas they get rent for their land and productive assets, they get wages, for their labour.

2.2.5.2 Variants of a cooperative farming society:

A cooperative farming society can take up different forms, mainly depending upon the functions which are performed co-operatively. The following are some of the important variants of a cooperative farming society.

(a) Cooperative joint farming society: The society represents the most comprehensive type of cooperative farming society. A joint cooperative farming society comes into existence when the members pool their land and oilier productive assets and carry on all the presowing the pooling and post harvesting functions besides the cultivation of the pooled land on cooperative basis. It purchases various inputs from the market and arranges for the marketing of the produce. It also seeks financial assistance from outside agencies to carry on these activities.

(b) Cooperative better farming society: In cooperative better farming society, the members do not cultivate their land jointly. Each member cultivates his own land. However, they cooperative with each for pre sowing and post harvesting operation. For instance, they purchase various agricultural inputs like seeds, fertilizers, insecticides, services of machinery etc, on cooperative basis. They sell the crops jointly. A cooperative better farming society may also arrange for financial assistance for carrying on these activities. The members pay for the services rendered to them by the society.

(c) Cooperative Tenant Farming Society: This is a society which purchases or leases in land from the Government or some private persons and then in turn leases out the land to its members. The

members cultivate the land and pay the rent falling to their share, to the society. The society also rends various other services to its members and charges from its members for the services so rendered. The profits earned by the society are distributed among its members according to some agreed formula.

(d) Cooperative collective farming society: This type of society involves pooling of their land by the members on a permanent basis. A member who joins this society cannot ever withdraw his land from the society. He can only transfer his land to some other person who will now become a substitute member of the society. The functions of this society are similar to those performed by a cooperative joint farming society. The member gets their wages and profits according to the labour and land respectively contributed by them. It is obvious that such a society is formed in contravention of this general principle of co-operative i.e. voluntary membership, with a right to withdraw from the society at any time.

2.2.5.3 Essential Features of a Cooperative Joint Farming Society:

From the foregoing description of different variants of cooperative farming society, it is clear that the cooperative joint farming society represents the most comprehensive from of a cooperative farming society and at the same time (unlike the cooperative collective farming society) follows Strictly the principles of cooperative. We describe below the important features of such a cooperative society.

1. **Recognition of the right of ownership**: Member of a cooperative joint farming retains the ownership of their land even they surrender it for joint cultivation. And in fact, this' is the feature of the cooperative society which promotes them to join their cooperative society without any hesitation. In the villages, especially in poor, under developed countries, land is the most important symbol of social status and one will be willing to cultivate the land jointly with other and benefit from such a joint cultivation provided the ownership of land and the resultant social status remain intact.

   A member, as we have already stated, can withdraw from this society and resume the cultivation of his land whenever he so desires**.**

2. **Voluntary Membership:** Another factor which encourages farmers to become a member of a cooperative joint farming society is the voluntary membership of the society. There is no compulsion for a farmer to join the society and mere is no compulsion to centime to be its members on a permanent basis. A member can withdraw from the society at any time, he so likes. Absence of an element of compulsion is likely to leave only those members with the society who believe in cooperative principles and who are loyal to the society.
3. **Democratic Management**: Office bearers of a cooperative society, unlike the management of in case of capitalist farm or a state farm or

collective farm, are elected democratically on the basis of one man-one vote. 'The cooperative principle gives one vote to each individual member, irrespective of the area of land or amount of the productive assets contributed by him. Such a procedure obviously is Conducive to social equality and is likely to encourage the willing, participation of all members in attains of the society irrespective of their economic status. Another feature of the democratic management of the society is that if the members in general are unhappy with the performance of any office bearer, they can vote him out of the office.

4. Distribution of rewards according to contribution: In order to attract both large and small farmers to it and also ensure fairness to all member the society pays to various members on the basis of the contribution in term of land and labour made towards the working of the society. There are generally two types of payment made to the members of the society; one as wages for the labour contributed towards cultivation and other activities of the society and the other as profit for the land pooled for joint cultivation. It is not necessary that the member who has pooled his land for cultivation should also work on the land.

5. Provision of Social Services: Though the cooperative farming society is basically organized for carrying on various operations on and in connection with the pooled land, it also performs various other jobs to promote general welfare of its members. It arranges for the education for the children of its members, arranges for health care and for general entertainment of course, these are ancillary services and their provision depends upon the resources of each individual society. Provision of such services encourages the members of the society to be more loyal to it and thus works for its greater stability.

2.5.4 Advantages of Cooperative Joint Farming:

Cooperative joint farming has many advantages when compared with some other forms of farming systems. Some of these advantages are as follows:

(i) Increase In the Size of the Holding :

When the members agree to pool their land for joint cultivation on a cooperative basis, it will obviously result in the increase in the size of the operational holding. This will be despite the fact the land in official records, still belongs to different individuals. A larger size of the holding leads to many advantages. Various improvements in land, like drainage fencing, leveling and raising of embankment, digging of well etc. can be profitably undertaken when the size of the farm is increased. The average cost of improvement) per acre and therefore, per rupees of output falls when the land is pooled to form a bigger holding. Roads and buildings on the farm occupy a relatively smaller portion of land when the size of the farm increases, thus reducing the per acre cost of such developmental activities. Sophisticated and costly machinery can be purchased for the bigger unit of cultivation, not only because such farm

can financially afford to purchase such machinery but also because it can fully utilize it.

Various other economies of large scale production can also be reaped on such a farm. For instance farm begins to enjoy financial economies. Not only does the operation of bigger farm meant larger savings in the aggregate, it also becomes easy for the cooperative farming societies to get financial assistance from ‘outside sources. In the same way bulk purchase of physical inputs results in savings due to concessional rates. Marketing of a larger amount of crops increases the bargaining power of the seller and thus saves him (the society in this case) from undue exploitation by the unscrupulous functionaries of the market.

(ii) Use of non-traditional inputs:

The use of non-traditional inputs like seeds, fertilizers and insecticides in agriculture is a must if it is to be transformed into a modern agriculture. Many of such inputs, however, are quite costly and their use necessitates expenditure. A cooperative farming society is in a position to purchase these inputs. Not only does its savings go up as a result of economies of large scale production that it comes to enjoy but also, it can easily borrow funds from outside on concessional rates.

(iii) Increase in Output:

Output on a cooperative farm is likely to, increase even when the same technology as was being used by its members, is used for production. This is due to more land being released due to the disappearance of old boundaries and embankments, found in the holding of each member of the society. However, as indicated above, the technology used is likely to improve after a larger farm comes into existence due to the formation of a cooperative farming society.

(iv) Social Justice and Cohesion:

We have earlier described some important features of a cooperative farming society. All these features encourage social equality and social justice. The management is elected democratically on the basis of one member-one vote. The voluntary membership of the society and freedom to withdraw from it eliminates the element of compulsion for its participation something which is resented by every individual. Association of rewards with contribution in terms of land and labour eliminates the element of exploitation and unfairness from the operation of the society. All the features of the cooperative farming society thus work for balanced and smooth relations among its members.

(v) Provision of social services:

Members of a cooperative farming society not only benefit monetarily from its membership but also enjoy some other advantages.

The society provides various services like educational facilities, health care and entertainment to its members. The society is able to render these services to the members out of its additional earnings. By rendering these services, the society is able to ensure the loyalty of its members towards itself.

(vi) Carrying of Off Farm Activates:

The activities of a cooperative farming society are not confined to the purchase of inputs, on farms activities and the sale of agricultural crops only. There are some allied activities which are not strictly agricultural activates, but which can be profitably undertaken by the society. An individual farmer is not able to take up these activates on his own because the cost involved in these activities is quite high. These activities are in the form of various processing like rice shelling gur making etc. Such activities not only provide additional income to the members of the society bet also generate more employment opportunities for the members, some of whom may become unemployed due to use of machinery on the cooperative farming.

(v) Research:

Research is again another activity which may not be undertaken by an individual because of high costs for carrying on such an activity. A cooperative farming society can spare a part of its income for carrying on research in various aspects of-the techniques of cultivation and allied activities.

(vi) Closer Contact of the Farmers with the Government:

The government on many occasions needs the help of the fanners in giving effect to its various policies. ‘The cooperative farming society can serve as a very good instrument for not only disseminating information about these policies but also, for implementing such policies at the farmers level. For example, services of cooperative society can be used for distribution of various improved inputs to the farmers. It is easier to deal with a society than will the individual farmers.

Infact, one of the objection at the political level against the cooperative farming society is that government can ultimately fully control and interfere with the decision making process of the farmers with regard to production, by taking over the cooperative farming society itself. In their view, cooperative farming is the first step towards the formation of a collective farmers a state farm.

2.2.5.5 Disadvantages of cooperative farming:

We have already referred to a fear associated with the cooperative farming in the preceding paragraph. There are other disadvantages of cooperative fanning which are described below:

(i) Fear of unemployment: It is pointed out that there is every possibility that the total number of workers employed on individual firms taken together may come down alter the owners of these farms, organize them into a cooperative farming society. Many reasons are given for this assertion. It is pointed out, for example, that on large farms, use of machinery becomes possible. This will displace some labour. It is further pointed out that the members and the worker of these families become like hired workers on, the cooperative farm. The manager of the cooperative form treating them as such will employ them only up to the point where their marginal productivity will become equal to the prevailing wages. This will obviously mean less employment of the workers when compared with the situation when each worker of the family is treated as a free of cost labour (as in the case of a family farm) and is employed up to the point where its marginal productivity is equal to zero.

There are, however, economists who do not accept these arguments. They feel that in the first instance, use of machinery, even if it is used for the farm, is completely optional. The members know their own interests. And if they feel no labour should be displaced, they may decide, not to use the machinery. Secondly, there may not be real unemployment after the co-operative farm comes into existence. There is significant level of disguised unemployment in agriculture of various economies. On a cooperative farms such a disguisedly unemployed labour may become openly unemployed. Khusro and Aggarwal put forth another argument to conclude that there should be no fear of unemployment after a cooperative farm comes into existence. They say that the concept of cooperative firming is not static in character. After a cooperative farming society comes into existence, it can take up many activities other than cultivation proper and generate new opportunities for employment. Wells can be dug up. Various other developmental activities on a farm like fencing, drainage, construction of a farm house etc, can also absorb some more labour. Use of non- traditional inputs may necessitate more labour. Various off-farms' activities like process of agricultural products e.g. rice shelling; gur making etc. can also create more jobs. In their view, thus there are no chances, of net displacement of labour after a cooperative farm comes into existence.

(ii) Bureaucratic interference:

As per the principles of cooperative, cooperative farming is voluntary-association, organized independently by the farmers to promote their own interest and to avoid exploitation at the hands of some unscrupulous members of the community. However, its independence is in name only. From its very inception, a cooperative farming society starts being pressurized and directed by the bureaucracy in its day to day working. This is simply because all the facilities and concessions which a 'cooperative fanning society enjoys, either How directly from the officials

of the government department or in other cases, through their help. The bureaucracy, in theory, is only expected to guide the society in its day to day working; in practice however it only directs the society to work according to him because of the privileged position it enjoys.

(iii) Difficulties in Distribution of Rewards:

We have earlier pointed out that there is fairness in the distribution of rewards for the services rendered by the individual members and for mere contribution of land and other productive assets. However, this fairness is in theory only. At the practical level, there are difficulties in ensuring justice in payment to various members for their contributions. For example, land is of different nature and its standardization presents a lot of difficulties. Same is the case with the nature of labour put in. Different operations of agriculture need, different levels of skills and the member generally resent the criterion (whatever it may be) used for determining wages for different operations.

(iv) Love for Land:

Love for land is responsible for the unstable existence of the cooperative farming society. Land is not only a source of living for an individual farmer but is also a symbol of status for him. The farmer is therefore, unwilling to surrender its ownership at any cost. Pooling of land, at least, means surrendering its possession, if not the ownership of land to, should pass on to somebody if some problem arises with regard to the work in of cooperative farming society. As such he will like to withdraw from the society at the very first inkling of an unsatisfactory working of the society.

(v) Lack of Responsibility:

Member of cooperative society work, jointly on a co-operative farm and we know, in joint adventures, every body's responsibility is no body's responsibility. This is especially so in ease of farming when the area of operation for a worker is very large and supervision cannot be very effective. One may not work devotedly and then blame others for poor results. No doubt the ownership of land is still 'with the members in a cooperative farming society, still the incentive to work is weakened, not only because his work can benefit other members but also because, part of the earnings of the farm are not distributed among members of the basis of ownership of land. This part, he earns only as a worker and obviously his behaviour as a worker is not different from that of any other worker.

2.2.5.6 Future of Cooperative Joint Farming in India:

At the outset, we may point out that co-operative joint farming has no future in India under the present circumstances. The most important indicator in this regard is the progress of cooperative joint farming society

in India. So far, the progress has been very unsatisfactory. It was only during the first three plans that the government tried to encourage the formation of cooperative societies. However, most of the societies organized through such an encouragement turned out to be fake societies, meant mainly to extract some concessions from the government. Since 1974 there has been no progress so far as the formation of co-operative farming societies is concerned. The main reasons for this are the disadvantages from which the cooperative farming societies suffer. Besides this, Otto Schiller gives another reason for-the unsatisfactory progress of cooperative farming societies in India. According to him, these societies nourish in new settlements like Israel where attitude of the village people towards each other are not hardened. Cooperative of any type, according to him, do not succeed in areas where there are strong likes and dislikes on the part of the individual towards each other and these strong likes and dislikes do get developed in old settlements, with the passage of time. Otto Schiller suggests in such settlements only cooperative better farming societies can be successful. Following his suggestions one can say that in India, one may continue with the existing system of peasant farming and supplement it with cooperative better farming societies. Many economists feel that this will be the best forms of a farming system in India.

Exercise 2.1

Q1. What are different types of farming?
Q2. What are the advantages and disadvantage of Cooperative Joint Farming Society?

2.3 SUMMARY

Description of an enterprising system involves the narration of three elements namely ownership, control and operation. Following are the important farming systems: (1). The traditional system, (2) The commercial system, (3) Collective farming and (4) Co-operative farming

The Traditional System: is a system which is generally prevalent in a backward, stagnant agriculture. The main feature of this farming system can be traced to the characteristics of an "overall backward economy. Industrial sector is nonexistent and therefore the population mainly depends upon agriculture. Population pressure on agricultural, has resulted in perpetual subdivision of holdings and therefore, size of the farm is very small. In some cases, the size of the farm is so small that it is difficult for the farmer to use the family labour and other resources optimally on the farm. As agriculture is backward, there is no marketable surplus on such small farms. This system is therefore, also called subsistence farming.

Commercial farming represents, as against the peasant farming, the other extreme of farming systems. Here, as against the private ownership

of a farm by a single farmer, the ownership is generally in the hands of a large number of persons who form a joint stock company to own the farm. (However, commercial farming is compatible even with a single owner if he can own a large farm-large enough, as to necessitate the use of hired labour), so far as the control of over production i.e. decision making power with regard to production is concerned it is generally in the hands' of employed managers. The hired labourers operate the farms. They constitute a class different from that of the managers who supervise the work. In India, various tea and coffee plantations are the fine examples of commercial farming.

State Farming Is a farming system is somewhat similar to the commercial farming or capitalistic farming. The only difference is with regard to the ownership of the farming, Where as in case of a commercial farm the ownership of the farm lies with a joint stock company (or in some cases with a land lord), in case of state farming, the state itself is the owner of the farm. So far as the control over production or operating of the farm is concerned, in both cases, the hired managers have the decision making power with regard to production and the hired workers work on the farm.

Collective Farming is another farming system which was introduced in U. S .S. R. Sometime after 1917 revolution. This system replaced the feudal system of farming enforced- by a communist Regime. The revolutionary regime decided that in place the feudal lords owing the land, hence fore. The village community, us a whole would own the land. The community itself would take decisions about production and itself would operate upon the land it possessed. This decision led to the emergence of what are now called collective farming. The land and other production assets are filed jointly by the village's society. There is no individual ownership. The village community as a whole constitutes the general body of the collective farm. Its members out of themselves elect an executive-board which manages the farm. Some nominees of the Government are also represented on the executive board. The board plans the crop production and arranges for various inputs to be used on the farm and also looks after the disposal of the crops produced. Member of the village community work as labourers on the collective farm. There workers are divided into work Brigades and their work is recorded by a foreman who is elected as such by the workers themselves. As the various agricultural operations require different skill and energy, the work put in by them is standardized. Each worker is paid according to the standardized work put in by him. However, we must note that whatever the workers get is not their wages. They do not act as wage earners. They share according to the works put in the surplus which they create on the farm after paying for the intermediate inputs, depreciation and taxes and other demands made by the government.

Cooperative Farming: When various farmers in a village pool their land together and agree, to treat the pooled piece of land as one big farm for

the purpose of cultivation, purchase the necessary inputs for the cultivation, and market the crops jointly, they are deemed to have formed a cooperative farming society. Such a society, for its proper working elects its office bearers on the basis of one member-one- vote. The office bearers look after the proper cultivation of new farm that emerges after the land of various farmers has been 'pooled. The ownership of the land still lies with the respective members of the society and they can withdraw from the society whenever they so like. Besides land, the farmers also contribute various productive assets as well as their labour for the purpose of cultivations. Whereas they get rent for their land and productive assets, they get wages, for their labour.

2.4 GLOSSARY

- **Commercial farming** represents, as against the peasant farming, the other extreme of farming systems. Here, as against the private ownership of a farm by a single farmer, the ownership is generally in the hands of a large number of persons who form a joint stock company to own the farm. (However, commercial farming is compatible even with a single owner if he can own a large farm- large enough, as to necessitate the use of hired labour), so far as the control of over production i.e. decision making power with regard to production is concerned it is generally in the hands' of employed managers. The hired labourers operate the farms. They constitute a class different from that of the managers who supervise the work.
- **The Traditional System:** This is a system which is generally prevalent in a backward, stagnant agriculture. The main feature of this farming system can be traced to the characteristics of an "overall backward economy. Industrial sector is nonexistent and therefore the population mainly depends upon agriculture. Population pressure on agricultural, has resulted in perpetual subdivision of holdings and therefore, size of the farm is very small. In some cases, the size of the farm is so small that it is difficult for the farmer to use the family labour and other resources optimally on the farm. As agriculture is backward, there is no marketable surplus on such small farms. This system is therefore, also called subsistence farming. Large size of the family makes agricultural labour intensive. The capital used on the land is of crude, form.
- **State Farming:** This farming system is somewhat similar to the commercial farming or capitalistic farming. The only difference is with regard to the ownership of the farming, Where as in case of a commercial farm the ownership of the farm lies with a joint stock company (or in some cases with a land lord), in case of state farming, the state itself is the owner of the farm. So far as the control over production or operating of the farm is concerned, in

both cases, the hired managers have the decision making power with regard to production and the hired workers work on the farm.

- **Cooperative joint farming society:** The society represents the most comprehensive type of cooperative farming society. A joint cooperative farming society comes into existence when the members pool their land and oilier productive assets and carry on all the pre-sowing the pooling and post harvesting functions besides the cultivation of the pooled land on cooperative basis. It purchases various inputs from the market and arranges for the marketing of the produce. It also seeks financial assistance from outside agencies to carry on these activities.
- **Cooperative Tenant Farming Society:** This is a society which purchases or leases in land from the Government or some private persons and then in turn leases out the land to its members. The members cultivate the land and pay the rent falling to their share, to the society. The society also rends various other services to its members and charges from its members for the services so rendered. The profits earned by the society are distributed among its members according to some agreed formula.
- **Cooperative collective farming society:** This type of society involves pooling of their land by the members on a permanent basis. A member who joins this society cannot ever withdraw his land from the society. He can only transfer his land to some other person who will now become a substitute member of the society. The functions of this society are similar to those performed by a cooperative joint farming society. The member gets their wages and profits according to the labour and land respectively contributed by them. It is obvious that such a society is formed in contravention of this general principle of co-operative i.e. voluntary membership, with a right to withdraw from the society at any time.

2.5 Answers to self-check Exercises

Answer 1. Refer to section 2.2.

Answer 2. Refer to section 2.2.5.

2.6 SUGGESTED READINGS

1. R.N. Soni: *Issues in Agricultural Economics*, Shoban Lal Nagin Chand & Co. Jallandhar.
2. Niehols, W.H. Eicher, and L. Wil (ed): "*The Place Of Agriculture In Economics Development*. Bombay, vora & Co.
3. Kuznets, S: Economic growth and Structure. New Delhi, Oxford.

2.7 TERMINAL QUESTIONS

Q1. What are the five types of farming system? Explain each system in Detail?

UNIT-03

FARM SIZE & PRODUCTIVITY DEBATE

STRUCTURE

3.0 OBJECTIVE

After going through this lesson you will be able to:

- Establish Farm size and Productivity Relationship in Indian Agriculture
- Explain the Inverse Relationship between Farm size and Productivity
- Narrate the Policy implications

3.1 INTRODUCTION

One of the hotly-debated issues in Indian agriculture since the publication of the farm management survey data for the fifties was the relationship between farm size and productivity. This debate was initiated by A.K. Sen in *1962 and he* argued that an inverse relationship between farm size and productivity existed in India i.e. as the size of holdings increases, productivity declines. This conclusion was reached at on the basis of data presented in the Farm-management-surveys concluded in different parts of the country.

3.2 FARM SIZE AND PRODUCTIVITY RELATIONSHIP IN INDIAN AGRICULTURE

The main issues involved in the debate on farm size and productivity are nicely summed up in the following three observation made by Amartya Sen.

(1) "When family labour employed in agriculture is given an imputed value' in the terms of the ruling wage rate much of Indian agriculture seems un-remunerative".

(2) By and large, the profitability of agriculture increases with the size of holding 'profitability' being measured by the surplus or deficit of output over costs including imputed value of labour.

(3) By and large productivity per acre decreases with the size of holding".

A devasting critique of the position came from Ashok Rudra who joined the debate in 1960 in a series of two articles entitled "Farm size and yield per hectare" and "More are returns to scale in Indian agriculture" appearing in special Number, July 1968 and Oct 26,1968 issues of' Economic and Political Weekly. Whereas Sen Khusro, Rao, Saini and others were victims of tendency to indulge in sweeping generalization about the whole economy based on some regional data.

Rudra Dutt was more cautious and vigilant in drawing conclusions. He argued that while such relationship may be held in certain areas, it is not a universal phenomenon and cannot be said to operate in all parts of the country. Krishana Bharadwaj and A.P. Rao's study was based on disaggregated data and logarithmic linear function was fitted to farm level data all belonging to the same village. The study showed that farm productivity remained constant over all the holding sizes. Kishana Bharadwaj study concluded that (a) an inverse relationship while not supported invariably is not rejected either and (ii) there is "no" significant relationship between per acre yield of individual crops and the size of holding. However, since the introduction of the new wheat technology in the mid-sixties, reinforced by the new rice technology in the early, seventies, the inverse relationship between farm size and productivity is believed to have undergone a change.

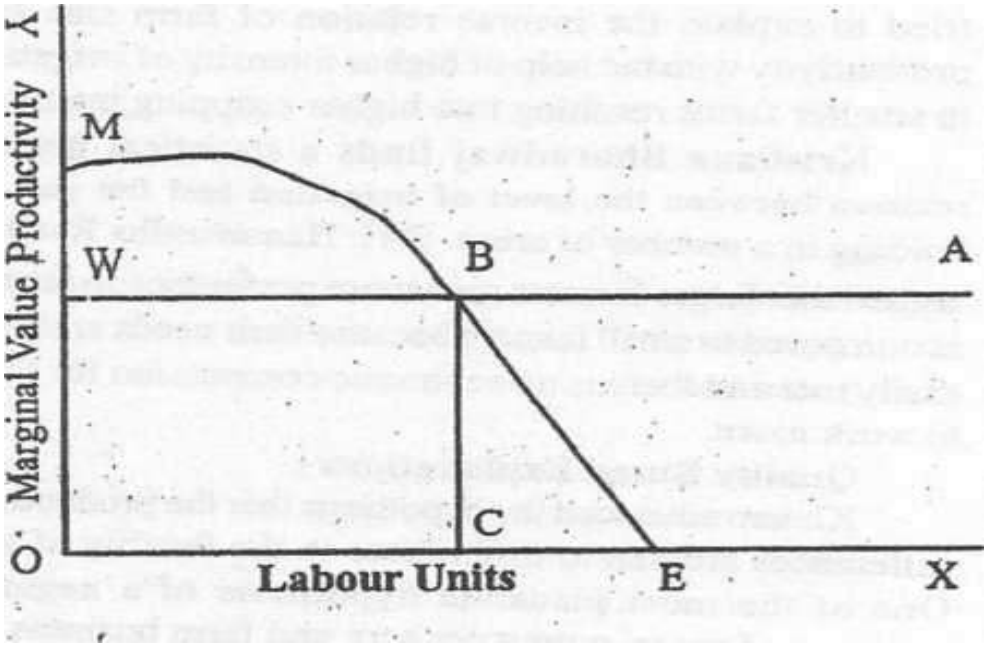
Chadha's study shows that under the impetus of technological changes, crop yield rates, overall yield rates and productivity have all increased for each farm size category. However, their rates of change have not been uniform along the farm size. For some crops, smaller holdings might still have an edge of higher yield rates. Yet, as a matter of fact, yield rate differences have either disappeared or become narrower. Most importantly, the slope of the statistical relationship between farm size and cropping intensity has become smaller.

3.3 EXPLANATION OF THE INVERSE RELATIONSHIP:

Explanation for the existence of inverse relationship between farm size and productivity has been broadly divided into two categories: (i) intensity based and (ii) quality based.

3.3.1 Intensity Based Explanations:

The most important explanation advanced in this regard, is in terms of low opportunity cost of family labour. This argument was put forward by A.K. Sen according to whom the small farmers do not use hired labour. It is based on the argument that the smaller farms characterized by peasant family cultivation extend the input labour right up to the point where the marginal product of labour is zero (i.e. point E) in the accompanying diagram at least much below the ruling market wage rate. On the larger farms labour will be employed only till the point where the marginal productivity becomes equal to the wages paid to the labour. Hence the similar farms have higher productivity per acre.



Accordingly, the labour land ratio is higher for small farms and thus keeping the productivity more as compared to larger farms. Sen's explanation is based on the assumption that, there are no outside, opportunities for family labour, and accordingly, its opportunity cost is zero. The assumption on which Sen's explanation is based is not sufficient to explain the inverse relationship on the following grounds.

(i) A small farmer will not consider his labour as available at zero prices if the peasant family farming coexists in the region.

(ii) Peasant family farmers even at the bottom of the scale hire labour at the margin and even derive income from employment of family labour in alternative occupations.
(iii) There also exists strong empirical evidence that the opportunity cost of labour on the smaller farms is not significantly different from market wage rate.

Deepak Majumdar, A.M. Khusio and Krishana Bharadwaj have put the arguments that small farmers make a more intensive use of their inputs as compared to large .farmers because they are faced with the compulsion of providing for themselves and their families from whatever small holdings they possess. As against this, the large farmers are not faced with any such compulsion and consequently do not use their inputs as intensively as small farmers.

Some economists like Prannoy Roy, try to explain this inverse relationship between farm size and productivity by saying that this extra labour on small farms is used for increasing the cropping intensity of the small farms. Prannoy Roy, Infact, points out that there is not much difference of the yield per acre on small and large farms but the gross value of output of an acre of small farm is more than that on a large farm because of higher cropping intensity on small farms.

C.H. Hanumanlha Rao and Krishana Bharadwaj has tried to explain the inverse relation of farm size and productivity with the help of higher intensity of irrigation in smaller farms resulting into higher cropping intensity.

Krishana Bharadwaj finds a statistical inverse relation between the level of irrigation and the size of holding in a number of areas. C.H. Hanumanlha Rao has argued that larger farmers give more preference to leisure as compared to small fanners because their needs are more easily met and there is no economic compulsion for them to work more.

3.3.2 Quality Based Explanations:

Khusro advanced the hypothesis that the productivity differences are due to differences in the fertility of soil. One of the most plausible hypothesis of a negative response of gross, output per acre and farm business per acre to changes in acreage is due to the fact that as farm size expands the proportion of bad and indifferent land to total land increases resulting into the decrease in per acre output and farm income.

A.M. Khusro and C.H. Hanumantha Rao have also advanced another reason for the higher productivity per acre on small farms. This is based upon the hypothesis that indivisible factors have a higher impact on small farms as compared to large farms.

Large farms may have more leased in land. If there are tenurial disincentives, productivity may be adversely affected. Explanations based on tenurial disincentives and absentee land lordships have been advanced by Khusro, Rao, Krishana Bharadwaj and S.Chakravarti.

Jagdish Bhagwati and S.Chakravarty have explained the inverse relationship due to fragmentation resulting into better quality lands, left with small' farmers as they sell poorer quality of land to large farmers.

For example Krishana Bharadwaj writes. “A possible explanation in terms of tenant-landlord relation may be suggested here. It may he argued that when a tenant due to financial stringency can afford to lease-in land, he may look for better quality of land less prone to risk of crop failure. Although land values and or rents may capitalize the productivity differentials (possible more than capitalize considering the tenant’s weak bargaining position), for the tenant the risk of a poor crop may work out much higher than the additional cost of tenancy, at the mere subsistence level. An even more likely situation would be that landlord himself prefers to parcel out this land into small tenant holdings, especially when they are of better quality land. The landlord strategy is to exploit the quality advantage to the maximum by controlling the size of leased-out parcel”.

3.3.3 Green Revolution and the Inverse Relationship:

The new agricultural technology consists of some bio-chemical and mechanical innovations, high yielding seeds, chemical fertilizers and pesticides are examples of bio-chemical innovations. Tractors, threshers, harvesters etc., are examples of bio-chemical innovations which are generally labour using and land saving are neutral to the scale of operation. Mechanical innovations are generally labour displacing and biased to scale. The introduction of these innovation has, on the one hand, increased the capital intensity of farm production in general arid-on the other, changed both the quantum as Well as the composition on farm capital.

However, since the introduction of the new wheat technology in the mid sixties reinforced by the new rice technology in the early seventies, the increases farm size productivity relationship is believed to have undergone a change. Under the impact of new technology which is essentially capital based, the productivity advantage hither to enjoyed by the small farmers with relative abundance of family labour started moving in favour of the large farms which have relative abundance of and also a more easy access to capital. There is strong evidence that after green revolution in India, the inverse relationship started yielding place to at least a constant relationship if not a positive relationship between farm size and productivity.

On the other hand, the large amount of labour on small farms is accompanied by a less than proportionate increase in capital input leading to a lower capital labour ratio. This development suggests a greater potential for large farms as regards productivity per acre. During the fifties, the inverse relationship continued for each of the three years in the Amritsar, Ferozepur regions of the Punjab state. A few years later (1974-75), the negative sign of the regression coefficient had changed to a positive sign although, it was not statistically significant.

G.K. Chadha (1978) which looks at farm level data for three agro-climatic regions in the Punjab for the year 1969-70 found that the inverse relationship had ceased to hold in the more dynamic zones, particularly in the central zone dominated by tube well irrigated maize cultivation. There is a Ghosh's 1979 re-examination of the FMS data which argues that an essential condition for the existence of the inverse relationship phenomenon is technological backwardness. And then we have the compendious work by Berry and Cline (1979) which surveys the inverse relationship evidence in a wide range of countries. We also have an important study from the Indus basin of Pakistan by M. Khan (1979) which again provides evidence of a breakdown of the inverse relationship following the introduction of new agricultural technology.

Sen and Rudra also reviewed this controversy in 1980 and they found that the inverse relationships got weaken or even disappeared in areas using new technology. Recently Madhusudan Ghosh has also confirmed that the inverse farm size productivity relationship is found to be reversed in areas experiencing technological change.

Farm Size farm productivity re-examined in the case of rural Egypt by Graham Dyer (1991) shows that increase relationship may hold in static context of a relatively backward situation and it breaks down with advancing levels of technological innovations. A major policy implication of inverse relationship, frequently suggested, is for a small farm bias in agricultural development strategy.

Adiqa Kausar Kiani's (2008) study found a negative but insignificant correlation between output per acre and farm size. The study found that the small and large farm size have higher land productivities than middle farms. The study showed that high productivity on small farms was due to the intensive labour and irrigation use where as on large farms, it was due to the usage of maximum capital. Low productivity in the case of middle farms was due to inefficient combinations of inputs.

Burdhan's explanation was a little different. According to him the higher productivity on large farms was not of modem inputs alone but due to the use of total inputs. The amount of inputs used per-acre was higher on smaller farms during the fifties as compared with that large farm. After the green revolution, more inputs per acre were used on large farms resulting into reverse relationship. It is necessary to point out that if all farms irrespective of their size, Use the same technology, the inverse relation hypothesis is most likely to be confirmed.

The general conclusion to emerge is the diversity of Indian agriculture, regarding the existence of the negative relation between size and productivity, 'the negative relation may held in certain .parts of the country at certain times but not everywhere not at all times'. It also appears that even that even when the inverse relationship holds, it may hold in certain ranges but riot in others, and in many cases it is noticeable 'only for small classes'. While counting the different regions one would find that the inverse relation is more frequently confirmed than

rejected, it would be a mistake to take it to be an empirical generalization for Indian agriculture as a whole.

In a recent contribution Manabendu Chattapadhya and Atanu Sengupta (1997) purport to show that the inverse relationship between farm size and output per hectare seems to have been strengthened in the agriculturally developed regions of West Bengal computed to the relatively less developed regions. Their study is based on disaggregated farm level sampled data collected from six agro-climatic zones across the state of West Bengal pertaining to the period 1989-90 and found a negative association between farm size and output per hectare. Those results run against much of the evidence from India and abroad which suggests a breakdown in the inverse relationship, with higher level of capitalistic development in agriculture.

3.4 POLICY IMPLICATIONS:

The controversy regarding the inverse relationship between farm size and land productivity is not merely one of academic interest but of fundamental significance from the point of view of economic policy. The question is important because it raised several significant issues regarding the choice between small family labour based peasant krros, large hired labour based “Capitalist Farms” and large co-operative farms. Policy implications will differ depending on whether we treat the inverse relationship as indicating. Higher efficiency of small farmers regards it as a phenomenon reflecting conditions of stress on small farms. C.H. Hariumantha Rao and V.M. Dandckar have suggested that small farms would be most suitable for India.

However, this suggestion was not easy to implement as imposition of ceiling on land holding has been evaded for one reason or the other. Since some recent studies have confirmed the reversal of this farm productivity relationship the case for small farms can no longer be advocated on the basis of productivity. Though, it can still be advocated on the basis of social justice. Recently it has been observed that planning authorities in India' are indifferent towards the redistribution of land. Now logically there should be more emphasis on the creation of larger farms, an increase in the production is the major objective of farm policy.

By and large it may be accepted that small farms of economic size are more efficient than large farms and help in promoting social harmony in the country. Promoting large farms would adversely affect the interest of small farmers and may create distress among them which may result into the distress sale of their holdings. This would swell the already large army of landless in the country.

Exercise 3.1

Q1. What is relationship between farm size and Productivity?

Q2. Quality Based Explanations of Inverse Relationship between farm size and Productivity?

3.5 SUMMARY

One of the hotly-debated issues in Indian agriculture since the publication of the farm management survey data for the fifties was the relationship between farm size and productivity. This debate was initiated by A.K. Sen in *1962 and he* argued that an inverse relationship between farm size and productivity existed in India i.e. as the size of holdings increases, productivity declines. This conclusion was reached at on the basis of data presented in the Farm-management-surveys concluded in different parts of the country.

The main issues involved in the debate on farm size and productivity are Rudra Dutt was more cautious and vigilant in drawing conclusions. He argued that while such relationship may be held in certain areas, it is not a universal phenomenon and cannot be said to operate in all parts of the country. Krishana Bharadwaj and A.P. Rao's study was based on disaggregated data and logarithmic linear function was fitted to farm level data all belonging to the same village. The study showed that farm productivity remained constant over all the holding sizes. Kishana Bharadwaj study concluded that (a) an inverse relationship while not supported invariably is not rejected either and (ii) there is "no" significant relationship between per acre yield of individual crops and the size of holding. However, since the introduction of the new wheat technology in the mid sixties, reinforced by the new rice technology in the early, seventies, the inverse relationship between farm size and productivity is believed to have undergone a change. Chadha's study shows that under the impetus of technological changes, crop yield rates, overall yield rates and productivity have all increased for each farm size category. However, their rates of change have not been uniform along the farm size. For some crops, smaller holdings might still have an edge of higher yield rates. Yet, as a matter of fact, yield rate differences have either disappeared or become narrower. Most importantly, the slope of the statistical relationship between farm size and cropping intensity has become smaller.

The controversy regarding the inverse relationship between farm size and land productivity is not merely one of academic interest but of fundamental significance from the point of view of economic policy. The question is important because it raised several significant issues regarding the choice between small family labour based peasant krros, large hired labour based "Capitalist Farms" and large co-operative farms.

3.6 GLOSSARY

- **Productivity**: A measure of the efficiency of a person, machine, factory, system, etc., in converting inputs into useful outputs. Productivity is computed by dividing average output per period by the totalcosts incurred or resources (capital, energy, material, personn el) consumed in that period. Productivity is a critical determinant of cost efficiency.
- **Capitalist Class**: The group of individuals (representing just a couple of percent of the population in advanced capitalist countries) which owns and controls the bulk of private corporate wealth, and which as a result faces no compulsion to work in order to support them.
- **An agricultural cooperative**: also known as a **farmers' co-op**, is a cooperative where farmers pool their resources in certain areas of activity. A broad typology of agricultural cooperatives distinguishes between agricultural service cooperatives, which provide various services to their individually farming members, and agricultural production cooperatives, where production resources (land, machinery) are pooled and members farm jointly.
- **Green Revolution** refers to a series of research, development, and technology transfer initiatives, occurring between the 1940s and the late 1960s that increased agriculture production worldwide, particularly in the developing world beginning most markedly in the late 1960s.[1] The initiatives, led by Norman Borlaug, the "Father of the Green Revolution" credited with saving over a billion people from starvation, involved the development of high-yielding varieties of cereal grains, expansion of irrigation infrastructure, modernization of management techniques, distribution of hybridized seeds, synthetic fertilizers, and pesticides to farmers. The term "Green Revolution" was first used in 1968 by former United States Agency for International Development (USAID) director William Gaud, who noted the spread of the new technologies: "These and other developments in the field of agriculture contain the makings of a new revolution.

3.7 Answers to self-check Exercises

Exercise 3.1

Answer 1. Refer to section 3.2.
Answer 2 Refer to section 3.3.2.

3.8 SUGGESTED READINGS

1. R.N. Soni: *Issues in Agricultural Economics*, Shoban Lal Nagin Chand & Co. Jallandhar.
2. Mishras & Puri (2006): “Indian Economy”, Himalayan Publishing House New Delhi.
3. G.R Saini (1971): “Holding Size, Productivity And Some Related Aspects Of Indian Agricultural “EPW”, June 26.
4. Graham Dyer (1998): “Farm Size and Productivity; A new Look at the old debate” EPW, June 27.
5. Adiqa Kausar Kiani: “Farm Size and Productivity in Pakistan” European Journal of Social Sciences Vol.7 No-2 (2008).

3.9 TERMINAL QUESTIONS

Q1. Examine the Farm size and Productivity Relationship in Indian Agriculture?

Q2. Suggests some Policy Implications for Farm size and Productivity Relationship?

UNIT-04

LAND REFORMS IN INDIA

STRUCTURE

4.0 OBJECTIVES

Studying this chapter should enable you to understand:

- Meaning and Rationale of Land Reforms in India
- Components of Land Reforms
- Appraisal and Progress of Land Reforms in India

4.1 INTRODUCTION

Land reform usually refers to redistribution of land from the rich to the poor. More broadly, it includes regulation of ownership, operation, leasing, sales, and inheritance of land (indeed, the redistribution of land itself requires legal changes). In an agrarian economy like India with great scarcity, and an unequal distribution, of land, coupled with a large mass of the rural population below the poverty line, there are compelling economic and political arguments for land reform. Not surprisingly, it received top priority on the policy agenda at the time of Independence. In the decades following independence India passed a significant body of land reform legislation. The 1949 Constitution left the adoption and implementation of land and tenancy reforms to state governments. This

led to a lot of variation in the implementation of these reforms across states and over time, a fact that has been utilized in empirical studies trying to understand the causes and effects of land reform.

4.2 GOVERNMENT MEASURES

At the time of independence, India inherited a semi - feudal agrarian structure with onerous tenure arrangements over substantial areas. The ownership and control of land was highly concentrated in a relatively few landlords and intermediaries. The principal interest of this controlling group in agriculture was to extract maximum rental from tenants, cither in cash or in kind. Under this arrangement, economic motivation to develop farm land for increased production or to improve the economic conditions of cultivators was lacking. At the same time, working cultivators after paying high rent had not surplus to invest in farm improvement. They had neither resources nor knowledge for increasing agricultural production. Thus the agricultural land resource of India, along with its operators was gradually impoverished because economic motivation tended toward exploitation rather than toward investment and improvement.

With increasing pressure on land the operating land base of many working cultivators was further reduced. Land occupancy rights became increasingly insecure often cultivators were continuously shifted from one plot to another according to the whims of superior holders. India thus emerged with serious imbalances man-land relationship among the three principal groups in the agricultural sector, viz., proprietors, working cultivators and labourers.

Following independence, land reforms as well as the abolition of intermediaries was considered an essential prerequisite for increasing agricultural production. Land reform has been defined as an integrated programme of measures designed to eliminate obstacles to economic and social development arising out of defects in the agrarian structure.

4.3 CONCEPTS DISTINGUISHED

4.3.1 Land Reforms: Land reform is concerned with changing the institutional structure governing man's relationship with land. In the main, land reform is seen as a means of bringing about structural changes in the agricultural sector, thereby altering the size, distribution of holdings or the distribution of income.

4.3.2 Agrarian Reforms: Agrarian reform is a much more comprehensive concept than land reform, since it involves modification of a wide range of conditions that affect the agricultural sector. These modifications might include changing price policies so as turn the terms of trade in favour of the agricultural sector increasing, allocations to agricultural sector in order to expand research, extension, training and

storage facilities making physical supplies such as fertilizers, available and increasing credit for their purchase; or providing infrastructure for facilitate agricultural production.

Agrarian reform may or may not include land reform. In some instance, there may be no need for land reform since land is already evenly distributed. In other cases, it may not be politically feasible to have land reform-although it might be both politically and economically feasible to raise output through the measures involved in agrarian reform. Tin-point is that land reform may be a necessary condition for agrarian reform, but it is seldom a sufficient condition for agrarian reform. The point is that land reform may be a necessary condition for agrarian reform, but is seldom a sufficient condition for increasing agricultural output since land is only one factor of production.

4.3.3 Rural Development: Broader still is the concept of rural development, because it embraces all dimensions' of the rural sector (agricultural and non-agricultural) and is more concerned with the welfare of rural people than with agricultural output or productivity as an end in itself. Since it has significant equity implications, land reform may be a necessary condition of successful rural development depending the prevailing pattern of land control, where the ownership of land directly affects the nature of local institutions and the participation in them by the majority of rural people.

Land reform may be essential. However, in terms of implementations, in some situation establishing institutions' and small holder services may be a prerequisite of land reform rather than vice versa. Where existing service systems and administrative structure is geared to working with large scale "farmers, land reform without concurrent rural development activity might cause hardship and economic losses which would outstrip the equity gains associated with land redistribution. Tenancy reform, on the other hand, in so far as it stabilizes the existing relationship between landowners and tenants may be a useful precursor of rural development programs.

4.4 MEANING AND OBJECTIVES OF LAND REFORMS

Land reforms involve intervention in the prevailing pattern of land ownership, control and usage in order to change the structure of holdings, improve land productivity and broaden the distribution of benefits. In practice, land reform is pursued in response to political pressures for socio-economic change arising from factors such as increased population, pressure on a limited land base or an ideology of egalitarianism based on a more even distribution of land or income Land reforms by its very context has interlinked political, economic and social dimensions which in turn have significant implications for development.

Land reforms necessarily imply many different kind of adjustments in an array of situations where there are great variations in individual

equity and agricultural productivity. In most instances, social or equity considerations are the main concerns. Thus, when there are exploitative land lord tenant systems, reform incorporates changes in the rights of tenants, redistribution of ownership to existing tenants or the replacement of the landlord. When individual ownership of the market economy type is the norm but the distribution of land is skewed, reform may require subdivision of large holdings. Where, holdings fragmented and appropriate reform might involve consolidation of holdings without change in the patterns of ownership of land. Elsewhere, land reforms might involve changing tenancy arrangements with emphasis on providing security to tenure so as to encourage on farm investment. Again, these do not require redistribution but eventually lead to a more economic development as well as social justice.

There are situations where land reform is a necessary precondition for modifying the structure of a society and raising agriculture agricultural output. However while land reform in itself may be necessary, it alone is not sufficient for improving hand productivity and distribution of income. Changes in patterns of landownership will not automatically lead to an increase in output or technological change in agriculture. These will come about only if adequate provision is made for the, supply of necessary inputs and mandatory services to the users of the land Indeed, the organization program is essential, especially where the process of reforms lead's, to a breakdown of the institutional structure of agriculture and leaves nothing on its place, Finally, it must be recognized that a policy for land reform for a given situation cannot be stated in simple terms. Any policy involves fundamental Judgments about the adequacy of an existing system and the most appropriate alternative. The judgments of policy makers differ clearly, the policies followed are not a matter of economy alone. They also reflect policies and ideology, and reach far beyond any purely economy calculus.

National Commission of Agriculture (1976) has observed that defective land tenure is a hindrance to intensive application of labour, increased production through a labour, intensive modem technology requires a high degree of social and economic equality among the rural population. Land reform as means of improving distributive justice is likely to have desirable effect on raising the productivity of agriculture labour through extended employment, higher income and consumption. To ensure, therefore, that the small farmers and landless labour are also able to share the new opportunities provided by modern technology, land reforms must constitute the basic ingredient in the process of modernization. Without it appropriate measures to protect the poor test sections of agricultural population, the introduction of improved technology can only result in increasing disparities and can lead to a dangerous disequilibrium in the rural economy and the rural society.

However, the effect of land reforms can best be examined by focusing on particular measures, such as the effect of farm size on

productivity, equity and employment as well as on savings and market surplus. These measures are inter-related. On 13 countries study undertaken by the FAO analyzed the relations among size of holding, concentration, of land and productivity. A similar study of 40 countries was undertaken by the World Bank. ' Both studies indicated that a smaller average size of holdings, and lower concentration of landownership were associated with an increase in output per hectare. Similar findings can be cited from cross section studies in a number of individual, countries. However, there is no claim that all conditions were identical. The studies simply indicated that the yields were higher on small farms than, on large farms.

The important implication is that reduction's in either the size of holdings or land concentration needs not the associated with a reduction in output per hectare. On the country, it appears that under controlled circumstances output per hectare is likely to be higher. There are two associated reasons for this assumption. First, there are limited economics of scale in most agricultural production. Secondly, small scale producers tend to maximize output by applying labour intensively, while large scale operators tend to maximize profits by using hired labour only until incremental production covers incremental costs. This is usually short of the output per hectare that would be produced if the goals were maximization of output.

In broad terms land reforms can be consonant with development from a point of view concerned purely with productivity, with output per hectare as the relevant criterion. Output per worker, however, is likely to decrease for the similar reason that smaller farms would employ more labour per Hectare. In other words, the large income would be shared by an even large number of families. This decline in labour productivity only reflects the employment and equality benefits of land reform the same land would supply mere, people and trio income generated would be more widely shared.

Evidence exists that the use of labour per hectare is greater on smaller holdings than on large ones. More intensive labour use is the main reason why small farms are able to produce more per unit of land than the large, farms. But inputs other than labour are also likely to be applied more, intensively on small farms, unless access to these inputs is blocked by institutional arrangement.

The equity effect of land reforms will be significant only:

(1) The effective ceiling in law

(2) The beneficiaries belong to the poorer groups;

(3) The extension and (non land) input distribution system favours the beneficiaries; owned and self-operated land as well a leased land is redistributed. .Opportunities for the redistribution of land depends to a great extent on the existing pattern of distribution of holdings and population density.

Thus, the Sixth Five Year Plan (Î980-85) has stated that the objectives of the land reforms policy in the successive Plan have been to remove such impediments to agricultural development as arise from agrarian structure inherited from the past and to eliminate exploitation and social injustice within the agrarian system so as to ensure equality of tenurial status and opportunity to all.

4.5 STEP NEEDED FOR LAND REFORMS

Experience with land reform in the past points to the overriding importance of political factor in securing meaningful change. A second factor of importance making reforms effective is a creation of institution to implement the reforms once legislated, and to press for continuing development. This has usually involved organizing the beneficiaries to create follow up pressure.

A third conclusion is that land reforms is rarely undertaken without considerable upheaval and loss of production, although there is evidence to suggest that there costs can be kept small and temporary The restructuring of land holdings is often accompanied by the destruction of traditional delivery system for input needs and marketing since these system are almost always tied to the operations of the large farmers who are dispossessed. Because of this, rather than because of and deficiency inherent in the small relative to the large farmers land reforms have often proved costly in terms of lost outputs. Minimizing such necessitates the provision of services concurrently with reforms implementation incorporating as much forward planning as feasible.

A fourth consideration relate to the problem of perspective over time, in assessing the effects of Land reforms. Thé effectiveness of land reforms may be relatively limited in the short run and m any socio-economic benefits, as are associated with greater social mobility and improved political stability, emerge only in the longer run and accrue for many years subsequently

4.6 DIMENSION OF LAND REFORMS:

Land reforms are thus concerned with the interrelated aspects of productivity and equity of land use. It is frequently pursued as a goal in itself, but in a development context it is usually seem as a part of agrarian reform or the rural development programs. The main elements of the land reforms policy in India have been fivefold, viz. ’

(i) abolition of intermediary tenures ;
(ii) tenancy reforms comprising regulation of rent, security of tenures and conferment of ownership rights on tenants;
(iii) ceiling on land holdings and distribution of surplus land;
(iv) consolidation of holding ; and
(v) Compilation and updating of land records.

India favoured a policy of curtailing (not eliminating landlord) and promoting conversion of non-cultivating landlords into cultivating

landlords. So far as the peasants were concerned, it favoured a policy of upgrading the upper layer of tenants, and of giving some relief to other tenants, Here then was a policy of promoting a class of owner cultivators both from among the tenant classes. This was expected to provide the social framework for economic development and for economic and social stability.

This was the basic orientation of the land policy laid down in the Five Year Plan in India, “It must be emphasized”, as has been remarked by Professor P.C. Joshi (1971.) “that this policy framework was sufficiently broad to permit both a relatively more radical’ or a-more conservation direction, a more tenant oriented or a more landlord-oriented direction, to an agrarian reform programme, as and when dictated by the exigencies of a situation.”

4.7 LAND REFORMS POLICY UNDER FIVE YEAR PLANS

Land Reforms- policy was concretized at the topmost Governmental level for the first time in the First Year Plan. The plan acknowledged the achievement in the abolition of intermediaries and emphasized high priority for agriculture production, diversification of agricultural economy and a land policy to reduce disparities in wealth and income, eliminate exploitation, provide security for tenant and worker and promise equality of status and opportunity to different sections of the rural population. Regarding tenanted lands, it considered a rate of rent within one fifth of the produce as for. It commended the principal of fixing an upper limit on individual holdings and allowed resumption of land from an upper limit on individual holdings and allowed resumption of land from the sharecroppers for cultivation of members of the family of landowners up to three family holdings. It was ensured, however, that displaced tenants had a minimum holding for cultivation.

The question of ceiling on land holdings, however, remained in the background during the first few years in ‘ the belief mat higher agricultural production was possible only through large scale farming using modem techniques. In Subsequent years, this question continued to gain ground as the pressure of population on land grew and landlessness among the agricultural population increased while the land distribution pattern remained highly uneven and socially inequitable.

The objectives of land reforms as laid down by the second Plan is, therefore to remove such impediments to agricultural production as arose from the agrarian structure and to create conditions for evolving an agrarian economy with high levels of efficiency and productivity. The thinking of planners (of the Second Plan) was greatly influenced by the recommendations of the Panel of Land. Reforms set up in 1955, which marked an-important stage in the evaluation of land reforms policy. The Second Plan stressed on the abolition of landlord-tenant nexus and pointed out the large variations the degree of practical implementation of tenancy reforms in different regions. It also referred to the large scale-

eviction of tenants and the ‘voluntary surrenders’ on ground of resumption for personal cultivation. The Plan admitted that malafied transfers of land to circumvent ceilings on holdings had taken place and recommended that these cases be reviewed and the question be considered whether the ceiling should determine whether the transfer had taken place or not.

The Third Five Year Plan reiterated the policy outlined in the first two plans and generally slated the idea of setting up a “Socialist pattern of society” and of ‘eliminating all elements of exploitation social injustice within the agrarian system

The Third Five Year Plait-acknowledged the gaps between the objectives and legislation and between the laws and their implementation. It noted that there had been considerable leasing out of land and in view of insecurity of the informal tenancies neither the tenants and sharecroppers nor the landowners were willing to invest in land to improve production. The Plan, therefore, recommended that (i) all tenancies be declared non reusable, (ii) resumption cases be finalized early where already allowed, (iii) voluntary surrenders be regulated, (iv) complete security of the tenants in their homestead lands be assured, (v) legislation for security of tenants and sub-tenants be properly implemented, and (vi) penalties for wrongful evictions be provided in the laws. The Plan further -stressed the Government should take steps in the matter of malafied transfers and that ceiling laws should be restructured for better effect.

Following the Chief Ministers conference in 1970, a Central Land Reforms Committee, was constituted to consider all aspects of the question relating to ceiling on holding. Its recommendations were further examined by another powered nine member committee. The recommendations of the Central Land Reforms Committees were considered in Chief Minister’s Conference on Agricultural Holding held in July, 1972. By a general Consensus the policy on ceiling was formulated and the ‘National Guideline.’ were thereafter laid down which are still effective.

The Fifth Year Plan formulated against this background, summed up the situation, to the effect that ‘the laws for the abolition of intermediary tenures have been implemented fairly efficiently, whilst in the fields of tenancy reform and ceiling of holding, legislation has fallen short of the desired objectives and implementation of the enacted laws has-been inadequate. ‘The Plan adopted a realistic approach in the context of the gaps between policy. These include speedy and effective implementation of measures recommended in the earlier plans within a firm time-bounded program; prompt enactment and implementation of ceiling provisions by the States as accepted in the Chief Ministers Conference to brings about uniformity' ; redesigning the program of consolidation which should be made effective after ensuring security of tenure, particularly to the share cropper ; updating records of tenancies maintenance : gearing up of the

administrative machinery and making the beneficiaries familiar with the provision of law ; and associating them with implementation through local Committees. The Plan also made certain policy recommendations- relating, inter alia to personal cultivation, leasing out, distribution of surplus land, consolidation of lands of the neW allots into compact blocks and jurisdiction of laws in the matter of implementation of land reform measures.

The main thrust of the Sixth Five Year Plan (BOSS) is towards effective and vigorous implementation of various elements of the nationally accepted land reform policy, more specifically the following on a time bound schedule:

1. States which do not have legislative provisions for conferment of ownership an all tenants, except for specified exempted categories, shall introduce, appropriate legislative measures with a period of one year.
2. The program of taking possession and distribution of ceiling surplus lands would be completed with a period of 2 years i.e. by: 1982-83.
3. A systematic programs would be taken up to for compilation and updating of land records, to be phased for completion within period of 5 year i.e. 1980-85.
4. Program of consolidation of holdings would be taken up in all States, phased for completion of 10 year, with priority to be given to command areas of irrigation projects where it should be completed in 3 to 4 years.
5. The program for the provision of house silos to be landless will be completed.

In 2007 for the first time the Central Government heard the voice of 25,000 landless poor in the country, who walked to Delhi in ‘Janadesh Campaign’ as a voice of the deprived and marginalized in the country. In response, the National Council for Land Reforms was formed in 2008 under the Chairmanship of the Prime Minister to look into the unfinished task in land reforms. The council also includes 6 Union Ministers - Minister for Rural Development, Agriculture, Panchayati Raj, Tribal Affairs, Environment and Forests, and Social Justice and Empowerment, the Dy. Chairman, Planning Commission, 10 Chief Ministers from the state of Andhra Pradesh, Bihar, Karnataka, Kerala, Maharashtra, Orissa, Rajasthan, Tripura, U.P., and West Bengal (although the other state ministers are not being included in the committee), and 8 Land Experts and members of social organizations - Dr. Bina Agarwal, Institute of Economic growth, DU, Prof. G.K. Chadha, Member, Economic Advisory Council to the Prime Minister, Prof. V.S. Vyas, Chairperson, Institute for Development Studies, and Ekta Parishad President P.V. Rajagopal and others. Land Reforms as a
redistributive programme are in relevance as they were 50 years ago. Addressing historic inequities in land ownership is central to the redistributive responsibility of our democracy. In spite of the fact that the National Council had been formed back in 2008 there has been no

proposition for meeting as of yet. Some agendas undertaken for the projected first meeting of the National Council are:

Both the Central and State governments should come out with their respective Land Reforms and Use Policy.

GOI should launch a Centrally Sponsored Scheme to allocate at least 10 to 15 cents of land to each homeless rural poor on priority basis.

Review & Operationalization of PESA or The Panchayats (Extension to the Scheduled Areas) Act with the expansion of the areas under it.

Empowering the 'Land Use Board' with enough resources undertaking the survey of Common Property Resources and Capacity building through training.

Current Status of Land Management with the Computerization of Land Records. Communication from the Centre to States upon the issues like Reforms in Land Ceiling, and Government, Bhoodan, Forest and Tribal Lands.

Certain significant issues concerning the Land Reforms, like the empowerment of the Gram Sabha, Ensuring Women Rights for Land, Governance issues and policies relating to Land, Tenancy-sub tenancy issues, Role of the Panchayats in Land Management and Administration including in the North Eastern States.

In the post-liberalization era formally in place since July 1991, a strong view was that the possibilities of land reforms had been exhausted and future growth would come only from private investments in agriculture and rural areas at large. This strong view was shared by many states that revised their land reform legislations. Even in the central government, it was believed that the distributive justice programs had been overtaken by a neoliberal development paradigm, notwithstanding the rhetoric of "Inclusive Growth" and "Faster, Sustainable and More Inclusive Growth" in the Eleventh (2007-2012) and Twelfth (2012-2017) Five-Year Plans respectively. In practice, the neoliberal growth model excludes more than it includes since it is socially unjust, economically inefficient, politically unstable, and environmentally unsustainable.

"Faster, Sustainable and More Inclusive Growth: An Approach to the 12th Five Year Plan" (2012-2017) raises the following issues without providing rational, just, fair and humane answers to them:

- Which land should be used for which purpose?
- What form and quantum of compensation and rehabilitation should be provided to those whose lands are acquired?
- How should land be acquired for new purposes (industrialization/ urbanization/ infrastructure development?

Therefore, there is a pressing need for a national land reform policy and land use plan as well as enhancement of the access of the rural poor to land available from sources, such as ceiling surplus, Bhoodan, village commons, government estates and wasteland, industries, religious and educational institutions, forest, and homestead for equity and efficiency.

Food security

Food security is closely linked with land reforms, more so in India, where there is a large food-insecure population. Accordingly, the National Food Security Bill, 2011 (Bill No. 132 of 2011) has been introduced in the Parliament (Lok Sabha) on 22 December 2011. It has been referred to the Standing Committee of Parliament for in-depth scrutiny and improvement. It is expected to be passed in the monsoon session of the Parliament, providing for entitlements and rights to food for vulnerable sections with a total coverage of 63.5% of total (rural and urban) population of 1.21 billion. The categorization of recipients is as follows:

a) “priority households” (below poverty line [BPL] with maximum entitlements – 46% rural and 28% urban population;
b) “general households” with reduced entitlements – 29% rural and 22% urban population;
c) expecting and lactating BPL mothers;
d) children in the age-group 3 months to 3 years;
e) primary school children of 4 to 14 years of age; and
f) the destitute, handicapped, and others similarly affected

Besides, under the National Rural Employment Guarantee Act, 2005, covering 200 underdeveloped districts since 2 February 2006 and extended to the whole of rural India since 1 April 2008, the government provides guaranteed hard manual wage-employment for 100 days per rural household per annum at minimum statutory wages, to facilitate food security and survival, and minimize migration of labor.

However, the above palliatives would only perpetuate dependency rather than dignified self-reliance among citizens.

4.8 LAND REFORM LEGISLATION AND IMPLEMENTATION

Land Reform is a state subject under the constitution of India and the implementation of land reform laws by different State rest with the State Governments, However, the government of India has been urging upon the State Government from time to time to expedite the implementation of land reform and pointing out areas where remedial action is called, form the light of the broad national policy and guidelines. Legislative enactment’s for land reform during the last four and a half decades have embodied in a programs for (a) abolition of intermediary tenures; (b) tenancy rights (c) fixation of ceilings on land holding ; and (d) consolidation of holdings.

4.8.1 Abolition of Intermediaries

Legislative measures for the abolition of intermediaries were initiated soon after the attainment of freedom. These measures were, however, assailed on two major grounds. Firstly, the high rates of compensation led to a wastage of capital resources as the bulk of

compensation was either frittered away by consumption or spent on buying urban properly, etc. and only a very small percentage of it was recycled to step up agricultural production. Secondly, the exclusion of “sir, khudkhastand khas” lands from the purview of the Acts as personal property of the intermediaries under self-cultivation constituted a damaging loophole in the law and was utilized with deadly effect by the intermediaries These provisions negated in a considerable measure by beneficial effect of the legislation and helped to keep alive the social and economic base of feudal vested interests in the country. The bigger land owners got the opportunity to carve out their own “sir khudkasht” lands both in respect of location and area, and resorted to large scale eviction of tenants and sharecroppers. The mass evictions exercised a baneful effect on village generated amount the rural poor by land reforms. However, the abolition of statutory landlordism covering a variety of intermediary tenures has now, more or less been accomplished brining nearly 26 million cultivators into, direct contract with the state.

This is the only plan of the land reform program that has been fully implemented. It should be pointed out that initially this was not a measure for the redistribution of land, because the farmer owners were compensated for the estimated value of their land. It did, however, make a large amount of land available for redistribution.

4.8.2 Tenancy Legislation:

The specific features of tenancy legislation arise from the basic framework of land reforms policy which favoured neither the wholesale expropriation of tenant cultivators. ‘The middle course was adopted. During the first phase of the post-independence land reforms, certain amendments to the existing tenancy laws were carried out, along with legislation for abolition of intermediaries, extending the scope of production to the tenants of exintermediaries particularly in areas of statuary landlordism. The provision of a large measure of protection to tenants, however, set into motion a contradictory social process namely that of mass eviction of tenants and sharecroppers. So powerful was the eviction drive, that in the years immediately the abolition of intermediaries, the old tenancy arrangements broke down and its took years for new arrangements to take shape.

Most Of the states, however, tried to enact and amend tenancy laws in the subsequent ten years and tried to plug certain glaring loopholes in the existing enactment’s to enlarge the area of protection to the tenants. The major aspects incorporated in tenancy” legislation in different States during, the last four and a half decades can be identified as (i) security of tenure ; (ii) termination of tenancy ; (iii) resumption for personal cultivation (iv) surrenders ; and (v) regulation of rent. Tenancy reforms in different States exhibited considerable variations though maintaining a broad similarity of pattern.

While some progress has been made in the field of tenancy reforms many deficiencies still persist in the laws. The definition of the term tenant generally excluded the sharecroppers who form the great bulk of the tenant cultivators. Most of the leasing is done in the form of sharecropping in all the States and exclusion of sharecroppers from the scope of protection deprives the real tillers of the soil of the protection and rights provided for the tenants.

Ejectment of tenants from their holding is still permissible on many grounds like non-payment of rent, failure of payment within a given period, failure to deliver share of the produce within “specified time, to execute agreement, to cultivate land property, etc. This is essentially a continuing hangover of the feudal system Total eviction from land is one of the besetting evils of the existing reforms. There is no reasons why tenancy should be terminated on some of these grounds, such as failure to give notice of harvesting.

Voluntary surrenders, as provided in the laws, are hardly ever voluntary, and have become the biggest instrument in depriving the tenants of their due protection Land owners resort freely to pressures and correction of secure surrenders to get the lands vacated. The provisions included in the tenancy laws of certain State, for scrutiny by the registration with the revenue authorities did not bring about any material change in the situation. The Fourth Plan suggestion that the landowners should not be allowed to regain possession of the surrendered land, which should be allotted by government to other eligible persons, has, not been acted upon by most of the States except Kerala, Gujarat, Himachal Pradesh, Orissa, Karnataka and West Bengal.

The right of resumption was sought to lie justified as it would help to convert non-working rent receiving landowners into owner cultivators who could step up agricultural production the accent being on ‘personal Cultivation”. The term ‘personal cultivation’ has been defined as to cover cultivation through hired labourer paid in cash or kind, but not as a crop share. Even personal supervision by the landowner of this family is not essential requisite of personal cultivation’s. With such a definition the right of resumption has become an instrument in the “hands of unscrupulous landowners for land grabbing, more so when the factor of personal labour does-not find any place in the definition. The provision has, in fact, indirectly created an atmosphere for the growth of informal and concealed tenancies under which the actual tenant is characterized as a farm servant or an ‘agriculture partner’.

Tenancy reforms have not yet been able to regulate rents as recommended in the Plants. Fairs rents have not been defined uniformly in the Stale Laws. Besides, it is extremely difficult, to implement the provisions of fair rents in the case of sharecroppers and tenants who are not enjoying any security of tenure. For any demand or litigation for fair rents on the part of such tenants leads to their ejectment from land.

One of the principal aims of tenancy reforms was to convert tenants into owners of land they cultivated. This object of conferring occupancy rights on a large body of tenants did not materialized because of high rates of compensation to the tenants. Besides, the purchase or ownership was made optional in certain States.

The provision of acquiring occupancy right by tenants producing proof of continuous possession for twelve consecutive years totally negates the spirit of the principal 'land to the tiller'; because under the peculiar character of landlord-tenanţ nexus in India. It is virtually impossible for an ordinary tenant to prove it. In fact, the landlord takes good care that the tenants unable to do so by manipulating land records withholding rent receipts and rotating the tenants yearly from plot to plot. The burden of proof being on the tenants the laws thus become virtually ineffective. It should have been provided that once a tenant puts forward his claim to occupancy right or any rights under a tenancy law the burden of proof to the country should be on the landlord in order to protect the interest of tenants.

If the small peasants and the sharecroppers have not been able to get hold of very much land they also not been served any better by the legislation relating to security, to tenure and the fixing of reasonable rents. In addition, the practice of granting oral leases of switching cultivators from one plot to another, device to withhold from him permanent occupations rights, are widespread. "The locus Classicus of the non-implementation of tenancy legislation is the report prepared by Ladejeinsky, who documented the lack of security of tenure and continued high levels of rental."

4.8.3 Ceiling Legislation:

The imposition of ceiling on agricultural holdings is pre-eminently re-distributing measure. The most compelling case of land ceiling arises from the absolute and permanent shortage of land in relation to the population dependent on it, the limited prospect of transfer of population to nonagricultural and the needs to set up production along with increase in 'employment'. But this necessity was not effectively transformed into spearheaded action. The First Plan made a passing reference, the Second Plan recorded a little advance by recommending ceiling legislation and the Third Plan only reiterated the earlier objective. . Thus, for nearly fifteen years after attainment of freedom, ceilings on big holdings remained a nebulous item in the scheme of agrarian reforms. It remained until about 1960 a vague political-economic concept lurking in the background. It was justified on consideration of social justice but not on grounds of increasing production and developing agriculture.

Ceiling laws were enacted and enforced in two distinct phases, the earlier phase covering the period up to 1972, and the later from 1,972 after the adoption of 'National Guidelines'. As ceiling legislation is a state subject, each State enacted its own ceiling law which obviously gave

room for variations. There were two units of application, namely, the individual landholder and the family. Again the definition of the term 'family' as well as also the classes of land which were exampled from the operation of Ceilings laws also varied widely in the States. Andhra Pradesh had a range from 27 to 324 acres, Rajasthan a range from 22 to 336 acres. Gujarat from 19 to 122 acres, Mysore from 26 to 216 acres, Punjab and Haryana from 27 to 80 acres, Maharastra from .20 to 80 acres, and so on. Obviously even its implementation was perfect, not much land was going to emerge for distribution.

These legislative measures are also full of loopholes and the big landowners took full advantage of them to circumvent the laws. They resorted to partition of their holdings and fictitiously transferred them to other individuals through what is called 'benami' transfer on a very large scale in anticipation of ceiling laws with the result that very little surplus land became available for redistribution. Besides implementation was extremely unsatisfactory. The absence of any penal measure to restrict or control such breaches of law accelerated such evasion.

Of these major loopholes that existed in die ceiling laws of the first phase the high ceiling limits, scope for manipulations and clandestine transfers and exemption of various types of land from the ceiling laws were serious. These loop holes provides an abject lesson for today.

It is now generally recognized that if redistribution of land was the main objective of the ceiling laws, this was nor realized at all. The ineffectiveness of the ceiling laws of the earlier phase, the exigencies of agricultural production, agrarian unrest in the country, all these factors called for immediate review. The National guidelines formulated on basis, of this review provided the basis of ceiling legislation in the post-1972 phase.

The chief Minister's conference (1972) approved the following ceilings on land holding :

(i) The best category of land in a Stage with assured irrigation and capable of yielding at least two crops a year should have ceiling with fertility of the soil and other conditions. Allowance 'may be made' for land irrigated from private sources and capable of growing at least two crops in a year equating 1.25 acres of such land with 1 acres of land irrigated from public sources and capable of growing at least two crops in the year. The ceiling for such land irrigated from private sources shall not, however, exceed. 19 acres.

The term irrigated from private sources, shall mean irrigation from tube-well or lift irrigation from a perennial water sources operated by diesel and/or electric power.

(ii) In case of land having assured irrigation for only one crop in the year, the ceiling shall not exceed 27 acres.

(iii) In case of owners with holding consisting different types of land, holdings after converting the better categories of land into the lowest categories should not exceed 54 acres.

(iv) Regarding the Unit of Application, the following recommendations were made:

(a) The Unit of application shall be a family of five members, the terms family' being defined so as to include husband, wife and their minor children. Where the number in the family exceeds five, additional land maybe allowed for each member in excess of five in such a manner that the total area admissible to the family does not exceed twice the ceiling that will apply to the aggregate area held by all the members of the family.

(b) Where both husband and wife hold lands in their own names the two will have rights in the properties within the ceiling in proportion to the value of the land held by each before the application of ceiling.

(c) Each major child will be treated as separate unit for the purpose of application of ceiling.

4.8.3.1 Exemptions have been permitted in the following cases:

(i) The exemptions in favour of plantations of tea, coffee, rubber, cardamoms and cocoa should continue;

(ii) Lands held by industrial or commercial undertaking for non-agricultural purpose should be exempted from the ceilign law; and

(iii) Sugarcane factories may be permitted to retain an area not exceeding 100 acres.

Professor A.K. Khusro has observed that "in terms of acreage the present ceiling appear to be stiffer than the past, But meanwhile, as agricultural yield has risen in the last ¡decade in more than half of India, thanks to higher technology, better seeds more input use and some institutional change, it does not appear that the present ceiling are any way stiffer than the ceiling of the 1950s in terms of the real income received by the landholders." The ceiling legislation in the post-1972 phase has been improved, rationalized and put on a more or less uniform basis throughout the country. This, represents a national consensus on the question. The ceiling limits have been appreciably reduced, the long list of the exempted categories of land has been considerably cut and measures to control clandestine transfers have been provided for. There, however, still remain some variations in the amending legislation from State to State relating, to the level of ceiling on lands with assured irrigation, other limits of ceiling, rates of compensation and the date of retrospective effect. The main problem is the of effective implementation of the amending legislation,

It must be remembered that the policy of land to the tiller was not directed towards landless agricultural labourers, the bottom strata of society. Raj Krishna, Dandekar and Rath, and Minhas have all argued that the problem of the landless cannot be solved through the redistribution of land, because there simply is not enough land to go round. Pressure on land is terribly acute. Thus' as a broad generalization

it is true that enough land can be made available though land redistribution, even of highly radical magnitudes with the existing land/man ratio in India. But professor A.M. Khusro is of the opinion that, land distribution through land reclamation programmes with the use of new reclamation technology remains a clear possibility for one or two decades to come. This also suggests mat land ceilings are dated measures of policy. However, much depends, of course, on what lands are transferred and how efficiently they are managed subsequently.

Detection of ceiling surplus land is more difficult than distribution of such land. There are various means, deriving their effectiveness from legal and social right, by owners can conceal their surplus land- Agricultural labourers and share-croppers are perhaps the most reliable sources of information regarding the actual extent of ownership of the local landlords. So long as they are tied to their masters with a net work of strings non-economic, as well as economic they cannot be expected to furnish true information. Hence, arise the necessity to impart to them a sense of independency.

Against the nearly 4.0815 million acres declared surplus, only about 2.737 million acres have been taken passion of land of this only about 1.973 million acres have been distributed at 13.8 lakh persons in the country (Agricultural Minister^ reply int. he Lok Sabha on October 4, 1982), Of the 1.4 million acres which have not yet been taken into possession 1.1 million are said to be under litigation. The highest numbers of cases, 500,000 are in Andhra Pradesh.

The tardy implementation of land reform, which sticks out like a sore in them by in the so-called new 20 point programme of the Prime Minister, has prompted the food and Agriculture Minister, to impress on the States to get on with the job.

4.8.4 Consolidation of Holdings:

In, India most of the agricultural holdings are not only small but they are also widely scattered. Hence emphasis was laid on consolidation of holdings in the Five Year Plans.

A Major weakness of the programme was that consolidation was not done without taking effective steps to ensure security of tenure to tenants, particularly sharecroppers. With the result, consolidation of holdings has led to a large scale ejectment of insecure tenants. For one thing, when holdings were fragmented even a resident landowner found it difficult to cultivate personally all the plots of land, constituting his fragmented holdings to sharecroppers. After holdings were consolidated, the landowner found it both feasible and profitable to cultivate personally the entire area and, therefore, he spared no efforts in getting rid of the sharecroppers. For another, the relationship of sharecropping tenancy subsisted in respect of a specified plot of land easily identified in the field. ‘Once consolidation was effected, the identity of the particular plot that the sharecropper has been cultivating was lost and he could be

automatically ouster from the land. Thus consolidation of holdings has often turned out to be the ‘coup’ to ‘grace’ for the sharecroppers who lead a precarious existence.

This Sixth Plan (1980-85) has stated that most of the States in the” country have enacted legislation to undertake consolidation of holdings. It is estimated by now nearly 45 million hectares of land, i.e., about l/4th of the consolidated land has been consolidated all over the country. However the implementation” has been extremely patchy and sporadic, only in Punjab, Haryana and West Utter Pradesh, the work is complete. Even a beginning has not been made in the southern States and Rajasthan. In the-Eastern states, some work has begun only in Orissa and Bihar.

In the post-liberalization era formally in place since July 1991, a strong view was that the possibilities of land reforms had been exhausted and future growth would come only from private investments in agriculture and rural areas at large. This strong view was shared by many states that revised their land reform legislations. Even in the central government, it was believed that the distributive justice programs had been overtaken by a neoliberal development paradigm, notwithstanding the rhetoric of “Inclusive Growth” and “Faster, Sustainable and More Inclusive Growth” in the Eleventh (2007-2012) and Twelfth (2012-2017) Five-Year Plans respectively. In practice, the neoliberal growth model excludes more than it includes since it is socially unjust, economically inefficient, politically unstable, and environmentally unsustainable. “Faster, Sustainable and More Inclusive Growth: An Approach to the 12th Five Yea Over time, however, land reforms have remained unfinished.

Since 1991, as the neoliberal development paradigm was put in place formally, land reform issues have become compounded by several realities, as discussed below.

The enhanced demand of agricultural land for non-agricultural purposes, such as infrastructure development, industrialization, and urbanization, as well as tribal lands in hills and forests for mining, mega projects, and industries: As of 2011, there are about 17 existing land acquisition legislations under which the government, exercising its authority based on the principle of “eminent domain”, acquires land for a range of purposes from defense and railways to Special Economic Zones (SEZs), infrastructure, and industries without adequate compensation and/or rehabilitation and resettlement.

However, the most commonly used legislation is the Land Acquisition Act, 1894, which has been bitterly and repeatedly criticized by the Supreme Courtin its recent judgments, advising the government to repeal and replace it with a new just and humane legislation. The Act has allowed forcible land acquisition or land grabbing, resulting in numerous protests by the adversely affected people and civil

society activists. Quite a few unlawful and unjust land acquisitions have been quashed by the High Courts and them Supreme Court.

As a result, the Land Acquisition Rehabilitation and Resettlement Bill, 2011 (Bill No. 77 of 2011) was introduced in the Parliament (Lok Sabha) on 7 September 2011 and has beenreferred to the Standing Committee of Parliament (SCP) for scrutiny and improvement. (The SCP has returned the Bill on 16 May 2012 with its recommendations for drastic amendments necessitating virtual redrafting.) It may be passed in the monsoon session of Parliament, repealing and replacing the 1894 Act. Its positive provisions include adequate compensation, rehabilitation and resettlement, prior consultation, social impact assessment, and others. However, its basic purpose is to facilitate land acquisition for industrialization, development of essential infrastructural facilities and urbanization, without any vision of rational land use and any consideration for rural people, their livelihood and lives, even though the bill has been drafted and introduced by the Ministry of Rural Development which is expected to promote the well-being of rural people and areas.

Displacement of people in the hills and forests caused by development projects: The Scheduled Tribes (STs) and other traditional forest dwellers have customary usufructuary land rights. But because technically and legally, they do not own such land, it is acquired by the government without consulting, compensating and rehabilitating them. As a result, 60 million people have been displaced following development projects over the last six decades, and only a third of them are estimated to have been resettled. About 40% of these displaced people are STs and 20% Dalits (SCs). Little wonder that a large part of the tribal and forest areas is affected by Maoist/ Naxal violence. 2 Recently, after sustained lobbying, advocacy and democratic pressure by the STs, Scheduled Castes (SCs) and other sympathetic groups assisted by CSOs and civil society at large, the Scheduled Tribes and OtherTraditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 and Rules 2007, was notified and enforced beginning 1 January 2008. It has generated some hope for them. Legislation, the Provisions of Panchayats (Extension to Scheduled Areas) Act (PESA), 1996, provides for mandatory prior consultation with the tribal Gram Sabha (village assembly) in the Fifth Schedule tribal areas to acquire their land. But so far, this has been observed only in its breach. Decline of about 2 million ha in the net area sown over the past decade Such decline is likely to increase in the coming years, jeopardizing lives, livelihood, and food security of the rural poor and rural people, notwithstanding the assertion in the Approach to the Twelfth Plan that it can be overcome by increasing agricultural productivity and avoiding acquisition of multi-crop irrigated land. Actually, there has already been an unprecedented

agricultural slowdown during the post-liberalization era (1991-2006), primarily due to highly reduced public investments and utter neglect. Measures to reverse it have been initiated only in the
Eleventh Plan (2007-2012) to ensure food security. Highly uneven land distribution as reflected in Agricultural Census (2005-2006) data and other sources underlines the need to optimize the redistribution of land to the landless tillers.

With regard to women's land rights, on the whole, there is gross gender inequity. The Hindu Succession (Amendment) Act, 2005 provides that in a joint Hindu family, the daughter shall, by birth, become a co-parcener in her own right in the same manner as the son and should have the same rights in the co-parcenery property as she would have had if she had been a son, effective 20 December 2004. Thus, Hindu women have equal rights to land, but social complications muddle practice. Hindus constitute about 80.5% of the population of India. Muslims constitute about 13.4% of the population; but they are governed by their personal law, which is unfair to women, the common norm being 62.5% to sons and 37.5% to daughters irrespective of their number. Other religious groups, numerically much smaller, are governed by their traditional laws and practices. Only a few communities in India in states like Kerala and Meghalaya are matriarchal; the rest of Indian society is patriarchal. Besides, in some cases, civil society activists have tried to get fresh land allotments in favor of women and/or joint allotments in favor of wife and husband.

4.9 REASONS FOR POOR PERFORMANCE

The Task Force on Agrarian Relations set up by the Planning Commission (1973) in its report has stated that the laws for the abolition of intermediary tenures have been implemented fairly efficiently. While in the field of tenancy reforms and ceiling on holdings, legislation has fallen short of proclaimed policy and implementation of the enacted laws has been tardy and inefficient. With the abolition of intermediary interest the ownership of land became more broad based and the erstwhile superior tenants acquired a higher social status. It should not, however be overlooked that as a result of the tenancy, laws enacted in the decade prior Independence the superior tenants had already been enjoying security of tenets fixity of rent. It is a most point whether the abolition of intermediary interest conferred any new economic benefits on the tenants.

The programmes which could have led to a radical change in the agrarian structure and the elimination of some of the elements of exploitation in the agrarian system and ushered in a measures of distributive justice were those of reform, ceiling on agricultural holdings and distribution of land to the landless and small holders. These programmes cannot be said to have succeeded. Highly exploitative tenancy in the form of crop-sharing still prevails in large parts of the country. Such tenancy arrangement have not only resulted in the

perpetuation of social and economic injustice but they also become insurmountable hurdles in the path of the spread of modem technology and improved agricultural practices. Thus the overall assessment has to be that programme of land reform adopted since Independence has failed to bring about the required changes in the agrarian structure. -

The major reason for the poor performance of the programme of land reforms according to the Task Force (1972), are as follows:

1. Lack of political Will:

Enactment of progressive measures of land reform and their efficient implementation call for hard political decisions and effective political support, direction and control. Professor Wolf Ladej insky after touring the greater part of South East Asia, summed up the approach to land reform "as nine-tenth of political will' and added, "where there is a will, there is a way and not just legislation.

In India, practically, all the state governments had enacted laws in the early fifties but lacking the "political will' none of them was able to implement the programme in letter and spirit in spite of the it fact that was one of the major election promises, it was thus definitely a lack of "political will" of the state governments, which allowed loopholes in the ceiling legislation. No tangible progress could be expected in the field of land reform in the absence of requisite political will. Its report also has pointed out that in no sphere of public activity since independence has there been as' much gap between precept and practice, between policy pronouncement and actual execution as in the case of the land reforms. To quote the Task Force: ' 'With resolute and unambiguous political will, all the other shortcomings and difficulties could have been overcome; in the absence of such will even minor obstacles became formidable roadblocks in the path of India's land reforms. Considering the character of political power structure operating in the country, it was only natural that the required political will was not forthcoming."

2. Absence of Pressure from Below:

The beneficiaries of land reform, particularly share croppers and agricultural labourers, are weighted down by crippling social and economic disabilities. Except in a few scattered and localized pockets, practically all, over the country the poor peasants and agricultural workers are passive, unorganized and inarticulate. 'The basic difficulty in our situation arises from the fact that beneficiaries of land reform do not constitute a homogeneous social or economic group. The mixed economic status of the different groups and their conflicting interest have rendered organized collective, action very difficult, and finally, the multicast composition of the peasantry effectively rules out the possibility of the development of a common outlook and collective will. In the circumstances it is small wonder that there has been no consistent

pressure from below, a pre-requisite for the effective implementation of land reform laws.

3. Administrative Organization-Inadequate policy Instrument:

Land reform, does not, therefore, get the undivided attention it need. Even if it had not been overburdened with multiple duties, it is very doubtful if the administrative organization would have proved to be equal to the task of efficiently implementing the land reform laws. The attitude of the bureaucracy towards the implementation of land reform is generally lukewarm, and often apathetic. No state has taken necessary steps to forge a suitable administrative organization and keep it in proper trim by systematic in service training and periodic courses. Nor has any conscious efforts been made to post and dedicated men with faith in land reform to key position in the administrative set up. As a matter of fact, there have been cases where administrators who tried to implement land reform laws honestly were hastily transferred elsewhere. In the result, practically in every State, the administrative organization has proved to be an inadequate instrument for the speed and efficient implementation of land reforms.

4. Legal Hurdles:

The land reform laws were defective in many ways; some loopholes were deliberately built in, while others were the result on poor drafting, the formidable combination of tenacious 'landowners and ingenerous lawyer found a godsend in a legal system which put great store by procedural formalities. All possible avenues of appeal and revision would be exhausted before a single step could be taken to implement a law. Practically in every state protracted litigation has delayed and often frustrated, the implementation of land reform laws.

While on the one hand the courts have been, and continue to be the targets of attack by politicians for allegedly standing in the ways of implementing land reform legislation, available data shows that the legislations are usually challenged on such facts as the number of members of the family, correct classification of the land the actual ownership of certain parcels of the holding, and not on their constitutionally validity.

The Law Ministry has also given the opinion that merely placing a land legislation in the Ninth Schedule would not debar court from reviewing a case arising from out of points of facts.

5. Absence of Correct' up-dated Land Records:

An important factor that has militated, against the effective implementation of land reform in the absence of correct up-to-date record of right. A programme that aims at the redistribution of income and wealth in the rural areas cannot succeed unless the beneficiaries can produce evidence of their rights. No amount of legislation will help the

tenant in the court unless he proves that he is in fact a tenant. This he can do not only if there is a reliable and up-dated record of tenancies with presumptive evidentiary value. The position regarding record to tenancies particularly in the matter of entries relating to rights of sharecroppers is not satisfactory anywhere in the country, and no record, exists in some areas. The problem is largely administrative, the absence of up-to- date land record is a serious obstacle in the implementation of land reform

6. Some Weak Spots in the Programme:

The programmes of land reform have been viewed so far, in isolation from the mainstream of economic development. Lack of financial support has plagued Indian land reform right from the beginning. No separate allocation of funds was made in the Five Years Plans for financing land reform The programme of land reform did not get the necessary budget support in any of the States. Against this back-ground, it is hardly, surprising that funds were not available for extending supporting service to beneficiaries of land reform An agrarian reform programme can succeed only if it is accompanied by adequate arrangement for the supply of inputs, particularly credit on easy terms for development and cultivation of land.

7. Deficiencies in Reporting System and Evaluation:

Even after four decades of land reform it is difficult to get reliable and up-to-date data on various aspects of land reform. The reporting system is weak and irregular and the deficiency is rooted in the weakness of the Revenue administration and the absence of up dated land records. There has been no systematic review of progress at periodic intervals.

Thus, the repeated change that it is total absence of political will rather than any other single cause that is the major reason for the poor implementation of land laws is amply borne out by facts. Parmit Choudhary (1978) has commented that there are not many areas of economic policy in India where one can categorically point out the direction in which events have been moving. Unfortunately, land-reform, a vital plank' in rural deployment policy, is one of these. It is an unrelieved account of false promises, of continued oppression and misery".

Dr. M.S. Swaminathah while delivering the tenth J.N. Tata lecture at the Indian Institution of Science, Bangalore, said that at a time when the country had entered the third and more challenging phase of agricultural production, one major issue facing it was the whole area of land reform and agrarian structure and reform had so far been mainly looked at from aspects of land ownership, land ceiling and security of tenure. For enabling small and marginal farmers to produce more; land reform would have to be given ownership-cum-production interpretation covering steps which facilitate the more efficient use of land.

Exercise 4.1

Q1. What is the pattern of Land-Holding in India?

Q2. What are the important methods of tenancy reforms in India?

4.10 SUMMARY

To basic objectives of land reforms should be to break-up the traditional strange hold of the big landed interests, abolish on land and landlord tenant nexus, strengthen and overall economic position, of the masses of peasants and create sanctions for the development of a healthy and dynamic agrarian society. The existing scheme of land reform shall have to be reoriented to this end in the following direction.

(i) Quick recording of the names of the sharecroppers and thereby securing to them the legal rights they are entitled to.

(ii) Distribution of already available ceiling, surplus vested lands among the landless and poor peasants.

(iii) To detect and vest more ceiling surplus through quasi-judicial investigative machinery with the help of rural worker's organizations and Panchayati Raj institutions.

(iv) Designing various programmes for developing rural infrastructure which would primarily benefit the assignees of vested land marginal farmers as well as give them sustenance during periods of distress, thus preventing, transfer of land to affluent farmers.

(v) Assigning permanent title for homestead purpose to all the landless agricultural workers (including sharecroppers), artisan and fisherman occupying lauds of other as permissive possessors.

Land reform cannot be properly enforced without popular cooperation and support at all levels. Population supervisory committees should therefore, be constituted at all levels consisting of people's representatives including the beneficiaries, officials and experts to exercise vigilance on implementation. These committees should be vested with certain statute powers like inspection of records and sites, collection of evidence, etc. and their recommendations should receive due weightage. Moreover, a policy of public investment in ceiling surplus lands prior to their former assignment to the landless is obviously necessary. We are aware that such a change is more easily recommended than brought about. It cannot but be a long haul. Land reform is again in the news and its implementation is declared as one of the essential ingredients of the Prime Minister's 20-point programme. Efforts are being made by Centre as well as the state governments to undertake the "unfinished task" started in the early fifties. The task is indeed difficult.

4.11 GLOSSARY

- **Land Reforms**: Land reform is concerned with changing the institutional structure governing man's relationship with land. In the main, land reform is seen as a means of bringing about structural changes in the agricultural sector, thereby altering the size, distribution of holdings or the distribution of income.
- **Land Ceiling:** refers to the legal limit on the amount of land an individual or family can own, with the purpose of preventing excessive land concentration and promoting equitable distribution of land resources.
- **Consolidation of Holdings:** consolidation of holdings refers to amalgamation and redistribution of fragmented land to bring together all plots of land of a cultivator in one compact block. On an account of growing pressure of population on land and limited opportunities for work in the non-agricultural-sector, there is increasing trend towards sub-division and fragmentation of land-holdings in the country.
- **Agrarian Reforms:** Agrarian reform is a much more comprehensive concept than land reform, since it involves modification of a wide range of conditions that affect the agricultural sector. These modifications might include changing price policies so as turn the terms of trade in favour of the agricultural sector increasing, allocations to agricultural sector in order to expand research, extension, training and storage facilities making physical supplies such as fertilizers, available and increasing credit for their purchase; or providing infrastructure for facilitate agricultural production.

4.12 ANSWERS TO SELF-CHECK EXERCISES

Exercise 4.1

Answer 1. Refer to section 4.4.
Answer 2 Refer to section 4.6.

4.13 SUGGESTED READINGS

1. R.N. Soni: *Issues in Agricultural Economics*, Shoban Lal Nagin Chand & Co. Jallandhar.
2. Mishras & Puri (2006): "Indian Economy", Himalayan Publishing House New Delhi.

3. G.R Saini (1971): “Holding Size, Productivity And Some Related Aspects Of Indian Agricultural “EPW”, June 26.
4. Graham Dyer (1998): “Farm Size and Productivity; A new Look at the old debate” EPW, June 27.
5. Adiqa Kausar Kiani: “Farm Size and Productivity in Pakistan” European Journal of Social Sciences Vol.7 No-2 (2008).

4.14 TERMINAL QUESTIONS

Q1. What are reasons of failure of Land reforms in India? Give suggestions for successful implementation of land reforms in India?

Q2. Explain the need and methods of consolidation of Land holding in Indian agriculture sector?

UNIT – 05
AGRICULTURAL PRODUCTION FUNCTIONS

STRUCTURE

5.0 Objectives

After going through this lesson you will be able to:

- Explain the Cobb -Douglass Production Function
- Elucidate Two variable factors: one product
- Explain the Quadratic Production Function

5.1 INTRODUCTION

The level of output achieved in a given period of time is dependent upon the quantities of inputs; there is a technical relationship between inputs and outputs. Though there is some uncertainty about the precise, level of output which will be obtained because of the unpredictability of weather and pest and diseases. However, the uncertainty is not as great as to prevent scientists from estimating the production relationships or to prevent farmers from using their knowledge of those relationships in reaching management decisions.

5.2 PRODUCTION FUNCTION

The input-output relationships are determined by the techniques of production. Indeed they define the technology available to the farmer. They are altered by technological change. Together with the level of fixed inputs these relationships determine what is feasible for the farmer to produce. They set limits on the alternatives open to him. Every farmer

therefore needs to know something of the way in which his resource inputs influence his output.

Historically, refinements in concepts relating to production function grew out of economics probably because of the following reasons, (i) The nature of production functions is important in determining the extent to which agricultural production can be increased from given resource stock, (ii) The magnitude of production coefficients serve as the basic for determining optimum pattern of international or inter-regional trade, (iii) The production function provides half or one of two general categories of the data needed in specifying the use of resources, (iv) The algebraic nature of supply function rests, in large part, upon the nature of production function.

With the passage of time, a greater knowledge level of farmers, and an increased commercialization of agriculture, there is increased need for experimental designs and research in biological fields which lend themselves to estimation of production function. Under these highly commercial operations, management is not satisfied to stop with use of quantity of fertilizer which is profitable. They are concerned with the most profitable quantity and mix of ingredients.

Various algebraic equation forms can be used in deriving production function. No single form can be used to characterize agricultural production under all environmental conditions. The algebraic form of the function and the 'magnitude of its coefficients will change with soil, climate, type and variety of crop or livestock, state of mechanization, magnitude of other inputs in "fixed quantity' for the firm etc. selection of any specific type of equation to express production phenomena automatically imposes certain Restraints or assumptions in respect to the relationships involved and the optimum resource quantities which will be specified. An infinite number of functional forms are possible in productivity studies but those considered in following sections either (a) have logical implications which cause them to "standout" from the others or (b) have been widely used production function studies.

Numerous research studies in agriculture revolve around production functions with a single resource or treatment applied at different levels. Equations with a single variable defining the input can be used to evaluate certain properties of production functions and their marginal products. These same properties generally apply when there are n variables.

Obviously, however, output is never greater than zero when only one production factor is used. Appropriately, the production function should be represented as

$$Y = f(X_1, X_2 \ldots\ldots\ldots\ldots Xn)$$

Where Y is the output and X_1 are inputs. It is of course, possible to hold certain categories of inputs at fixed level. While others are

variable however, certain resources are exogenous and are not subject to control by the decision maker. Expressing this random disturbance as €, the 'production function, without control of factors, is

$$y = (x_1, x_2, x_3 \ldots\ldots\ldots\ldots xn) + \lambda €$$

A vertical bar can be used to indicate that only one factor, X_1 is variable while other are held constant at some predetermined

$$Y = \phi(x_1/x_2 x_3 \ldots\ldots\ldots\ldots\ldots x_n)$$

In practical life, unless we have knowledge about the nature of production function itself, we cannot know the point which will indicate the, optimum utilization of resources. The equilibrium condition is the equality between marginal value productivity of a factor and its price, but the question is how to determine marginal productivities of various factors or movements in their direction with the change in various inputs. This requires fitting of a production function. Before a production function is being fitted, it is necessary to know the nature and form of production function itself. This takes us to the description of some important production functions that have been or can be used for analyzing problems of resource use in agriculture.

5.3 THE COBB –DOUGLASS PRODUCTION FUNCTION

This production function is known, after the name of its author's cob, Charles W. and Dougalas, Paul. H. They fitted the equation of the type

$$P^1 = b\, L^k\, C^{1-k} \qquad 5.1$$

to data for American manufacturing industries Over the period 1899-1922. This was the first formal empirical production function fitted to time series data. In this, equation P^1 represented the predicted index of manufacturing output, L was the index of employment in manufacturing industries, and C was the index of fixed capital in industry. Actually, the equation which has came to be known as the cobb-Douglas function traces to Wick sell. He stated, in the footnote, the function as

$$P = a^{\alpha} b^{\beta} c^{\delta} \qquad 5.2$$

where a β λ was equal to 1 (as in Cobb-Douglas function where K + 1 - K =1) Douglas and associates later on relaxed the restraint that the sum of the elasticity's in the production function should sum to unity and employed at the suggestion of Durand the function'

$$P = bL^k\, C^J \qquad 5.3$$

where k and j could take any value. The resulting power function, which is linear in logs, has commonly come to be known as the cobb-Douglas function. It has been applied in numerous production function studies for technical units and firms of agriculture.

One of the main contributions of Cobb and Douglas, and also of

Durand, to production function studies may have been development of the particular algebraic form of equation. It has been used widely because of its convenience in interpreting elasticity's of production, because estimation of parameters involve fewer degrees of freedom than other algebraic forms which allow increasing or decreasing returns to scale, and because its use involve fewer degrees of freedom Unlike many other production functions, this production function assumes that at least some quantity of each input must be used if output is to non-zero.

The Cobb-Douglas or power function, in the form generally used, is

$$y = ax^b \qquad 5.4$$

where x is the variable resource measured, y is output, a is a constant and b defines the transformation ratio when x is at different magnitudes. The exponent or b coefficient is the elasticity of production and can be used directly. (The equation is estimated in logarithmic form.) This function allows either constant, increasing, or decreasing marginal productivity. It does not allow an input output curve embracing all three. When all other inputs are held in fixed magnitude, the marginal product is expected to decline. The marginal product equation is

$$\frac{dy}{dx} = b\,a\,x^{b-1} = \frac{b\,a\,x^{b}}{x} \qquad 5.5$$

$$E_p = \frac{x}{Y} \cdot \frac{dy}{dx}$$

$$= \frac{x}{y} \cdot \frac{y}{x} = b \qquad [\, y = ax^b \,]$$

$$5.6$$

$$E_p = b$$

indicating that if b = 1, the marginal product-will-be constant, where b is less than 1, the magnitude of marginal product will decline as x increases since $X^b < x$, where b >1, the magnitude of marginal product will increase as x increases, depending on the magnitude of b

This function assumes a constant elasticity of production, E_p, over the entire input-output curve, or that

$$\frac{dy_1}{dx_1}\frac{x_1}{y_1} = \frac{dy_2}{dx_2}\frac{x_2}{y_2} = \frac{dy_n}{dx_n}\frac{x_n}{y_n} \qquad 5.7$$

Given the mathematical properties of the equation, this function cannot be used satisfactory for data where there are ranges of both increasing and decreasing marginal productivity. Neither can the function be used satisfactorily for data which might have both positive and negative marginal products. Also since the rate of decline in marginal product decreases with input magnitude, the power function provides a curve of the, nature indicated in figure. 5.1. 'The curve "flattens out" as input increases and a maximum product is not defined. Unless an

economic optimum is defined for small magnitude of input, the power function may overestimate the input of x which equates marginal revenue and marginal cost.

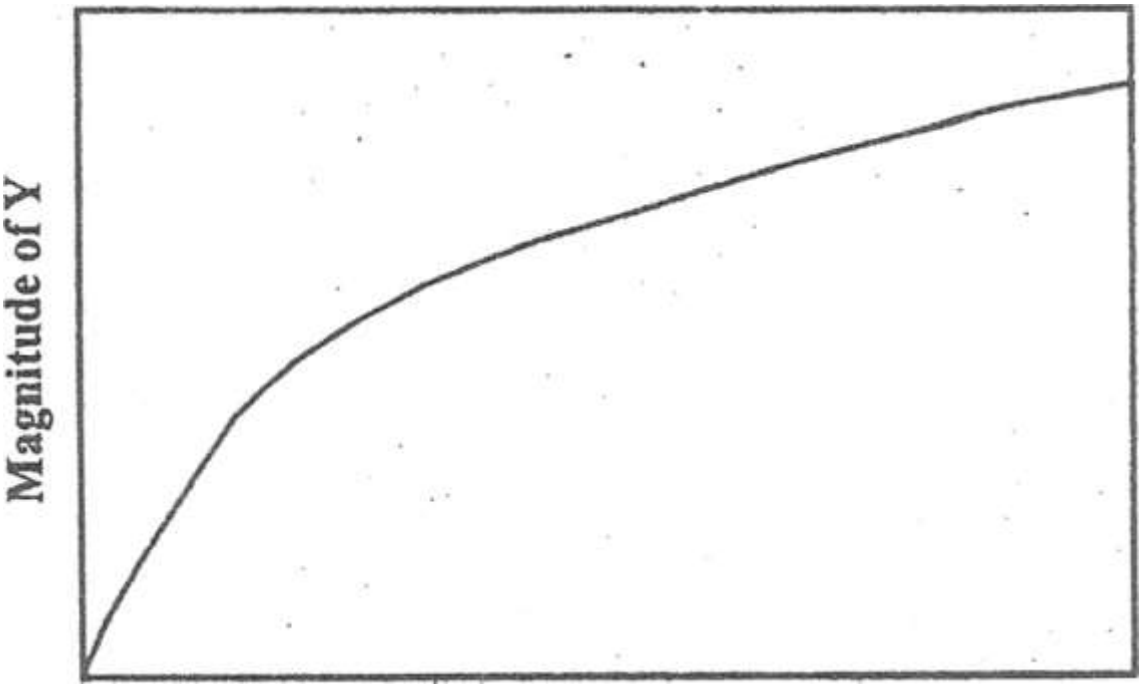


Fig. 5.1

Graphic Illustration of function computed from equation log y = log a + b log x.

5.3.1 Two variable factors: one product

We now consider the effect of varying inputs of two factors of production. The total physical product in quintals for combinations of two factors, labour and land, are given in Table. 5.1. These figures therefore represent the production function relating output to inputs of labour and land. Each row in this table represents the response curve for labour at a given level of use of the other resource land. Each column in the Table 5.1 represents the response curve for varying inputs of land with a given level of labour use. The marginal product per unit of labour and land is the difference between two consecutive values in the same raw and same column respectively.

Table 5.1
Amount of output in quintals (y) to
Varying combinations of labour (X_1) and land (X_2)

Labour input X_2 (units)	Labour Input (X_1 Units)							
	0	1	2	3	4	5	6	7
	1	7	20	31	37	40	39	35
	2	18	33	45	52	37	57	54
	3	27	42	55	62	65	67	65
	4	33	48	61	68	71	73	72
	5	37	53	66	73	76	78	77
	6	39	58	69	76	79	81	80
	7	40	60	70	77	80	82	81

If we assume that inputs of land and labour can be varied continuously, smooth curves can be fitted to the data given in each row and column. Here the diagram takes a three dimensional form where quantities of inputs are measured along with the horizontal axis and output is measured vertically.

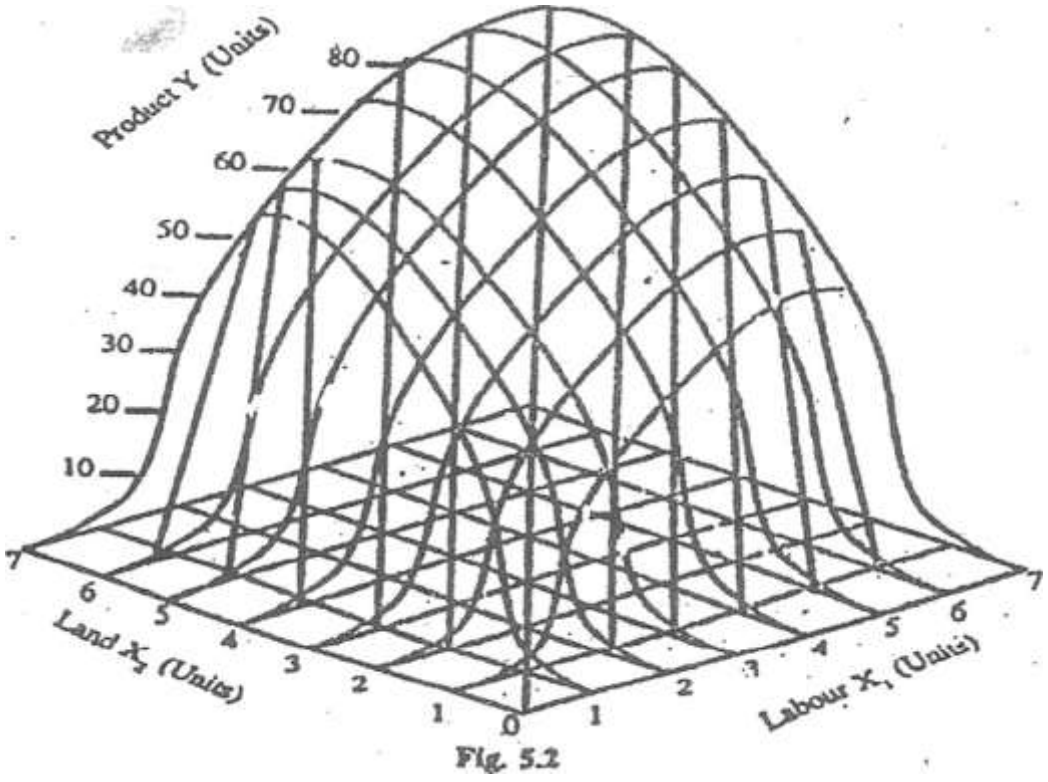


Fig. 5.2

Response surface for two inputs with interlaced single variable response curves. Individual single variable response curve for labour are represented by vertical slices

parallel to the labour (x_1) axis Likewise response curve for land are parallel to the X_2 axis.

The interaction means that if inputs of one factor are increased in relation to inputs of another factor, although the marginal product per unit of the first factor eventually declines, the marginal product of second factor rises. Also the marginal product per unit of a variable factor depends upon the level at which limiting factors are fixed. All points on the production surface will represent some combinations of X_1 and X_2 and we must note that if we have two variables, the number of such combinations and therefore, of the corresponding points on production surface will be infinite.

Like any other two input production functions, the cobb-Douglas production function, $y = a X_2^{bI} X_2^{b2}$ gives rise to set of iso-quants. Locus of various combinations of two inputs X_1 and X_2 which yield the same amount of total product is known as iso-quant. If coefficients of X_1 and X_2 i.e. b_1 and b_2 have positive values, the iso-quants for this function will be convex to the origin depicting declining rate of marginal technical substitution between X_1 and X_2. Iso-quants will be asymptotic to input axis.

$$y = a x_i^{bi} x_2^{bi} \qquad 5.8$$

Suppose y is y_0 i.e., a particular amount of output produced then

$$X_1^{b1} = \frac{yo}{a X_2^{b2}}$$

$$X_1 = \left[\frac{yo}{a X_2^{b2}}\right]^{b1} \qquad 5.9$$

Now slope of this iso-quant at a given point, will represents the marginal rate of substitution of X_2 for X_1

In this case MRS of X_2 for X_1 is

$$\frac{d X_1}{d X_2} = \left[\frac{1}{b_1 \; a X_2^{b2}}\right] yo^{1/b_2 .1} \quad b_2 = \frac{yo\ 1}{b_1 X_2^{b_2+1}}$$

$$\frac{d X_1}{d X_2} = \frac{b_2}{b_1} \left[\frac{yo}{a X_2^{b2}}\right]^{1/b_2 .1/x_2}$$

$$\frac{d X_1}{d X_2} = -\frac{b_2}{b_1}\frac{X_1}{X_2} \left(\left[\frac{yo}{aX_2^{b2}}\right]^{1/b_1} = X_1 \right) \qquad 5.10$$

The **above equation** of MRS **for an iso-quant based** upon C-D production function clearly shows that as X_2 increases and in progressively substituted for X_1 MRS will go on falling, which shows about convexity of the iso-quant.

If one variable in the above equation of iso-quant (i) say X_2 is zero, value of X_2 % will be infinity showing **that the iso-quant** will meet the axis X_1 at infinity. MRS of an iso-quant is a linear function of the ratio in which "X_1 and X_2 are combined to produce the output represented by the given iso-quant.

Iso-costs for a C-D function will be straight lines, all passing through the origin since the iso-clines are straight lines passing through the origin, and these will coincide with the scale lines. Minimum cost point is that where the slope of iso-quant is the same 'as that of iso-cost line Since iso-cline is a straight line passing through the origin, the ratio in which inputs are to be mixed for minimizing total costs is the same for all levels of output.

5.3.2 Returns to Scale

Historically, in Cobb-Douglas analysis of farm firms, the sum of the estimated input coefficients has been taken as an indication of the returns to scale. If $\sum b_1 < 1$, it implies decreasing returns to scale and '$\sum b_1 > 1$ increasing returns to scale

$$\hat{y} = ax_1^{b1}X_2^{b}{}_2.....X_n^{bn} \qquad 5.11$$

The procedure usually adopted is to perform a least to ascertain if $\sum b_1$ is significantly different from unity at the desired probability level.

If the researcher believes that constant returns to scale must prevail if all input factors are included, then it is logical to test the divergence between $\sum b_1$ and unity as an indication of the importance of omitted input factors.

5.3.3 Use of Cobb-Douglas Type Function

Cobb-Douglas functions have been the most popular in farm firm analyses. This algebraic model provides a compromise between (a) adequate fit of the data, (b) computational feasibility, and (c) is a relatively "efficient user" of degrees of freedom. Such efficiency is important where research resources are limited and collection of farm firm data is expensive. However, it probably has greatest use in diagnostic analyses, reflecting marginal resource productivities at mean levels of inputs. Because of the elasticity restraint, estimates departing above the mean may well overestimate productivities. The C-D function, because of the need of aggregation procedure tells little about returns from specific investment.

5.4 SPILLMAN FUNCTION

This exponential type function was suggested by spill man in the following form of equation

$$y = M\text{-}AR^X \qquad 5.12$$

Where y again measures total output and x measures total input. M is the

maximum total output which can be attained by use of the variable resource. A is the total increase in output which can be attained by increasing X, M-A is the level of output defined by fixed resources and a zero input of the variable resource, R is a constant defining the ratio of successive increments to total product. Hence, R also defines the magnitude of the marginal product of input x, relative to that of input level X_1. From the equation of this production on function, the equation of marginal product is

$$\frac{dy}{dx} = - AR^x \log_e r \qquad 5.13$$

and the marginal product of i-th input bears the following relationships to the marginal product of the previous input:

$$\frac{dy}{dx} = - R \left(\frac{\partial y_{i-1}}{\partial x_{i-1}} \right) \qquad 5.14$$

To explain the relationship further, we may say that if R = 0.8. and the marginal product for x_1-1 is 10.

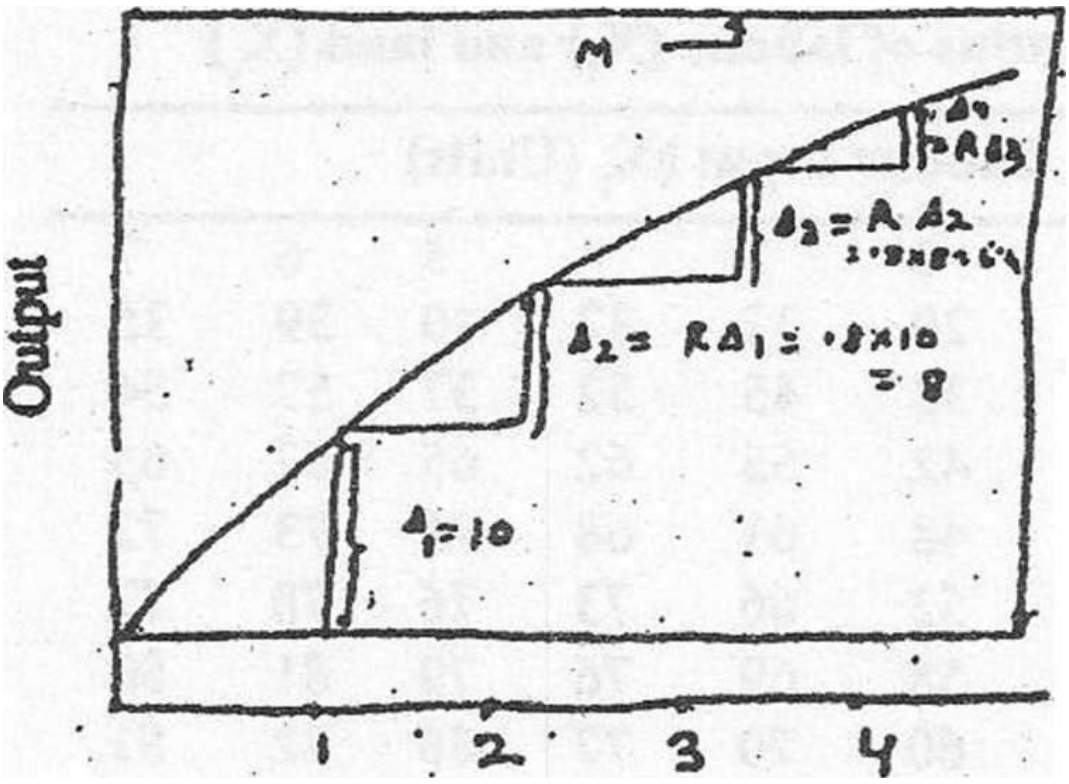


Figure: 5. 3 Nature of Spellman- type exponential function

the marginal product of X_1 is (.7) x 10 = 8. Based upon these concepts and properties,

the above equation finds its expression through the following curve.

The total product curve of equation is asymptotic to M. The marginal product curve is asymptotic to the zero axsis, never becoming negative. For this reason, the function is not appropriate for samples drawn from experiments where input magnitudes are great enough to cause a decline in total product. The product curve approaches the maximum M as X increases and AR decreases. If used as a response function the equation is

$$y = A (I-R^{x}) \qquad 5.15$$

and the input axis has origin at M-A in Figure. Similarly, yield then becomes asymptotic to A, rather than M.

5.5 Quadratic Production Function

In a single variable input X, the equation of the quadratic production function takes the following form

$$Y = a + bx-cx^2 \qquad 5.16$$

with a minus before C to denote diminishing marginal returns. This function does not impose such strict restraints on the production function as does the Cobb-Douglas or Spellman equation. It allows both a declining ‘and negative marginal productivities, but not both increasing and decreasing marginal products. A maximum total product is defined where input magnitude or X is equal to $5bc^{-1}$. The elasticity is not constant as in the power function, but declines with input magnitude as indicated by elasticity equation.

$$Ep = \frac{bx - 2cx^2}{a+bx -cx^2} \qquad 5.17$$

The marginal products do not bear a fixed ratio to each other as in the case of the Spellman function.

Finding the first derivative of the equation

$$\frac{\partial y}{\partial x} = b - 2\,c\,x \qquad 5.18$$

Use of the quadratic equation does assume a particular characteristic in relationship between marginal products; namely that they decline by a constant absolute amount. In other words, the marginal product curve is linear (the second derivative being a constant equal to 2c) and the total product curve forms a “mirror” curve with the portion on the right of the maximum being the “mirror” of the portion of the left.

Modification of the polynomial equation $ya + bx –cx^2$ may be used to relax the restraint that marginal products declines by a constant amount,

$$y = a-bx + c\sqrt{x} \qquad 5.19$$

This square root equation provides a simple compromise between the power and the quadratic form in equation $y = a + bx - ex^2$

The appropriate functional for estimating production relationship will, of course, depend on the type of phenomena being examined. Ordinarily, those represented by crop response to fertilizer will have diminishing marginal products for all inputs greater than zero. But there are cases where increasing marginal products have been encountered for initial inputs of nutrients.

5.5.1 Two variables Quadratic Function

Extension of the quadratic function $y = a + bx - ex^2$ two inputs results in the production surface equation, which will take the following form

$$y = a + b_1x_1 + b_2x_2 - b_3x_1 - b_4x_2 + b_5x_1x_2 \qquad 5.20$$

The equation shows that diminishing returns exist for either input alone but there is a positive interaction between the two factors. The corresponding iso-quant equation has been derived by treating Y as representing some constant level of output and then rearranging the resultant expression in the form of a quadratic equation of variable x_1. The equation then has been solved for x_1, and this is also an iso-quant equation.

$$x_1 = \frac{b_1 + b_5x_2 + [b_1 + b_5x_2)^2 - 4b3\ (y + b_4x^2_2 - b_2x_2 - a)]^{\frac{1}{2}}}{2b_3} \qquad 5.21$$

5.5.2 Main features of iso-quants of quadratic function

(1) Unlike the iso-quant of C-D function, the iso-quants of quadratic function are not asymptotic to the input axis. Rather these are circular or elliptical in shape.

(2) In contrast to the surface formed by the power function, the surface formed by the quadratic function can have a distinct peak, denoting a maximum output for a single imitational combination of the factors.

(3) Certain levels of output can be attained with zero input of x_1, and iso-quants are allowed to intersect the input axes of a contour map of the surface.

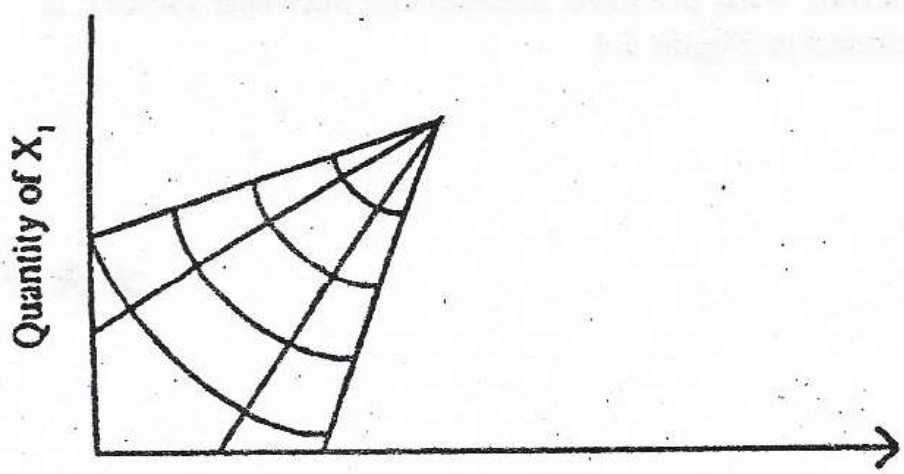


Fig. 5.4

5.5.3 Iso-quants and Iso-clines for quadratic function

The equation of substitution rates corresponding to equation of iso-quant is

$$\frac{\partial y_1}{\partial x_2} = -\frac{b_2 - 2b_4 x_2 + b_5 x_1}{b_1 - 2b_3 x_1 + b_5 x_2} \qquad 5.22$$

By selling the equation of substitution, rates equal to the constant price ratio, the following iso-clines equation is obtained

$$x_1 = \frac{kb_1 - b_2}{b5 + 2kb_3} + \left[\frac{kb_3 + 2b_4}{b_5 + 2kb_3}\right] x_2 \qquad 5.23$$

while the isoclines are linear, but unlike the iso-clines of power function, they do not impose the same conditions On production surface. Iso-cline though linear is not forced to pass thought the origin. Only a single iso-cline, the one representing a substitution rate of K such that does so.

$$\frac{kb_1 - b_2}{b5 + 2kb_3} = 0 \qquad 5.24$$

If 'his ratio is great *it* than zero, the iso-clines intersect the X_1 axis, and if it less than zero, they intersect the X_2 axis.

The iso-cline representing a ridgeline, with a zero MRS of X_2 for X_1, can he derived when the partial derivates shown in equation 5.25 is equated to zero. It has value

$$x_1 = \left(\frac{2b_4}{b5}\right) \quad x2 - \frac{b_2}{5_2} \qquad 5.25$$

and intersects the X_2 axis where the later resource of input magnitude X = .5 $b_2b_4^{-1}$. Similarly, the ridge lines defining a zero rate of substitution of X_1 for X_2 intersects the input axis at X_1 = .5$b_1b_3^{-1}$. The ridgelines generally have a positive slope.

A map of iso-quants and iso-cost for a quadratic function with positive interaction between factors is included in Figure 5.4.

Exercise 5.1

Q1. What are the Uses of Cobb-Douglas Type Function?
Q2. What do you mean by Production function?
Q3. What are the Main features of iso-quants of quadratic function?

5.6 SUMMARY

This chapter concentrated on the production function. In this chapter we dealt with the Cobb -Douglass Production Function and its uses. We also read Spillman function. The next topic we gone through in this chapter was the Quadratic Production Function and the main features of iso-quants of quadratic function.

5.7 GLOSSARY

- **Production Function:** A function that specifies the output in an industry for all combinations of inputs.
- **Iso-quant:** A curve representing the combinations of factor inputs that yield a given level of output in a production function.

- **Iso-cost line:** A line along which the cost of something -- usually a combination of two factors of production -- is constant. Since these are usually drawn for given prices, which are therefore constant along the line, an isocost line is usually a straight line, with slope equal to the ratio of the (factor) prices.

- **Cobb-Douglas Type Function:** A popular functional form for production and utility functions. With arguments $X = (X_1,\ldots,X_n)$, the function is $F(X) = A\Pi_i X_i^{\alpha}{}_i$, where $\Sigma_i \alpha_i = 1$ and A are positive constants. This function has elasticity of substitution between arguments equal to one. As a production or utility function, it has competitive expenditure shares equal to α_i.
- **Returns to Scale:** A property of a production function such that changing all inputs by the same proportion changes output more than in proportion. Common forms include homogeneous of degree greater than one and production with constant marginal cost but positive fixed cost. Also called **economies of scale**, **scale economies**, and simply **increasing returns**. Contrasts with decreasing returns and constant returns.

5.8 ANSWERS TO SELF CHECK EXERCISES

Exercise 5.1

Answer 1. Refer to Section 5.3.3.

Answer 2. Refer to Section 5.2.

Answer 3. Refer to Section 5.5.2.

5.9 SUGGESTED READING

1. Heady, E.O. and J.F. Dillon (1961): Agricultural Production Functions, N.Y. Prentice Hall.

2. Kalilon, A.S. and Karam Singh (1980): “Economics of Farm Management” in India, Bombay, Allied Publishers.

3. Upton, Martin (1976): Agricultural Production Economics and Resource use.

5.10 TERMINAL QUESTIONS

Q1. Explain the meaning of the term production function as used in agriculture. Discuss the main characteristics of Cobb-Douglas production function and why it is used in agriculture?

Q2. To What extent Cobb-Douglas production function is effective in Indian agriculture?

UNIT-06

CONCEPT AND TYPES OF PRODUCTION FUNCTION

STRUCTURE

6.0 OBJECTIVES

After going through this unit you will be able to:

- Explain the Production Functions.
- Elucidate the different stages of Production
- Enlighten the Product-Product Relationship
- States the different types of Product- product Relationship

6.1 INTRODUCTION

The principle of rationality, one of the corner stone's of economic theory, States that human beings, will, given enough information, seek to maximize their gains by obtaining the highest possible return for any given resource or else will seek to economize (minimize) using the smallest quantity of a resource to obtain a given return. In a market economy, each producer continuously adjusts his production to give the highest profits. 'The production process and the decision making underlying it constitute a dynamic, ever changing situation.

Production is concerned with the supply side of market. In the production process, various inputs are transformed into some form of output. Combining seed, fertilizer, labour, equipment and land to produce wheat is an example of production. In production analysis, we study the least cost combination factor inputs, factor productivities and returns to scale. 'The producer is confronted with three basic types of problems; how much to produce, how to use resources for production and what to produce. The discussion of these principles of resource allocation is the subject matter of the present lesson.

6.2 PRODUCTION FUNCTION

A production function expresses the technological or engineering relationship between the output of a product and its inputs. In other words, the relationship between the amount of various inputs used in the production process the level of output is called a production function, for example, a farmer growing wheat combines soil, fertilizers, pesticides, water, seeds, labour and capital (farm equipment, etc.) to yield a crop of wheat. Some of these inputs may be fixed in supply: the land available, and the existing amount of capital. The other inputs .nay be varied and, accordingly the level of output may be expected to vary.

Although an individual farmer cannot alter a production function, he can choose which of the many possible ways of producing particular products he will use. Technology also contributes to output growth as-the productivity of various inputs depends on the state of technology. The point which needs to be emphasized here is that the production function describes only efficient levels of output, that is, the output associated with each combination of inputs is the maximum output possible, given the existing level of technology.

Thus we can express the relationship in the following way.

Goods and Service	result from	Combining resources

Using y to symbolize goods and services and x to symbolize resources, we could write the production concept as a simple

mathematical expression, called a production function.

y = f (x)

This is read as y (output) is a function of x (the resources used). Output is measured from the units of resources (x). The total physical product varies with the quantity of resources used in production Table 4-1 illustrates the production situation-

Table 6-1

The Production Function: y - f (x_1/X_2 ....X_n)

Units of X_1 used TPP	Units of Y Produced
0	0
1	3
2	8
3	11
4	12
5	11

Here consider just one firm producing only one product, using just one variable resources, function fitting our illustration is à modification of our general function.

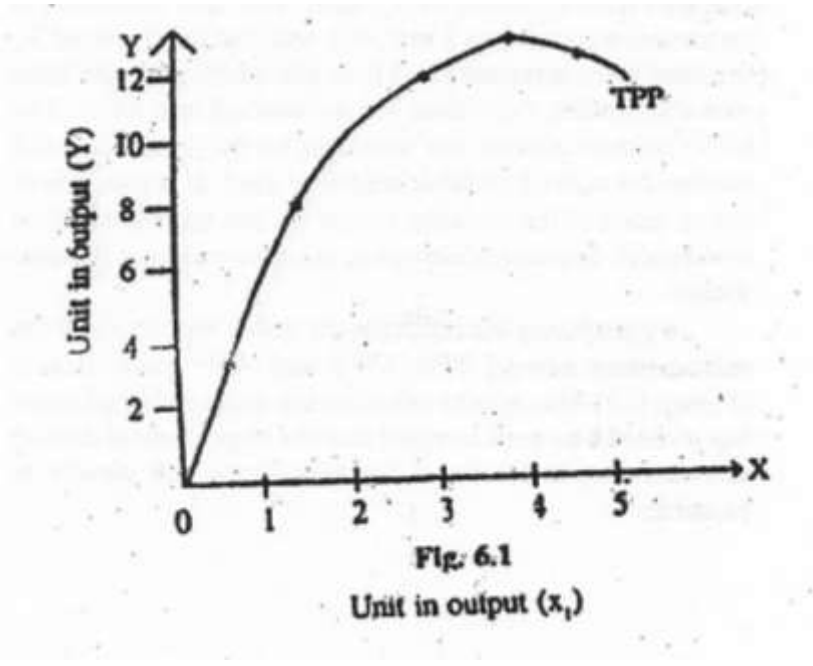


Fig. 6.1

y = f (x)

or Y = f (X_1/X_2...Xn)

Where X, is a specific resource used in various amounts with a set of fixed resources *(X_2.....X_n)* Through repeated studies, some consistent characteristics among input-output relationships have been observed When only one input is varied (X_1) while all others are held constant ($X_{1.....}..X_n$), TPP (total physical product) will at first increase rapidly, then increase less rapidly and finally decreases Since production economics rests on that observation, it is essential to explore in greater depth.

6.3 Diminishing Returns

If there were no diminishing returns, there would be no limit to the amount of wheat that could be grown on an acre of land. Theoretically, the nation's demand for wheat could be met by sowing more and more wheat and putting more and more fertilizer on that one acre. We know that is impossible because of diminishing returns a phenomenon that has become so established as a basis for economic studies, .we call it the law of diminishing returns.

6.3.1 The Law Of Diminishing Returns

When successive equal units of a variable resource are added to a given quantity of a fixed resource, at some point the addition to total output will decline.

Table 6-2: Diminishing Returns

Variable resources X_1	Fixed Resources X_1 ..... X_n	TPP Y	Addition to TPP $MPP = \frac{\Delta y}{\Delta x_1}$	Output per Unit of X_1 $APP = \frac{y}{x}$
0	1	0	--	---
1	1	3	3/1 = 3	3/1 = 3
2	1	8	5/1 = 5	8/2 = 4
3	1	11	3/1 = 3	$11/3 = 3\frac{2}{3}$
4	1	12	1/1 = 1	12/1 = 3
5	1	10	-2/1 = 2	10/5 = 2

Note that in Table 6.2 we have added successive units of X, say nitrogen Fertilizer, to a set of fixed resources, x_2....X_n, say one acre" of land including everything else needed. The production of y, say wheat changed with each unit of X_1, used. TPP first increased at an increasing rate 0 to 3 to 8, but with the third unit of X, the total only increased to 11; or the addition to the total was less for the third than for the second unit of X_1. The MPP-column shows the addition to the total for each successive

unit of variable resource used. It is possible to use so much of the variable, resources that total production is reduced. Too much nitrogen, in other words, will harm yields.

By graphing the information in 6.2 we can show the relationship among TPP, MPP and APP more clearly (Figure 6.2). Though the relationship will held in all cases but it should be kept in mind that the hypothetical data so selected was to illustrate the relationship as clearly as possible.

Certain relationships will always exists between TPP and MPP. Look at Table 6.2 and Figure 6.2 TPP from X_1 = 0 to X_2 = 2 increased at an increasing rate, and MPP was increasing. After the second unit of X_1 the addition to TPP declined so that after point A, TPP increased at a lower rate. The MPP reached its peak point A, at the same point that TPP began its slower rate of increases. Between A' and B', TPP continued to increase and MPP between A’ and B’ continued to decline but was always a positive point. With each successive unit of X_1 less was added to output. Between the fourth and fifth unit of X_{J5} the additional input did not increase output. When TPP was greatest, at point B, MPP = 0 at points B.

Also the relationships of APP to MPP should be observed. APP always increases as long as it is less than the MPP because the marginal output pulled the average up. Each student is an expert in this concept as applied to grades, instantly, a student knows that the grade he receives on the last test will improve his average as long as the grade is greater than the average. APP will be greatest, point C, when APP = MPP and will always be greater than zero so long as there is any output.

Productivity has a special meaning and cannot be considered the same as production. Production is the total output. Productivity is the relationship between output and inputs used (y/x) and are an efficiency measure. When per unit output increases, productivity increases.

Table 6-3 Increasing, Decreasing and Constant Productivity

	Increasing		Decreasing			Constant		
Units of X_1	TPP	MPP	Units of X_1	TPP	MPP	Units	TPP	MPP
0	0	0	0	0	0	0	0	0
1	1	1	1	5	5	1	3	3
2	3	2	2	9	4	2	6	3
3	6	3	3	12	3	3	9	3
4	10	4	4	14	2	4	12	3
5	15	5	5	15	1	5	15	3

6.4 Increasing Productivity

As successive units of a variable resource are added to a given quantity of fixed resources, total physical product increases at an increasing rate, or the marginal physical product increases, (see Table 6.3 and Figure 6.3)

6.5 Decreasing Productivity

As successive units of a variable resource are added to a given quantity of a fixed resource total physical product increases at a decreasing rate or the marginal physical product decreases.

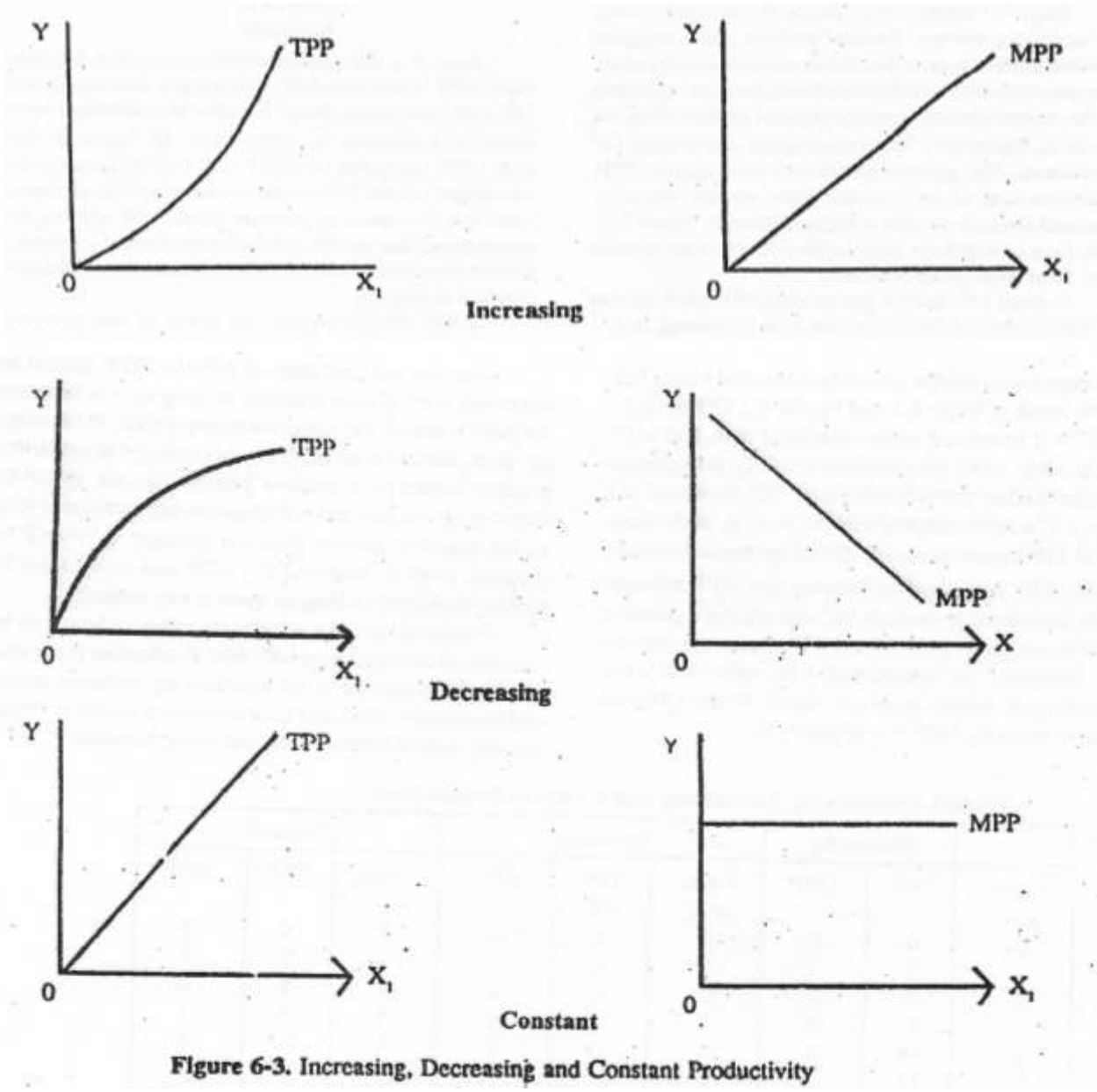


Figure 6-3. Increasing, Decreasing and Constant Productivity

6.6 Constant Productivity

As successive units of a variable resource are added to a given quantity of a fixed resource, total physical product increases it a constant rate or the marginal physical product remains constant.

The study of the economics of production is based on following assumptions,

1. The producer wants to maximize profits.
2. There is a single business (farm) producing only one product.
3. There is a single infinitely divisible input and no limitation of the availability of that resource.
4. There is no uncertainty.
5. There is no change in technology or institutions.

6.7 Stages of Production

Economists have found in studying the production function, that it can be broken into three separate parts, each with its own characteristics. The reason for this division lies in the fact that it helps us in moving towards the most efficient point of resource allocation, Identifying the three- Stage I, Stage II, and Stage III rests on diminishing returns and the resulting relationships among TPP, MPP and APP.

6.7.1 Stage I

Stage I is that portion of production function having an increasing average physical product and a marginal physical product greater than the average physical product. The greatest technical efficiency the highest per unit output (y/x) occurs when the average physical product is highest (Point B, Figure 6.4). That occurs at the end of stage I of production. The greatest addition to total output (TPP) from one unit of the variable input occurs when the marginal physical product is highest (Point A, Figure 6.4). It is easy to conclude that the best level of production may be at either point A or B.

In stage I the MPP is greater than APP, MPP reaches its maximum, and TPP increases at an increasing rate.

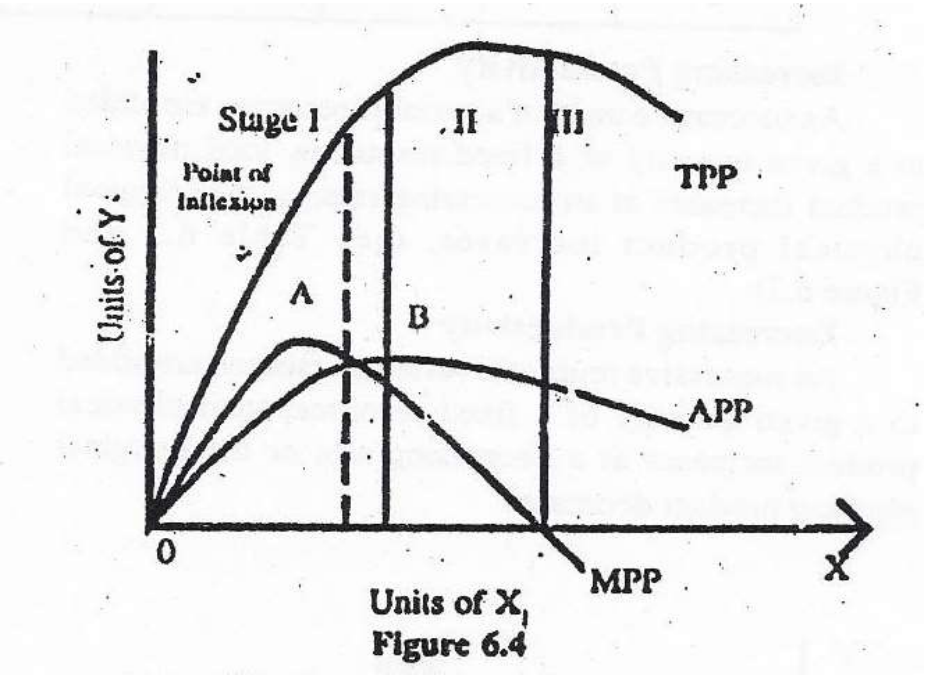


Figure 6.4

6.7.2 Stage II

Stage II is that position of the production function when MPP is less man APP, (but greater than zero), and TPP is still increasing. Stage-H ends when additional input results in a decrease in output.

6.7.3 Stage III

Stage III begins at that point (TPP is greatest and MPP = 0). Profits can never be maximized in stage III because the use of additional inputs causes a decrease in output. It should always, be remembered that profits cannot be maximized in stage I and III. A producer interested in maximizing profits must produce in stage II.

It will always pay to use more of the variable resource, X_1, as long as the increased output, y, from the added X, is worth more 'than the cost or the added X_1 used to produce it. This has reference to the fundamental concepts of marginalism. The criteria for profit maximization are that change in output multiplied by price of output should be equal to change in input multiplied by price of input.

$$\frac{\Delta y}{\Delta x_1} = \frac{Px_1}{Py}$$

or

$$\frac{\text{Change in output}}{\text{Change in input}} = \frac{\text{Price of input}}{\text{Price of output}}$$

The profit maximization formula can be stated more simply if we multiply each side by the py, then'

MVP = PX,

(Where MVP = marginal value product). The formula for profit maximization, MVP =PX_t, is the criterion or guide to determine the best level of production.

To present the input-output relationship we made several assumptions Also, to present the relationship as simply as possible certain special situations were ignored. Some of which we shall consider.

Profits are maximized when MVP = PX_1 Though MVP = PX_1 is a necessary condition for profit maximization, the sufficient condition is when there are diminishing marginal returns. As long as the MPP is greater man the APP, the APP will increase. Without knowing the prices of Y or X_1, it can be concluded that profits will increase, while APP is increasing.

The decisions on “how much input to use” and “how much product to produce” are not separate and different decision. Though they are the same, yet they have very different advising problems, depending on the stage of production. Each farmer’s resource problems are unique when they arc in stage II. Only for farmers in stage I general recommendations are useful. If a producer is in stage III, a recommendation is fairly straight forward use less input or produce less product.

Both PX_1 and Py are necessary to determine MVP = PX_1. Any change in the pace of either the product or the input will give a new optimum resource level. If the Py goes up, it pays to use more of X_1, if the Py falls, the amount of X_1 used must be cut back. If the PX_1 falls, use more X_1, if PX, increase use less.

6.8 Input-Input Relationship (How to Produce)

As already discussed, the production function indicates the; alternative combination of various inputs which can produce a given level of output. While all these combinations are technically efficient, the final decision to employ a particular input combination is purely an economic decision and rests on costs. A farmer should choose that combination which costs him the least. We can modify our basic production function y = f (X_1/X_2,.....X_n), to reflect the addition of a second, variable resource, y = f (x_1, x_2/x_3.....x_n), where x_1 and x_2 are the variable resources and x_3..... x_n are the fixed resources. Out task is to determine the most profitable amounts of x_1 and to combine with x_3..... x_n to produce a given level of output. All the assumptions of the input-output relationship except the single variable resource assumption will hold. In the input-input relationship there will be two variable inputs produce a given level of output.

To aid our thinking in this regard the concept of an iso-product curve which shows all the possible combinations of two variable resources that can produce the same amount of a product.

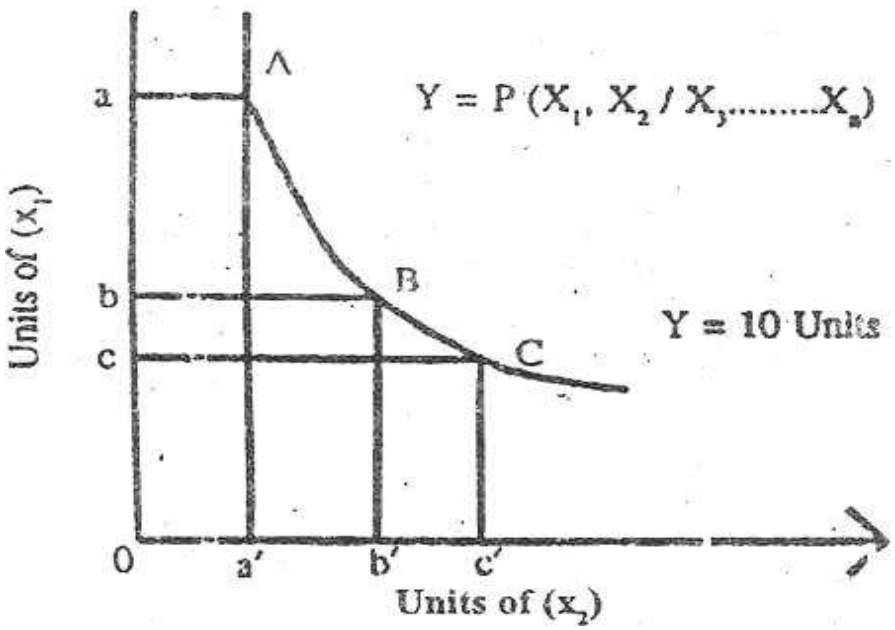


Figure 6.5 The Iso-product Curve

Figure 6-5 illustrates the iso-product curve when y = 10 units. Every point on y (A, B, C or any other point) represents 10 units of y that can be produced with varying combinations of units of (x_1) and (x_2). The marginal rate of substitution (MRS) refers to the amount a resource that can be decreased as use of another resource is increased by one unit without affecting the output. Algebraically stated:

$$\text{MRS of } x_2 \text{ for } x_1 = \frac{\Delta x_1}{\Delta x_2}$$

The marginal rate of substitution is always stated as a negative; the iso-product curve always slopes downward and to the right. A diminishing marginal rate of substitution is apparent when successive equal units of a variable input (x_1) are substituted for another variable input (x_2) and the successive equal units of the substitute (x_2) gradually replace less and less of the original variable input (x_1).

As has already been mentioned that the final decision to employ a particular input combination is purely an economic decision and rests on costs. An entrepreneur should choose that combination which costs him the least.

To aid our thinking in this regard, economists have developed the concept of iso-cost (equal cost) line, which shows all combinations of inputs x_1 and x_2 that can be employed for a given cost (in rupees) or the iso-cost line represents all possible combinations of two variable inputs

that can be brought with a given amount of money.

The slope of the iso-cost line is determined by the price ratios. Any change in the prices results in a different slope (see Figure 6.6).

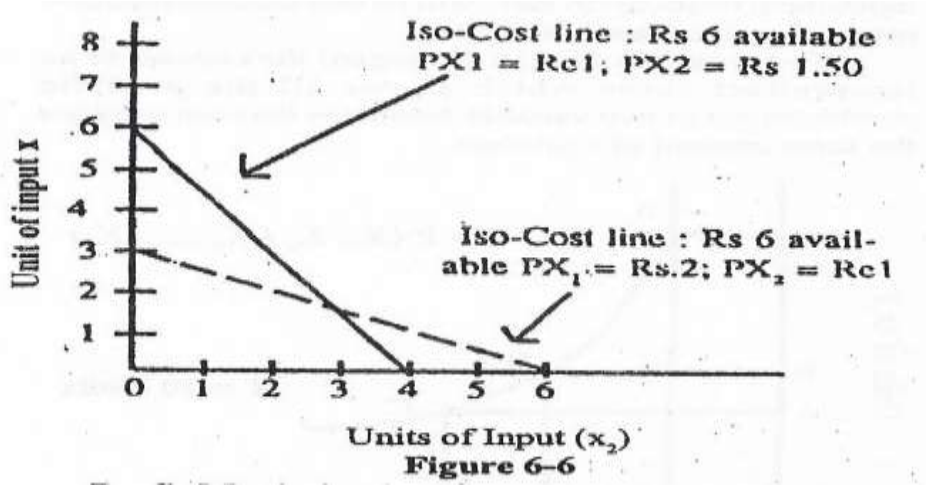


Figure 6-6

6.8.1 Profit Maximization Criterion

If our objective is to maximize profits at a given level of output then cost minimization is identical to profit maximization. We will seek the least cost combination of resources to produce the given level of output. To determine the least cost combination, we need to know the price of each factor and the marginal rate of substitution between factors. When that is known, we can determine the profit maximizing combination by finding the point where the marginal rate of substitution is equal to the price ratios.

$$\text{MRS of } x_2 \text{ for } x_1 = \frac{Px_2}{Px_1}$$

or

$$\frac{\Delta x_1}{\Delta x_1} = \frac{Px_2}{Px_1}$$

By connecting the input combination points we can construct an iso-product curve. Using the least cost we can construct the iso-cost line. The point of tangency shows us the optimum resource combination.

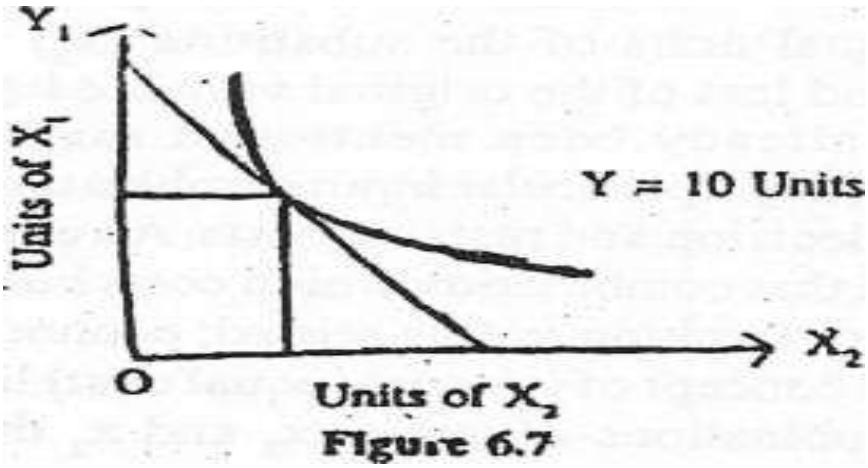


Figure 6.7

The least concept has a wide range of applications. Understanding it well enough to make effective use of it in agricultural production is well worth your time and effort. Any time a manager is confronted with resource allocation decisions, he will find the factor- factor principle basic to his decision making.

When there is a change in the price relationship between two inputs, there will be a new least cost combination of the two. The cheaper, one will be substituted for the more expensive one until once again the MRS equals the inverse of the price ratio.

6.9 The Product-Product Relationship (How to Combine Enterprises)

We have provided a basis for answering the first two of the three basic production questions, How much to produce? How to produce the product? What to produce? The third, “What to produce.” is ¿he topic of this section when producers desire to maximize profits; they try to find those lines of production that add most to profits. Their resources will be allocated to the enterprises that give the highest returns. Our objective here is to provide an understanding of how to determine the combination of enterprises that maximize profits.

6.9.1 The Production Possibility Curve

Just as two analytical tools i.e., (a) iso-quants and ‘(b) iso-cost lines are required for determining the optimally conditions regarding factor-factor relationship. Similarly, a set of two tool; of analysis namely (a) the production possibility curve and (b) the iso-revenue lines are needed for determining the optimality conditions concerning product-product relationship. A production possibility curve represents all possible combinations of two products y_1 und y_2) that can be produced with a given amount of resources.

Table 6.4
Combinations of output from Two Enterprises (y_1 and y_2) when 100 Units of Input are available

Units of Output	
Y_2	Y_1
25	0
23	5
20	10
16.5	15
10	20
0	25

The production possibility curve using 100 units of input has been illustrated in Table 6.4. The 100 units will produce any of the combinations of y_2 and y_1 listed. Such enterprise combination data can be plotted on a diagram, Figure 6.8. Here we will plot y_1, the output being substituted in equal increments for y_2 on the horizontal axis and y_2, the output being substituted out of the business, on the vertical axis. Each of the output combinations can be plotted and a line connecting the points gives us a production possibility curve.

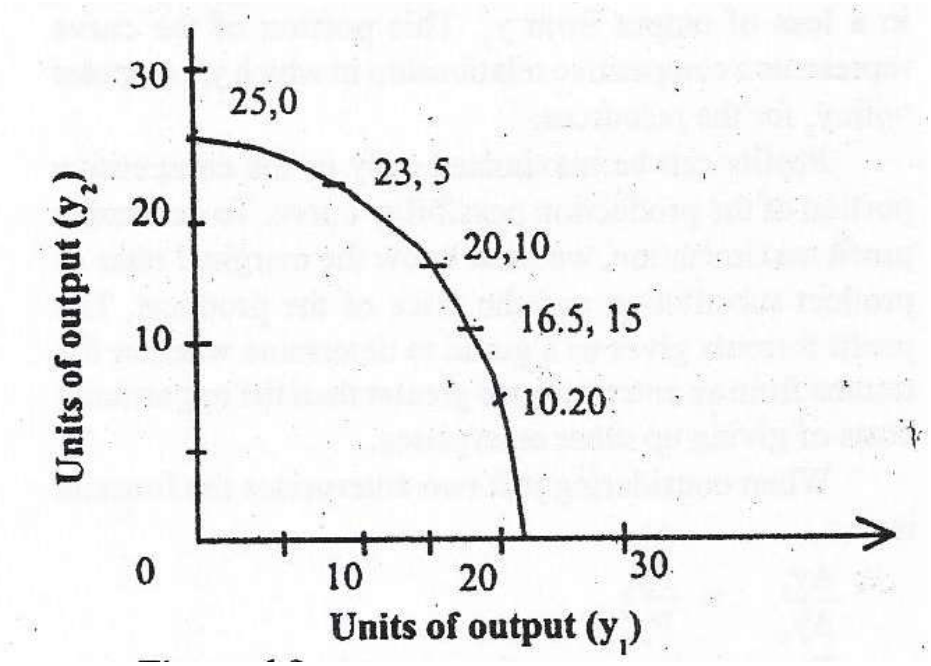


Fig 6.8 The Production Possibility Curve

An iso-revenue line represents all possible combinations of two products that, if sold, will give a fixed amount of revenue. For example, if the Py_1 = Rs2 and Py_2 = Re.l, then a Rs. 60 income can be obtained by selling:

Units of Y_1	Units of Y_2
0	60
10	40
?0	20
30	0

When those data were plotted in Figure 6.9, the straight line connecting y_2 = 60 and y_1 = 30 is the iso-revenue line. The slope of this line is determined by the price ratios, in this case Rs 2, Re 1. The iso-revenue line is very similar to the iso-cost line; both indicate a constant value.

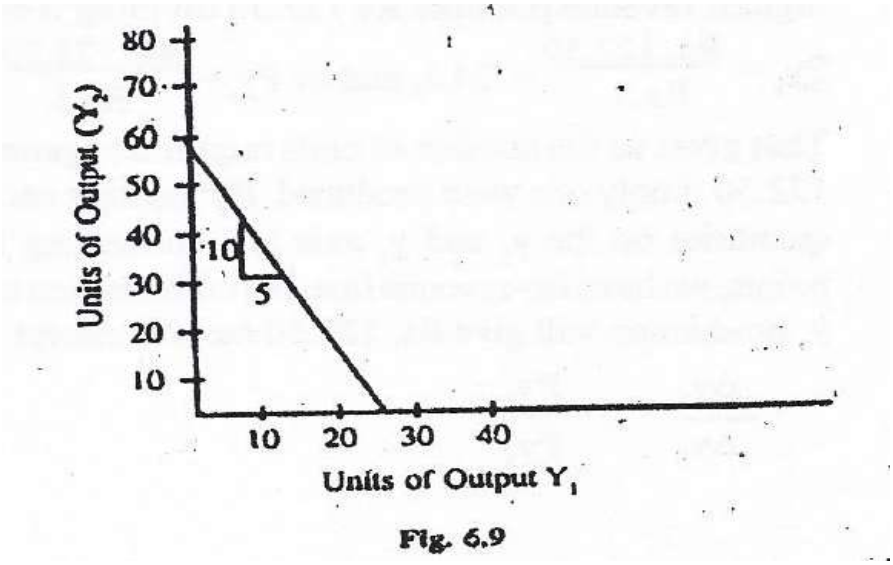


Fig. 6.9

Opportunity cost of is potential income foregone from a resource as a result of using that resource for another line of production. Equi-marginal returns refer to allocating resources so that the last unit of resources gives the same returns from each product produced.
The idea algebraically can be expressed as follows:

$$MVPY_1 = MVPY_2 \ldots\ldots\ldots MVPY_n$$

This tells us that we have allocated x_1 among all our enterprises so that the Value of the output resulting from using one more unit of x, would

be the same for any time of the enterprises, if there were unlimited resources, that would be true when the $MVPY_1 = MPPY_2 = ...MVPY_n = Px_1$. When resources are limited the equi-marginal returns will occur before MVPY = PX.

The marginal rate of product substitution is the amount one product (y_2) changes in quantity when the other product (y_1) is increased by successive equal units, when total resources used remains constant. The MRPS is computed by using this formula:

$$\text{MRPS of y for } y_2 = \frac{\Delta y_2}{\Delta y_1}$$

The data from Table 6.1 are presented graphically in Figure 6.10. The MRPS gives us the slope of the production possibility curve.

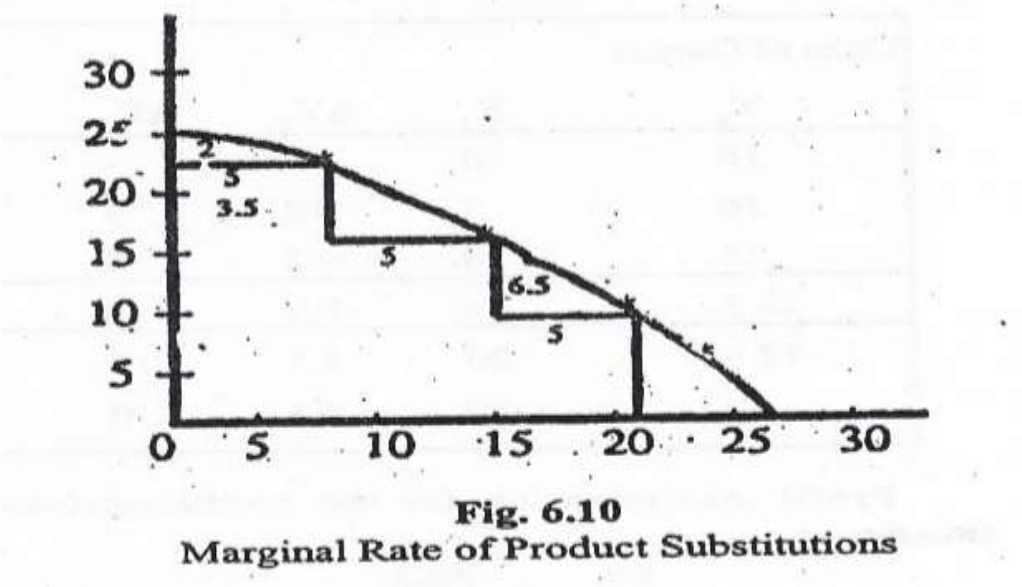


Fig. 6.10
Marginal Rate of Product Substitutions

6.9.2 Types of Product-Product Relationships

When Substituting enterprises within a business, the enterprises may help, compete or have no effect on each other. When resources are taken from one enterprise and placed in another and output of both increases, the relationship is said to be complementary. When enterprises have no effect on one another, there is a supplementary relationship. Enterprises compete when the addition of one reduces the output of the other.

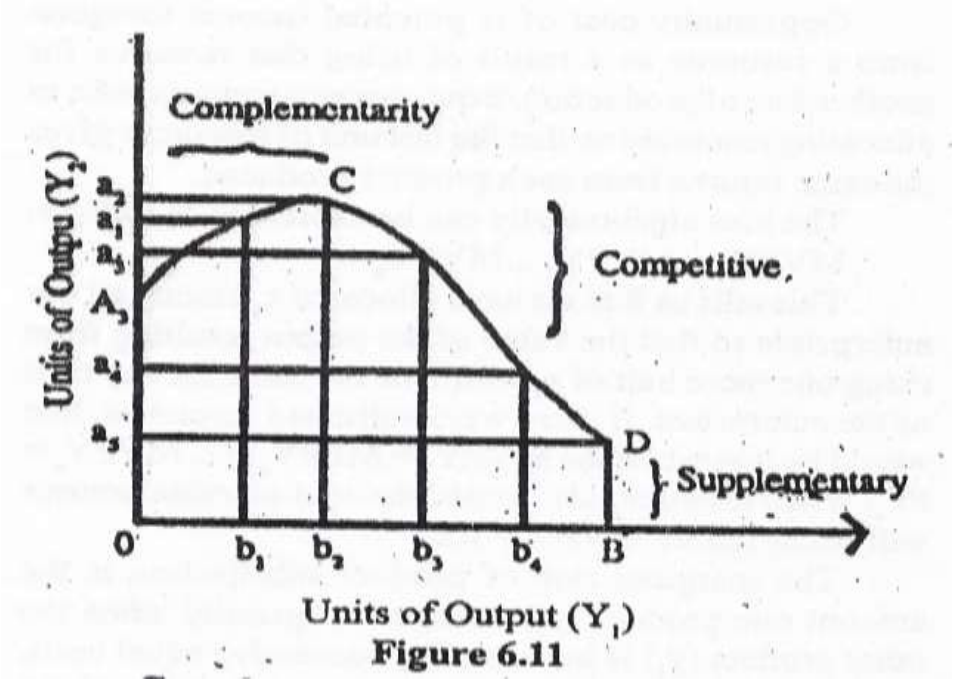


Figure 6.11

6.9.3 Complementarily, supplementary and Competitiveness among Products

Between A and C, a shift of resources from y_2 to y_1, results in an increase in output of both y_1 and y_2. This portion of the curve represents a complementarily between y_1 and y_2. The supplementary relationship exists between B and D as we can shift some resources to produce y_2 without giving up any y_1, Oa_5 units of y_2 can be produced. Between C and D a shift of resources from y_2 to y_1 results in a loss of output from y_1. This portion of the curve represents a competitive relationship in which y, competes with y_2 for the resources.

Profits can be maximized only in the competitive portion of the production possibility curve. To determine profit maximization, we must know the marginal rates of product substitution and the price of the products. The profit formula gives us a guide to determine whether the returns from an enterprise are greater than the opportunity costs of giving up other enterprises.

When considering just two enterprises the formula is:

$$\frac{\Delta y_2}{\Delta y_1} = \frac{Py_2}{Py_1}$$

For more than two enterprises if can be etates.

$$\frac{MVPZ\,(Y_1)}{Px} = \frac{MVPX}{Px} = \frac{MVPX\,(yn)}{Px}$$

Table 6.5 Profit Maximization for Two Enterprises when the Py_1 = Rs 3 and Py_2 = Rs 5

Units of Output				MRPS	Revenue		Total
Y_2	Y_1	ΔY_2	ΔY_1	$\Delta Y_2/y_1$	Py_2y_2	PY_1y_1	
18	0	-	-	Rs. 90.00	Rs. 0.0	Rs. 90.00	
20	5	+2	5	2/5	100.00	15.00	115.00
18	10	-2	5	2/5	90.00	30.00	120.00
15.5	15	-2.5	5	-2.5/5	77.50	45.00	122.50
12.0	20	-3.5	5	-3.5/5	60.00	60.00	120.00
0	20	-12	0	-12/0	0.00	60.00	60.00

Profit maximization for the product-product situation is

Py_1/ Py_2 = Rs. 3/Rs. 5

by looking down MRPS column, between -2.5/5 and - 3.5/5, there must be a point where Rs.3/Rs. 5 = -3/5. Using the data in Table 6.5, we have prepared a diagram, Figure 6.12 illustrating profit maximization. The production possibility curve gives us the MRPS, and the iso-revenue line gives us the price ratio. The point where the two are just tangent fulfills the profit maximization criterion and tells us the most profitable combination of the two enterprises.

The iso-revenue line was determined by taking the highest revenue possible Rs 122.50 dividing it by the

$$Py_2 = \frac{\text{Rs. } 122.50}{\text{Rs.}5} = 24.5, \text{ and by } Py_1 = \frac{\text{Rs. } 122.50}{\text{Rs.}3} = 40.8.$$

That gives us the number of units required to generate Rs. 122.50 if only one were produced. By locating each of the quantities on the y_2 and y, axis and connecting the two points, we have iso-revenue line. No combination of y_2 and y, production will give Rs. 122.50 income except where

$$\frac{\Delta y_2}{\Delta y_1} = \frac{Py_1}{Py_2}$$

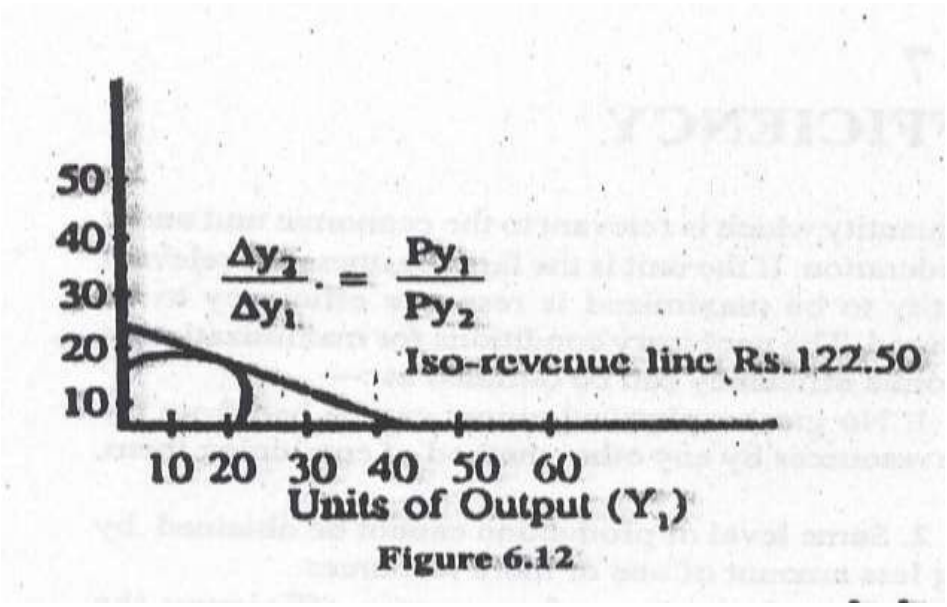


Figure 6.12

Profit Maximization for Two Enterprises when the Py_1 = Rs. 3 and Py_2 = Rs. 5.

Exercise 6.1

Q1. What are the different stages of production? Explain each one in detail?

Q2. Explain input-input relationship?

Q3. What do you mean by Production function?

6.10 SUMMARY

Production is concerned with the supply side of market. In the production process, various inputs are transformed into some form of output. Combining seed, fertilizer, labour, equipment and land to produce wheat is an example of production. A production function expresses the relationship between the amount of various inputs used in the production process the level of output is called a production function, for example, a farmer growing wheat combines soil, fertilizers, pesticides, water, seeds, labour and capital (farm equipment, etc.) to yield a crop of wheat. Some of these inputs may be fixed in supply: the land available, and the existing amount of capital.

Economists have found in studying the production function, that it can be broken into three separate parts, each with its own characteristics. The reason for this division lies in the fact that it helps us in moving towards the most efficient point of resource allocation, Identifying the three- Stage I, Stage II, and Stage III rests on diminishing returns and the resulting relationships among TPP, MPP and APP.

Input-input relationship deals with how to produce with the aim of maximizing profits. The product- product relationship deals with the combining of Enterprises.

6.11 GLOSSARY

- **Production Function:** a mathematical way to describe the relationship between the quantity of inputs used by a firm and the quantity of output it produces with them. If the amount of inputs needed to produce one more unit of output is less than was needed to produce the last unit of output, then the firm is enjoying increasing returns to scale (or increasing marginal product). If each extra unit of output requires a growing amount of inputs to produce it, the firm faces diminishing returns to scale (diminishing marginal product).
- **Diminishing Returns:** The fall in the marginal product of a factor or factors that eventually occurs as input of that factor rises, holding the input of at least one other factor fixed, according to the Law of Diminishing Returns.
- **Increasing Productivity:** As successive units of a variable resource are added to a given quantity of fixed resources, total physical product increases at an increasing rate, or the marginal physical product increases.
- **Decreasing Productivity:** As successive units of a variable resource are added to a given quantity of a fixed resource total physical product increases at a decreasing rate or the marginal physical product decreases.
- **Constant Productivity:** As successive units of a variable resource are added to a given quantity of a fixed resource, total physical product increases it a constant rate or the marginal physical product remains constant.
- **Production Possibility Curve**: is the locus of various combinations of two goods which can be produced with the help of a given factor of production when fully employed.

6.12 Answers to Self-check exercises

Exercise 6.1

Answer 1. Refer to Section 6.7.

Answer 2. Refer to Section 6.8.

Answer 3. Refer to Section 6.2.

6.13 SUGGESTED READING

1. John Sjo (1976): economics for Agriculturist Grid, INC. Ohio.

2. Martin Uptron (1976): Agricultural Production Economics and Resources Use Oxford University Press.

6.14 TERMINAL QUESTIONS

Q1. With the help of table and diagram explain Iso-Product curve?

Q2. Examine the different types of Product- product Relationship?

UNIT–07

EFFICIENCY IN RESOURCE USE

Structure

7.0 OBJECTIVES

After going through this unit you will be able to:

- Explain Technical Efficiency
- Explicate Economic Efficiency
- Elucidate the Input Output Relation and Resource Allocation
- Explains how the selection of optimum input and output levels by done by the producer

7.1 INTRODUCTION

Several forces determine how resources of a farm are used or should be used. Two of the most important of these are (i) the technical conditions of production and (2) the structure and relationship of market prices. Technical conditions of production refer to the nature of the relationship between resources and products. The quantity of a single resource or of all resources to be used by a farm depends as much on the nature of the production function as on the level and structure of prices. The other relationship in farm production involves the allocation

of given resources between competing enterprises. It is termed the product-product relationship. It again refers to the choice between two or more alternatives. Here, we have discussed there aspect in detail.

7.2 TECHNICAL EFFICIENCY

Most Physical scientists concern themselves with technical efficiency. Technical efficiency may or may not be identical with economic efficiency. This type of efficiency is measured by magnitude of the physical ratio of product output to factor output; the greater the ratio, the greater the degree of technical efficiency. There are two ways to measure technical efficiency in agriculture

1. Workout the magnitude of physical ratio of product output to the quantity of the variable input used for this production. Such concept is often used in animal husbandry where production of maximum milk, beef, chicken, wool, etc. Is concerned, yield per unit of the variable factor of production like feed. Thus, such efficiency is maximized where the average product is the highest.
2. Instead of working out the ratio of the product output to variable input, some physical scientists are more interested in obtaining the ratio of product output to input of fixed factor. Thus the interest concentrates around obtaining maximum yield per hectare, wool per sheep or milk per cow. Such efficiency is maximized generally at a higher level of variable input as compared to that used in maximizing the technical efficiency with respect to the use of the variable input.

This type of “technical” efficiency is maximizing where total product (obtained for one hectare of land or one dairy cow) is at its maximum. Agronomists and some other plant scientists generally treat such a concept of technical efficiency as their goal.

7.3 ECONOMIC EFFICIENCY

Economic efficiency is denoted when resources are used in a manner to maximize the particular objective or end quantity which is relevant to the economic unit under consideration. If the unit is the farm business the relevant quantity to be maximized is resource efficiency to be measured. The necessary conditions for maximization of economic efficiency can be outlined as:—

1. No greater physical output can be had from the same resources by any other method of combining them, and
2. Same level of production cannot be obtained .by using fewer amounts of one or more resources.

For maximization of economic efficiency the sufficient condition can only be defined when the input and output prices are employed for maximization of profits. The necessary condition for profit maximization can be stated in the form of following equations:

$$\frac{\text{Price of factor}}{\text{Price of product}} = \text{Marginal product of resource} \quad \ldots\ldots(1)$$

$$\frac{Px}{Py} = \frac{\Delta Y}{\Delta x} \quad \ldots\ldots (2)$$

These two equations state the same thing; since Px denotes the price of factor x1 while Py denotes the price of product y; and

of product y; and $\frac{\Delta Y}{\Delta x}$ the change in output of y for each 1-unit change in input of x, denotes the marginal product of each unit of the resource. Since $\frac{\Delta Y}{\Delta x}$ the

marginal product of the resource,, is indicative of the rate of change in product Y for each unit change in factor x, profits are at a maximum when the ratio of prices is inversely equal to the ratio at which resource is trans formed in to product; as equation 1 and 2 indicate, the price of the factor is always 'over' the price of the product while the change in product is always 'over' the change in factor.

7.4 INPUT OUTPUT RELATION AND RESOURCE ALLOCATION:

The input-output relation and the three stages of production are presented in the figure given below:

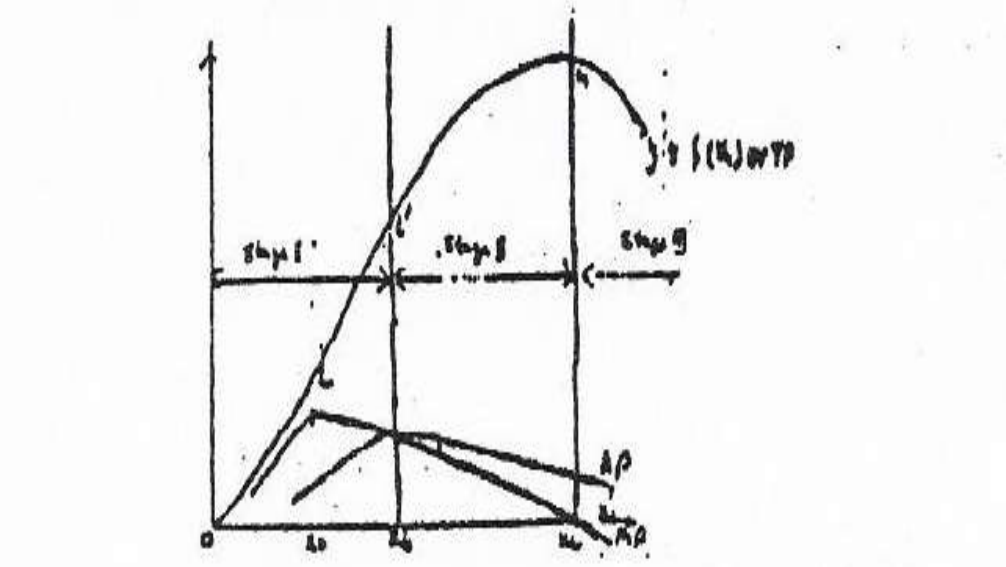


Fig. Stages of production and rational resource use.

In the above figure, stage I ranges from a zero input to a xb input of the variable factor. In other words, stage I extends to the input which results in a maximum average productivity of the variable factor; the maximum point on the average curve defines the end of stage I. Stage II extend from the input denoting a maximum average product, xb units of input in the figure, to the one defining the maximum total product, xc units of input in the figure. In other words, all resource inputs between (i) the one consistent with maximum product per unit of variable factor and (ii) the one consistent with a maximum product from the fixed factor, fall in stage II, Stage III includes all inputs which have a negative marginal product and extends over the entire range of declining total output.

7.4.1 Irrational Resource Use in stage I:

Any level of resource use falling in stage I, is uneconomic. Returns, measured in profit to the individual or in social product, can be increased by applying more quantity of variable inputs to the factors which are otherwise considered fixed. The average productivity of all pervious inputs of the variable resource increases continuously as additional among of variable resources are added within stage I. As production per unit of fixed factor is pushed to the limits of stage I, a greater product is forthcoming from the fixed factors as well as from each unit of the variable factor. The farmers can obtain more product from the same resources by rearranging the combination of “fixed” and variable factors within this stage. A greater product from given resources can be attained by discarding or leaving idle part of the factor which was otherwise considered fixed.

7.4.2 Stage II and Irrational Resource Use:

Stage III is also an area of irrational production, and, as in stage I, resource can be left idle with the effect of increasing total product The only difference is that now it is the variable factor rather than fixed resource which we withdraw from use. If the product has any price or value whatsoever, economic return always must increase as resources are rearranged within stage III. Even if the variable factor is a free agent of production, a greater economic return can always be had by using less of it. Rational Production and Resource Allocation: Stage II is the only economic area of production. .The rate at which variable factors are applied to fixed factor can never fall outside of this stage if economic return is to be maximized. However, the exact intensity of production which is economic cannot be specified within stage II until prices and costs or other choice indicators can be specified. Thus, irrational production can be defined as it relates to profit maximization.

7.5 SELECTING THE OPTIMUM LEVELS OF THE INPUT AND OUTPUT

Farmer as a manager often has to decide: how much fertilizer to use per hectare? How much seed or chemicals, to apply per hectare? How much ‘concentrates to feed per animal for milk production? These are only a few examples of many questions that have to be answered for obtaining maximum profits on the farm. In general, the farmer needs to know the quantity of a variable input that should be applied to a given quantity of the fixed resources on his farm. People often talk about applying the quantity of variable input that maximizes the yields rather than the profits. With due consideration to economic point of view, the optimum level of a variable input is the one that maximizes profits and not the one that maximizes yield. However, in special type of economics while the objective may be maximization of output, rather than profits, yield maximizing level of input use would also be the optimum level.

The decision making rule under limited capital funds would thus be kept on increasing the level of production by using more and more quantities of variable input as long as the added return (Marginal Return) is greater than the added cost. Eventually, under the diminishing returns, the optimum level of variable input would be one where:

MVP=MIC, i.e., where the marginal value product due to the additional (last) unit of the variable input is just equal to the marginal input cost, i.e., the cost of that unit of the input. This is, however, only the necessary condition for determining the profit maximizing level of the variable input. Sufficient condition for profit maximization also requires that the MVP is falling. Under perfect competition, as obtained generally in agriculture, MIC remains constant irrespective of the level of input use and is equal to its per unit price or cost.

If the per unit price of output and per unit cost of the variable input were Rs. 1 each, then the principle just described can be used to work out the optimum level of input-use and optimum level of output to be produced from the hypothetical data presented in Table. Such an optimum would occur when 40 units of x are applied and the total product is 46. The reader may answer himself the why part of the problem.

Table: Variable Input (x,) and Corresponding levels of TPP APP and MPP

No of units of variable inputs X_1	ΔX_1	Total Physical product (TPP)	ΔY	Average Physical product (APP) Y/x_2	Marginal Physical (MPP) $\Delta Y/\Delta X_2$
0		0		-	-
10	10	10	10	1.0	1.0
20	10	24	14	1.2	1.2
30	10	36	12	1.2	1.2
40	10	46	10	1.15	1.15
50	10	50	4	1.0	1.0
60	10	51	1	0.85	0.85
70	10	51	0	0.73	0.73
80	10	49	-2	0.61	0.61

The foregoing principle when expressed in other terms-would mean profits are maximized at a point where the; marginal revenue (MR) is just equal to tie marginal cost (MC). That is, the, problem has now been looked from the angle of output rather than from the point of view of input use. However, the answer would be same from both the approaches, because once the level of one, cither input or output, is determined the level of the other immediately becomes known. Thus the profits are maximized where the last unit of output adds same-to the total revenue as to the total cost. Thus, mathematically, point of profit maximization is where: where MC stands for marginal cost and MR stands for marginal revenue. The reader is warned her not to get confused with MIC and MC and MVP and MR. The above condition of profit maximization is only the necessary condition and it assumes a well behaved production function where the rate of rise in MC is greater than that of MR. Geometrically, this sufficient condition of profit maximization is that marginal cost curve should cut the marginal revenue curve from below.

The judicious decision making for carrying out actual production requires the fulfillment of an additional condition. This condition requires that the total revenue (TR) must be greater than the total variable cost (TVC). Mathematically we can state the condition as: TR > TVC. If we divide both TR and TVC by output level (Y), we can also re-state the condition as: AR>AVC, where AR and AVC are the average revenue and average variable cost. In the short run when producer does not have any control over the fixed costs, the only costs to be considered are the variable costs which can be altered, thus, this is a relevant principle to be followed in the short run, i.e., to carry out production, if the producer expects to make enough money to cover the variable costs, liven when TC > TR > TVC, the wisdom lies in carrying out production, rather than closing the production plant, as it ensures the minimization of loss in the

short run. The loss would be higher if the production is not carried out at all because of the very nature of the fixed costs which need to be paid irrespective of the fact whether production is carried out or not. In the long run, however, when all the costs become variable over which the fanner can influence his control, this condition reduces to TR > TC or AR > AC.

So much about the principle to be adopted for deciding the optimum level of input use when the capital availability if unrestricted and diminishing returns are observed to operate. What then if constant or increasing returns prevail? How to decide about the optimum use of the variable input? The principle to follow is the same as in case of diminishing returns, i.e. go on applying the variable input to the fixed inputs till MR > MC or MVP > MIC Thus, the limit to production can occur in case of increasing returns only if diminishing returns are encountered, which eventually may be due to the management factor. In case of constant return, it is as profitable to use the first unit of the variable unit as it is to use any unit. All the units thus are equally profitable or unprofitable. Thus, either it pays or does not pay to use the variable resource. Following the principle MC = MR, we keep on adding to the variable input, if it is profitable to use and the limit to production can be reached only when diminishing returns start operating.

When the capital funds are limited, it may not be possible to expand the use of the variable resource to a level where MC = MR. In such a case the limited quantity of the variable resource should be applied to a reduced level of the fixed resource, if it is possible to do so as may be the case with fertilizer application to land fixed at one hectare.

7.6 INPUT OUTPUT RELATIONSHIP THE CASE OF MORE THAN ONE VARIABLE INPUT

More complication can be brought about in the input-output relationship by allowing two or more factors of production to vary simultaneously in the production of a single product. Let the product be Y and factors of production being x, x_2,……x_3.

The decision making is still done by using the same principle as discussed for one variable input-one product relationship earlier. That is, keep on adding more and more of each of the variable input x_1, x_2……X_n,. so long as marginal value product due to each one of them, MVP_1, MVP_2……..MVP_n, is greater than their corresponding marginal factor cost, MIC_1, MIC_2……MIC_n. Mathematically, when the capital funds are not limited, the profit maximizing level of each of the factors of production, X_1, X_2……X_n, can be worked out just by equating the following, i.e.,

$$MVP_1 = MIC_1,$$
$$MVP_2 = MIC_2,$$
$$MVP_n = MIC_n$$

But can we proceed as above? The answer is yes provided we are careful to work out the partial derivatives of total value product with respect to x, x_2,.....x_n, i.e., MVP_1, MVP_2 and MVP_n.

7.7 ENTERPRISE RELATIONSHIPS AND THE OPTIMUM COMBINATION OF PRODUCTS

1. Joint Products: Examples of joint products on a farm are cotton and cotton seed, wheat grain and bhusa, butter and buttermilk, etc. In the short run there is no chance of substituting one for another. For a given breed of sheep the production between wool and lamb yield cannot be changed. Similarly, the wheat grain and bhusa ration for a given variety would be in the same range, thus for all practical purposes, the two products with such a relationship are generally treated as 'one from the economic analysis point of view. The yields of such two products can be added together in value terms after multiplying with their respective prices. The production, possibility curves for such products are represented by points as in fig. 7.1. The marginal rate of substitution of one product for another is obviously zero.

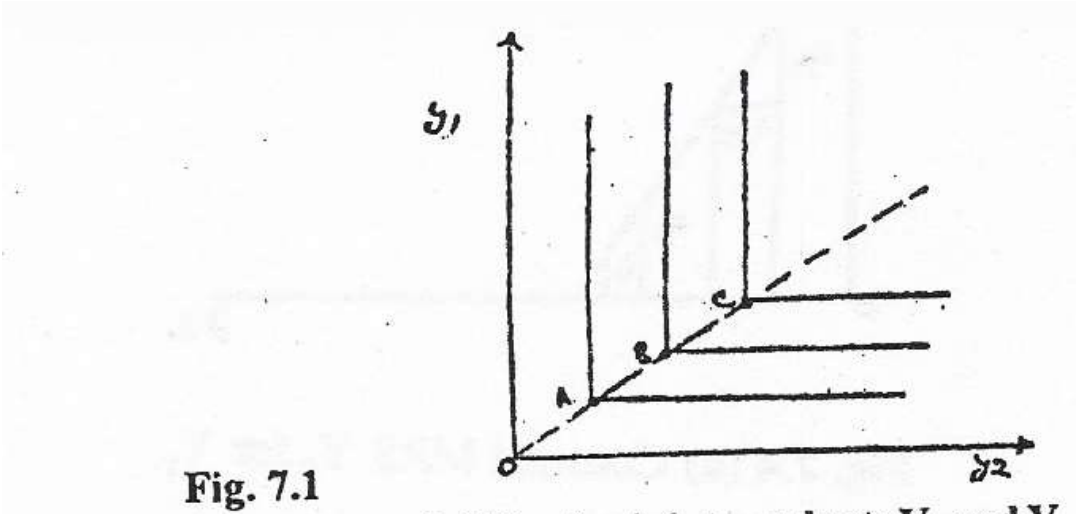


Fig. 7.1
Production possibilities for joint products Y_1 and Y_2

In the long run, with changés in the relative prices of two products, research efforts may result in such breeds and varieties which may yield higher quantities of the product with relatively more favourable price. For example, Mexican wheat's yield's much higher proportion of grains to bhusa as compared to the traditional wheat varieties.

2. Complementary Products: Two products are called complementary if a transfer of resources to one product (Y_2) and an increase its production are accompanied by an increase in the production of the other product (Y_2). Since the direction of change is the same ΔY for both the

products, hence ~i the marginal rate of substitution of Y_2 for Y, would bear a positive sign. A segment of the production possibility curve for such a relationship is given in Fig. 7.2. It means that as we move along AB from A, the production of both the products Y, and Y_2 would increase simultaneously with the level of resources remaining unchanged. The two products thus are beneficial to each other in the region A to B. Obviously, as the complementary relationship is pushed too far away from B, the products would start competing with each other resulting in a new relationship.

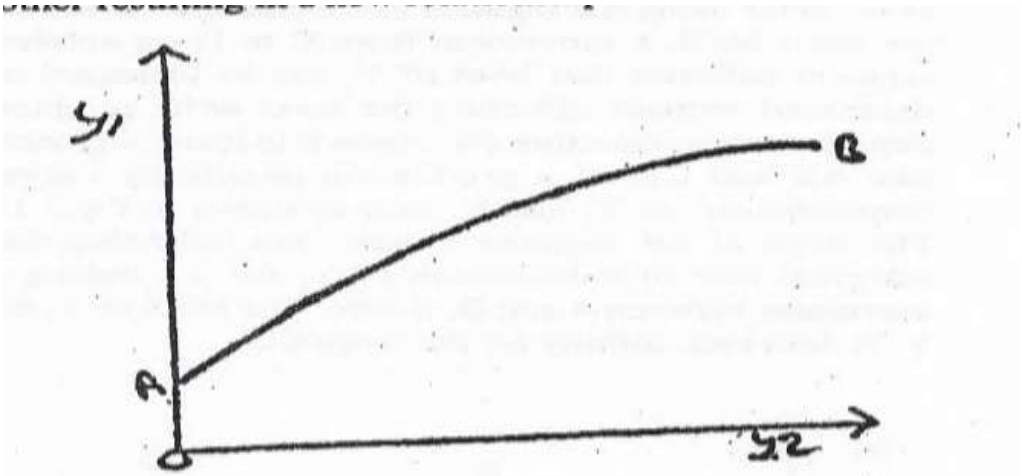


Fig. 7 2
Production possibility curve for complementary products Y_1 and Y_2

Decision making is rather very "simple". So long as Y, and Y, bear any positive prices, the rule is to produce at point B where the complementary relationship ends. Even if one of the two products has a zero price the decision making rule remains unchanged.

Crop rotations which include leguminous crops provide a good example of complementary relation during a given production period. Rising of oxen and crops on a farm in many parts of the country is yet another example of complementary relation. The reader is requested to write a few such examples for his state. A hypothetical example of such a relation is given below in Table.

Table: 7.3 Possible Product Combinations of Y_1 and Y_2 for 50 Units of Input, x — Complementary Relation.

Units of x, used in producing		Units of Output Produced	
X_1	X_2	Y_1	Y_2
50	0	20	0
40	10	22	4'
30	20	25	6
20	30	26	7

3. Supplementary Products: Two products are said to be supplementary, if for a given level of resources the production of one can be increased without affecting the production of the other. It is thus a border line case between competitive and complementary products. Supplementary relationship between Y_1 and Y_2 products has been shown by AB and CD segments of the iso resource curve in Fig. 7.3. Production of Y_2 can is increased without affecting the level of production of Y_1 as we move along AB segment of iso-resource curve. On the other hand, a movement from C to D on another segment indicates that level of ***Y_2*** can be increased or decreased without affecting the level of Y_2 product. Supplementary, therefore corresponds to linear segments like AB and CD of a production possibility curve, perpendicular' to Y_1 and Y_2 axis as shown in Fig.7.3 The slope of AB segment is zero, thus indicating that marginal rate of substitution of Y_2 for Y_1, during a movement between A and B, is zero. The MRS of Y_2 for Y_1 is, however, infinity for the range CD.

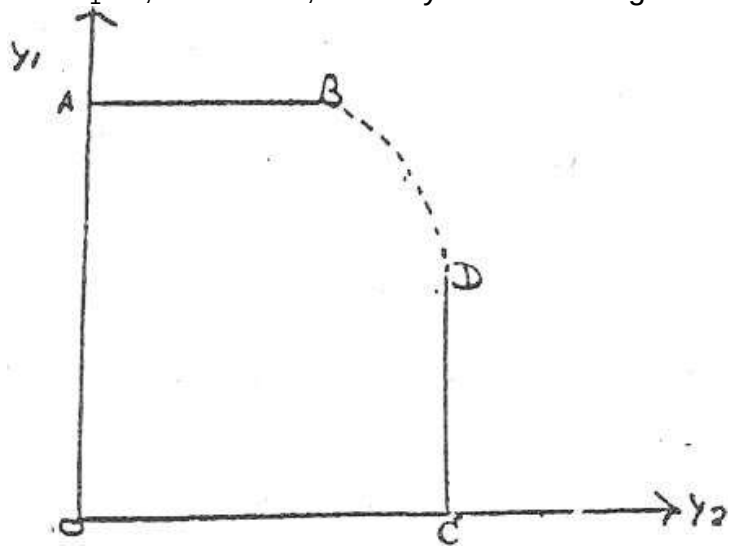


Fig. 7.3: Segments of production possibility curve corresponding to supplementary relation

It is a common experience that any supplementary relation, between two products, if carried beyond certain range results into a competitive relation. The decision making is very easy where supplementary relation exists. The rule consists in producing each product at a level where full utilization of the supplementary has been made. Thus, point B or are such points depending on the segment of production possibility curve. This rule would apply as long as both the products have some positive prices, however low the price may be.

There are several examples of supplementary in agriculture. Some of the good examples are found in those enterprises which can be introduced on the farm in order to use certain unused or unutilized resources like machinery and human labour. Such products often constitute secondary source of farm income. The utilization of unused-human labour on a certain farm to raise honey or a few poultry birds are such examples. It is also possible to have a non-farm supplementary enterprise for utilizing the unused farm labour during certain lean periods of labour use, e.g. some farmers work as carpenters or masons in some states of India during the lean periods of labour use on the farm in order to supplement their farm incomes.

3. Competitive Products: Two products are competitive if, with the given level of resources, an increase in the production of one results in the reduced level of production of the other. There are number of example of such products in agriculture and also every supplementary and complementary relation finally ends into this relation The MRS of one product for another say ΔY is negative as the changes in the level of production of the two products are in the opposite direction. Two competitive products can substitute for each other either at a constant, decreasing or increasing rate. The iso resource curves of production possibility curves for such products are drawn in Figs. 7.4 (a) & 7.4 (b).

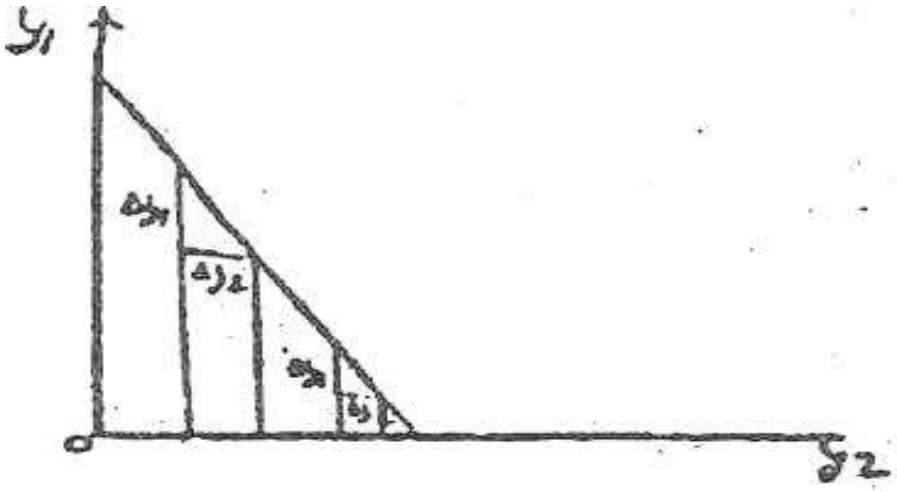


Fig. 7.4 (a) Constant MRS Y_2 for Y_1

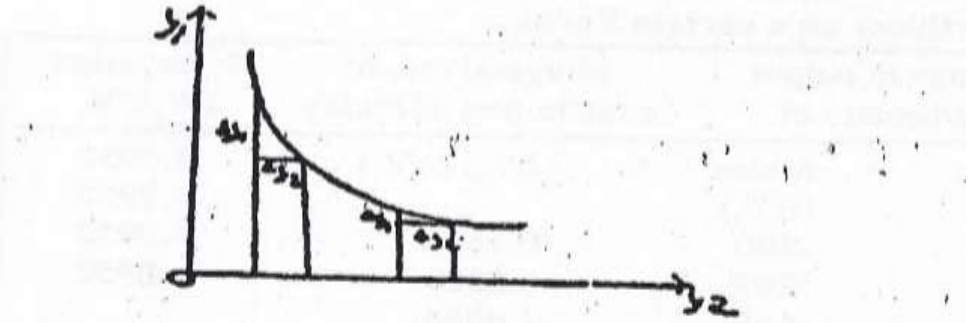


Fig. 7.4 (b) Decreasing MRS Y_2 for Y_1

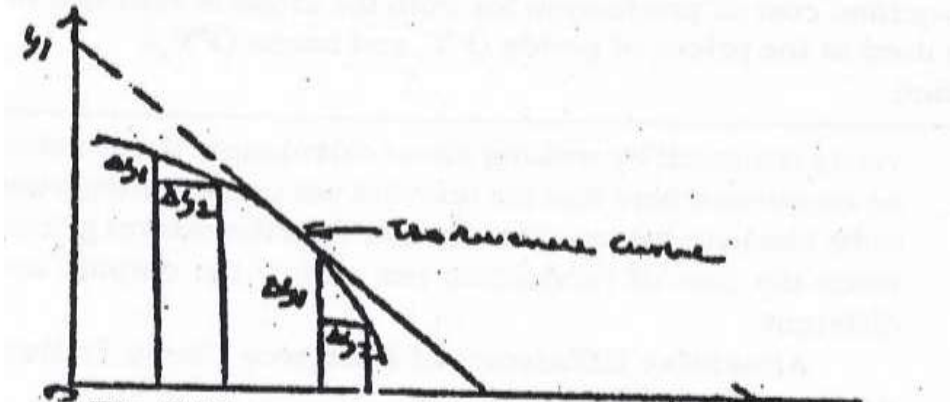


Fig. 7.5 Increasing MRS Y_2 for Y_1

Two products may substitute for each other at a constant rate as shown in Fig. 7.5. It is only a short period phenomenon because such a relationship may not hold for long. Two varieties of any crop and all crops grown on soil of equal productivity, with all inputs including land held constant, during any single crop season provide examples of this type of substitution. Economic decision making is rather easy, i.e. produce only one of the two products depending upon yields and prices.

Whenever decreasing MRS exists between two products (ignoring the negative sign before) as shown in Fig. every unit addition to one product, say Y_2, replaces less and less amount of the other product, Y,. The iso-resource curve is concave away from the origin and convex to the origin. This type of relation is quite rare. Here, the amount of resources used is so small that the products, Y, and Y_2, are being produced only, in the first stage of production.

It has already been discussed earlier on input output relation that no rational producer ever operates in the first stage of production so long as he can help it. None the less, examples of this type of increasing

MRS can be found on very small farms where capital is very limited and the production of none of the two competitive commodities can be extended beyond first stage of production. Decision making is simple in this case also, i.e., produce only one of the two products depending on relative yields and price.

Substitution at an increasing rate between two products (ignoring the negative sign of the MRS) is n common relationship. Such relationship always holds true when both the products are produced in the stage of decreasing returns. The production possibility or opportunity curve in this case is concave to the origin as shown in Fig. 7.5. Increasing amounts of Y, product must be sacrificed for each successive gain of one unit in the other product Y_2. As true with other type of opportunity curves, the slope of opportunity curve in figure measures the marginal rate of substitution of product Y_2 for product Y,. The concept of MRS can either be expressed as an average (are) or exact (point) concept on the same lines. Rational producer always produces in the range where products are competitive. The level of production of the two products depends on:

(i) Marginal rate of substitution between them, indicating as how they can be exchanged in production.

(ii) Price ratio, indicating their exchange in the market.

The profit is maximized where slope of production possibility curve is equal to that of an iso-revenue line, i.e.

$$\frac{\Delta Y_1}{\Delta Y_2} = - \frac{\Delta Y_2}{\Delta Y_2} \text{ or } \Delta Y_1, PY_1 = \Delta Y_2, PY_2$$

Thus, the decision making rules can be stated as follows: (i) It ΔY_1, $PY,>\Delta Y_1$. PY_2 more inputs should be diverse; towards the production of Y_1, thus producing less of Y_2.

(ii) If ΔY_1, PY, $< \Delta Y_2$, PY_2, more inputs should be used for producing Y_2, and thus production of Y, should be curtailed.

The application of the above economic principle in selecting an optimum combination of two products at a given level of resource has been demonstrated With the help of Table 7.6.

Table 7.6 Selecting an Optimum Combination of Paddy and Maize Enterprises at 160 kilogram

Availability of Nitrogen Fertilizer on a certain Farm.

Quantity of nitrogen used in Kg. per hec.		Output in kg. per hectare of		Change in output (kg/hectare of		Marginal rate of substitution of Puddy	Price ration PY_1/PY_2
Puddy	Maize	Puddy (Y_1)	Maize (Y_2)	Puddy (ΔY_1)	Maize (ΔY_2)	(ΔY_2) (ΔY_1)	1.0952
							1.0952
0	160	3710	3728	1310	-200	0.1526	1.0952
40	120	5020	3528	1010	205	0.2029	1.0952
80	80	6030	3323	500	-545	-1.0980	
120	40	6530	2778	230	-336	-1.4608	
160	0	6760	2442				

- Optimum combination of paddy and maize. Per quintal cost of production for both the crops is assumed to be the same and Rs. 115 and Ks. 105 per quintal have been used as the prices of paddy (PY_1 and maize (PY_2).
- Slope of Iso-revenue line is negative of the price ration.

The table presents data on paddy and maize yield 'responses as a result of varying levels of nitrogen application per hectare and the first four column of the table are the tabular representation for the production possibility curve. 'The given level of resource is 160 kilograms of nitrogen at which the optimum combination paddy and maize outputs is required to be selected.

Following the procedure described above, marginal rate of substitution of paddy for maize (MRS Y^1, or Y^2) is worked out at various combinations of nitrogen application. The marginal rate of substitution of paddy for maize can be observed to increase (in absolute sense) as more and more of the former is substituted for the latter. In this type of product - product relationship, therefore, for obtaining the optimum combination of two products we need to equate the MRS y^1 for y^2 wall the slope of the iso-revenue line which is just the negative of the ratio between per quintal price of paddy (py^1) and per quintal PY^1 price of maize (py^2), PY^1/PY^2. Such a combination is PY^2 given by 6530 and 2778 kg of paddy and maize in the table. It represents the most profitable combination of the two products at a 160 kg level of nitrogen use when the cost of production per quintal is assumed .to be the same for paddy and maize. All other combinations of outputs of two crops in the table give less profit. The reader should verify it himself by making direct calculation. It must also be mentioned here that the relevant per unit product price to be used are the net prices rather than the market prices when the cost of production per unit of the outputs are different.

7.8 Allocative Efficiency of Resource Use in Indian Agriculture

A question is often raised. How far in actual practice, is resource allocation perfect, in Indian Agriculture? In- other words, how far are the general conditions of resource allocation satisfied in agriculture? Obviously the conditions are not always satisfied.

Farmers do not always extend resource use to a point when the factor/product price ratio and the marginal physical product of a resource unit are equal. This is due to (c) marginality has no application in farming, (b) economic principle is not understood in rough fashion by any of the of farmers, (c) farmers are not rational in their use of resources, or (d) all resource inputs inability to fulfill these condition are: (i) lack of knowledge of the relevant input-output relationships and cost structures (2) the uncertainty of future, prices and yields; and (3) the existence of severe capital limitations. It is, thus, quite obvious that the resource allocation in agriculture may not be perfect. Many factors work against perfect allocation of resources in Indian Agriculture.

Exercise 7.1

Q1. Write a short note on Input Output Relation and Resource Allocation?

Q2. How will the Producer select the Optimum Levels of the Input and Output?

Q3. How will the entrepreneur decide about the Optimum Combination of Products?

7.9 SUMMARY

The technical conditions of production and the structure and relationship of market prices are the Two most important of the several forces which determine how resources of a farm are used or should be used. Conditions of production refer to the nature of the relationship between resources and products. The quantity of a single resource or of all resources to be used by a farm depends as much on the nature of the production function as on the level and structure of prices. The other relationship in farm production involves the allocation of given resources between competing enterprises. It is termed the product-product relationship. It again refers to the choice between two or more alternatives. In this chapter we have discussed there aspect in detail.

7.10 GLOSSARY

- **Joint product:** One of two or more products (goods and/or services) that are produced by a single production process, such as milking a cow to produce both milk and cream. Most trade theories assume away joint products for simplicity.
- **Complementary Products**: Two products are called complementary if a transfer of resources to one product (Y_2) and an increase its production are accompanied by an increase in the production of the other product (Y_2).

- **Supplementary Products**: Two products are said to be supplementary, if for a given level of resources the production of one can be increased without affecting the production of the other.

- **Competitive Products**: Two products are competitive if, with the given level of resources, an increase in the production of one results in the reduced level of production of the other.
- **Marginal rate of substitution:** In a production function or a utility function, the ratio at which one argument (input) substitutes for another along an iso-quant or indifference curve

7.11 ANSWERS TO SELF CHECK EXERCISES

Exercise 7.1

Answer 1: Refer to Section 7.4.
Answer 2: Refer to Section 7.5.
Answer 3: Refer to Section 7.7.

7.12 SUGGESTED READINGS

1. Heady, E.O. and J.F. Dillon (1961): Agricultural Production Functions, N.Y. Prentice Hall.
2. Kalilon, A.S. and Karam Singh (1980): “Economics of Farm Management” in India, Bombay, Allied Publishers.
3. Upton, Martin (1976): Agricultural Production Economics and Resource use.

7.13 TERMINAL QUESTIONS

Q1. Explain the Allocative Efficiency of Resource Use in Indian Agriculture?

Q2. Explain Technical Efficiency and economic Efficiency?

UNIT–08
RISK AND UNCERTAINTY IN AGRICULTURE

STRUCTURE

8.0 OBJECTIVES

After going through this lesson you will be able to:

- Explain the Risk and Uncertainty
- Enlighten the Farmer Defense against Risk and Uncertainty
- Elucidate Uncertainty Precautions

8.1 INTRODUCTION

Production relationships are not exact because the farmer does not have perfect control of all the environmental factors which influence crop and livestock yields. Hence, whilst some of the variation in yield may be due to differences in the combination of inputs used,' there is always a certain amount of variation due to uncontrolled factors. This residual variation may be viewed as chance variation. Therefore it is impossible to predict the outcome of any productive process exactly; there is always some chance variation and therefore some uncertainly about the precise outcome of a particular productive activity over a particular period. These risk and uncertainties are permanent phenomena in agriculture and a farmer is always faced with the problem of taking suitable action against these. To the extent the farmer succeeds in minimizing risk and

uncertainty, he succeeds in maximizing his returns. Before we discuss the decision making under risk and uncertainty, it would be proper to define these two terms risk and uncertainty.

8.2 RISK

Risk is defined as a situation which exists when the future can be predicted with a specified degree of probability. With the perfect knowledge situation it is possible to say definitely and positively that an event will happen; when a risk situation prevails, it can be said that the chances are, for instances 50-50 or 60-40 than an event will occur.

With in the broad classification of risk, there are two sub-classes. The first is a priori, the second statistical. A priori probability prevails when sufficient information is known in advance about the general possibilities that the probability of a particular event occurring can be specified. For example, if a coin is tossed, it is known that it must come up either heads or tails. It is known that both have exactly the same opportunity of turning up. Therefore, on the basis of general principles, the probability of a particular event happening can be predicted.

This is to be contrasted with statistical risk. When statistical risk occur the probability of future event can be stated on the basis of results of many previous observations. Probabilities are assigned to future events on the basis of recorded experiences as to what has happened under similar conditions.

8.3 UNCERTAINTY

Uncertainty is faced by all entrepreneurs and profit is their reward for handling it successfully, as loss is the ‘penalty for future. Uncertainty should be distinguished from risk. There is a risk when a statistician can work out mathematical probability of the occurrence of an event Risk is something which is insurable (loss for fire, for example) which can be incorporated into the cost of a business, and which therefore docs not adversely affect decision making. Uncertainty is incalculable, characterizes situations where there may be broad range of outcomes, and does affect decision-making. Agriculture, it is argued faces a greater uncertainty than other businesses and fanners reaction to it can lead to inefficient production.

Farmers face at least six different types of uncertainties, some of which are common to non - agricultural producers and-some peculiar to, or especially prevalent in, agriculture. First, technological uncertainty applies’ to nearly all economic activities. It is the uncertainty about new technique, new processes, new-types of product, or new machines which may render obsolete existing or planned investment in capital and labour.

Secondly institutional uncertainty is also a common problem which derives from the effects on entrepreneurs of government actions such as changes in investment allowances, interest rates, regional aids, income and consumption taxes and foreign exchange policy. Clearly, the more the

dependence of an industry on government the higher is the institutional uncertainty. Thus wholesale government intervention in agricultural prices, output, or incomes can increase this type of uncertainty.

The third and fourth types of uncertainty, which relates to the prices of inputs and their availability, apply equally to farming and other activities-except for those farming enterprises, especially livestock, which are highly, dependent on other farming enterprises, particularly cereals, for one of their major inputs.

The two remaining types of uncertainly are those which are commonly held to cause the distinctive instability of agriculture. 'They stem from the related fluctuations in yields and prices. All farm products are the result of biological processes which are notoriously difficult to control. Land, animals and crops can vary widely in character and quality; they are vulnerable to pests, parasites and diseases; and, above all, they are subject to the climate. It is common for the annual yield of same crop in the same place to vary by 25 per cent and variations of 50 per cent or more are not unknown. Plant breeders and agronomists have, however, made immense progress in reducing the yield variability of crops, particularly temperate ones. But yield variability remains quite high with tropical primary products due to extreme changes in climate and lesser application of science and management.

Though attempts are made to reduce yield variability yet there remains large annual variation in the output of all agricultural products. Because of very low price elasticity of demand for most agricultural products, large price flucţuations will result from very small changes in output. Price fluctuations are also caused and aggravated by the short-run price in elasticity of supply which results from the difficulty or in possibility of adjusting production quickly in response to changes in price. All agricultural production processes take a considerable time from a few months with some crops, to around several years with coffee and rubber. Adjustments to upward changed in prices are therefore, inevitably delayed. Adjustments to downward changes also tend to be slow because the variable costs of the farmers tend to be unusually small in relation to his fixed costs. A final point to be made oh instability is that it is not fluctuations in prices but the resulting income instability which is the cause of concern.

8.4 FARMER DEFENSE AGAINST RISK AND UNCERTAINTY

The farm manager is faced with many situations that can be classified as either risk or uncertainty. He may not draw a clear line of distinction between them, yet by his reactions he reacts to risk differently than he does to uncertainty as these terms are outlined above.

There are numerous situations in agriculture that may be properly classified as risk. If a possible unfortunate occurrence can be insured against, it can be classified risk. Various kinds of insurance are available. In such situations the farmer must decide whether he should pay to have

the risk transferred to some other person or institution or whether he can afford to carry the risk himself. Not all insurance can be viewed in the same way, as it provides differing amounts of protection against unforeseen events. Insurance can be defined as the substitution of a certain small cost for the possibility of a large uncertain loss. Liability insurance usually protects one against rather large losses.

It is possible to insure growing crops in various ways. Insurance from private agencies is usually limited to a particular crop risk, such as hail. Again the consequences of a loss must be evaluated when such insurance is considered. In areas where crops are uncertain and loss of a crop would be catastrophic to the farm business, insurance, although costly, may be' a good investment. On the other hand, some production areas have stable yields and the crop risk is quite small. In such areas the magnitude of the loss is not likely to be great, nor is the possibility of its occurrence large. Therefore, the farmer may wish to assume his own risk.

Certain risk situations like breakage of eggs, grain waste through spillage, and losses due to rodents cannot be covered by insurance. Because these cannot be insured against, the farmer must deal with them in one (or both) of two "ways: instituted control measure or lose revenue. In either case the costs involved are production costs.

Another form of diverting risk is by the use of contracts. Contracting is quite old in agriculture. Land has long been rented on the basis of contract, with payment either in cash or in share of crops. When the fanner rents for cash he is more susceptible to a loss in case of unfavourable prices or yields than if he were renting on a share basis by the same taken he stands to gain more in case of favourable prices or yields.

The use of commodity contracting is increasing. Prior to undertaking production, the farmer may sign a contract with a specified price. By doing he protects himself against extremely unfavourable price movements. On the other hand, he signs away any chance for a wind fall gain.

Again two elements are important in making such decisions. First is the risk aversion of the decision maker and the other main factor is the asset position of the firm. All farmers view risk in different ways. Some may wish to assume the risk of a possible loss in order to retain the chance of a possible gain. Others are willing to forego the chance of a wind fall gain if they can be protected against unforeseen loss. Some businesses-are in a position to bear the losses in case unfavourable incidents take place; in other words, they can afford to take a chance. For some even the smallest unforeseen loss may mean disaster. The signing of contracts and the buying of insurance can also be looked upon as a part of the trend toward specialization.

8.5 UNCERTAINTY PRECAUTIONS

8.5.1 Flexibility:

Flexibility may be defined broadly as planning in such a way that new information may be taken into account as it becomes available. This implies being prepared to make now decisions from day to day in the light of changing conditions, rather than preparing a comprehensive plan in advance and sticking to if rigidly.' Generally, a flexible farm system is one which “can be changed more quickly and at a lower cost than an inflexible system. Flexibility, as Heady says, is the avoidance of rigid: production methods”. And in the case of a multi-product enterprise, it also means avoidance of a rigid production pattern.

Flexibility may be maintained by choice of enterprises with a quick turnover, by using general purpose buildings and machines rather than specialized ones, and by avoiding fixed costs. It is easier and cheaper to expand or contract an enterprise such as pig or poultry keeping with a relatively short production period than it is to vary the scale of a pedigree-cattle breeding enterprise, provided that specialized buildings and equipment are avoided. Likewise annual crops are likely to provide greater flexibility than perennial tree crops. Also, a farm system is kept flexible by using temporary hired labour rather than regular workers, by using labour intensive methods rather than specialized machinery, and by hiring on contract rather than owning machines. However, this flexibility is likely to have a cost in terms of certain amount of profit foregone on average.

8.5.2 Diversification

Diversification has also been advocated as a precaution against uncertainty. The theory of this is that prices and yields for different enterprises do not fluctuate together and that a combination of enterprises will tend to stabilize income over what it would be if the enterprises were produced separately. This rule is widely recommenced as a means of reducing income variability, but as we have seen it may increase risk. Thus it is only to be recommended as a risk precaution when it is known that returns from the enterprise involved are not positively related.

8.5.3 Asset Management

The existence of, uncertainty in agricultural production has a profound effect on the management of assets in farming. The farmers may hold a higher percentage of his assets in a liquid form than if the future were more certain. Liquidity may be defined as that characteristic of an asset ‘that permits it to be converted easily into cash. If necessary liquid assets can be converted into, cash and be used either for living or production expenses.

8.5.4 Capital Rationing Uncertainty

Capital Rationing Uncertainty may also affect the use and quantity of capital in farming. A lender will tend to restrict the amount of money loaned in proportion to the amount of uncertainty associated with a venture. Even if a farmer has his own capital, he may restrict the use of capital depending upon the degree of uncertainty which exists. The farmer may wish to restrict the use of capital short of the point where expected marginal cost is equal to anticipated marginal returns. This is called internal capital rationing. It differs from external capital rationing which means that financial, institutions and private money lenders are reluctant to advance loans to the farmers on account of uncertainty.

Assume it will take 90 kg of fertilizers to equate marginal costs and returns on the basis of experimental results and current prices, but it is expected that prices may decline 25 per cent. Under such circumstances, only 60kg of fertilizer would be profitable. The farmer as per his logic may apply 60 kg whereas he knows full well that under average conditions 90 kg would a more profitable application. Yet he is willing to sacrifice the possible gain to protect himself on the event either unfavourable prices or yields should occur. To manage a farm business profitably in the face of uncertainty requires decision making of a very high order.

8.6 OTHER METHODS

Besides the above measures, Upton refers to a few other measures also which a farmer can adopt to minimize the impact of uncertainty.

8.6.1 Choice of reliable enterprises

Farmers, though not knowing full well the possible outcomes and probabilities of different enterprises are not - aware of the fact that certain enterprises/ventures are more reliable than others. The relative yield variation of intensive livestock, such as pig and poultry, is generally thought to be less than that of sheep and beef cattle. Again cereal yield is generally less volatile than the yield from root crops. Similarly is the case with price variability. The prices of some products are more stable than those of others. Activities with variable outcomes assure a higher long—run average income. Risk avoiders hardly experiment with innovations.

8.6.2 Discounting for risk

This implies producing less than the economic optimum level of output on average in order to reduce losses in unfavourable.

8.6.3 Maintaining reserves

This may be viewed as another way of maintaining flexibility. Thus many farmers maintain a larger complement of machinery and equipment and labour force larger than what is required to cope up with the situation of uncertainty. Maintenance of extra food and cash may also prove

beneficial in the adverse times.

8.6.4 Contracting prices in advance

Price uncertainty may be reduced by making forward contracts for the purchase of inputs and sale of produce. However, where the period of contract is pretty long say a year, in such cases concerned organizations generally keep the right to re-negotiate the terms as per the need of the hour and hence variation and uncertainty cannot be eliminated entirely. Though wages and rents are contractually fixed yet landlords and workers can always ask for a periodic hike in rent and wage. Certain products are produced entirely under contractual agreement, particularly in the poultry industry. Fanners provide housing, labour and some management while the outside party, usually a livestock feed company, supplies chicks and feed and pays the farmer an agreed price for the product. The development of such a system is known as vertical integration. By this agreement the farmer not only can mitigate the inherent price and income uncertainties of the traditional marketing system but also establishes useful links with manufacturing firms and input suppliers.

Exercise 8.1

Q1. What is Risk and Uncertainty?

Q2. What are the Uncertainty Precautions?

Q3. What are the other methods which a farmer can adopt to minimize the impact of uncertainty?

8.7 SUMMARY

Production relationships are not exact because the farmer does not have perfect control of all the environmental factors which influence crop and livestock yields. Hence, whilst some of the variation in yield may be due to differences in the combination of inputs used,' there is always a certain amount of variation due to uncontrolled factors. This residual variation may be viewed as chance variation. Therefore it is impossible to predict the outcome of any productive process exactly; there is always some chance variation and therefore some uncertainly about the precise outcome of a particular productive activity over a particular period. These risk and uncertainties are permanent phenomena in agriculture and a farmer is always faced with the problem of taking suitable action against these. To the extent the farmer succeeds in minimizing risk and uncertainty, he succeeds in maximizing his returns.

In this chapter we have covered the concept of risk and uncertainty. We also studied what is the farmer’s or producer’s defense against this uncertainty and risk. We have also gone through the measures which a farmer can adopt to minimize the impact of uncertainty.

8.8 GLOSSARY

- **Risk:** Risk is defined as a situation which exists when the future can be predicted with a specified degree of probability. With the perfect knowledge situation it is possible to say definitely and positively that an event will happen; when a risk situation prevails, it can be said that the chances are, for instances 50-50 or 60-40 than an event will occur.
- **Uncertainty:** Uncertainty is faced by all entrepreneurs and profit is their reward for handling it successfully, as loss is the 'penalty for future. Uncertainty is incalculable, characterizes situations where there may be broad range of outcomes, and does affect decision-making. Agriculture, it is argued faces a greater uncertainty than other businesses and fanners reaction to it can lead to inefficient production.
- **Flexibility** may be defined broadly as planning in such a way that new information may be taken into account as it becomes available. This implies being prepared to make now decisions from day to day in the light of changing conditions, rather than preparing a comprehensive plan in advance and sticking to if rigidly.' Generally, a flexible farm system is one which "can be changed more quickly and at a lower cost than an inflexible system.
- **Liquidity** may be defined as that characteristic of an asset 'that permits it to be converted easily into cash. If necessary liquid assets can be converted into, cash and be used either for living or production expenses.

8.9 ANSWERS TO SELF CHECK EXERCISES

Exercise 8.1

Answer 1. Refer to Section 8.2 and 8.3.
Answer 2. Refer to Section 8.5.
Answer 3. Refer to Section 8.6.

8.10 SUGGESTED READINGS

1. Bishop, C.E. Taussaint, W.D. (1958): Introduction to Agricultural Economics Analysis: Wiley International Edition.
2. Castle, E.N. Decker, M.H; & Smith, F.J. (1972): Farm Business Management The Macmillan company N.Y.

8.11 TERMINAL QUESTIONS

Q1. What is Farmer Defense against Risk and Uncertainty?

Q2. Write Short notes on:

(i) Choice of reliable enterprises
(ii) Discounting for risk
(iii) Asset Management
(iv) Capital Rationing Uncertainty

UNIT-09

MODELS OF AGRICULTURE DEVELOPMENT-I

STRUCTURE

9.0 OBJECTIVES

After going through this lesson you will be able to:

- Explain the Traditional Agriculture According To Schultz.
- Enlighten The Doctrine of Zero Value Labour
- Give Suggestions for Transforming Traditional Agriculture
- Explicate The Process of Transformation
- Boserup's Theory of Agricultural Development

9.1 INTRODUCTION

We have seen in an earlier lesson that agricultural development is a condition precedent for the overall development of an economy. The more fundamental question is how to develop agriculture itself in the first instance. Many economists have addressed themselves to this question. T. W. Schultz is one such economist. His well-known book 'Transforming Traditional Agriculture, appeared in 1964. In this book he suggests various steps for changing a traditional agriculture into a modern agriculture. Though his definition of traditional agriculture as we shall see, covers even an agriculture which uses an advanced technology. This book is basically meant for transforming agriculture which is backward and has a very low yield when compared with the yield in modern agriculture.

9.2 DEFINITION OF TRADITIONAL AGRICULTURE ACCORDING TO SCHULTZ: SOME MISCONCEPTIONS:

Before giving his definition of traditional agriculture, Schultz tries to dispel some wrong impressions about what a traditional agriculture implies.

a) Traditional agriculture has nothing to do with the traditions of a society. According to Schultz agriculture can become traditional in any country, irrespective of the customs and conventions which its people have generally practiced. For example, it is not necessary that only a conservative, superstitious and a whimsical society can have a traditional agriculture. Even a forward looking society can find its agriculture to be traditional in nature. Schultz feels that most of the factors that influence' production i.e. Thrift, attitude to work, industriousness etc, are not affected by the cultural traits of *A* society. These are Infact economic variables. People do not save for investment simply because the method of production does not give a high return. Again people do not work much because the return to labour is rather low. Accumulation of more capital or use of more labour are the governed by economic factors and not by the cultural factor.

b) Traditional agriculture has nothing to do with the institutional arrangement in a country A country With - any type of institutional arrangements can find its agriculture being traditional. For instance agriculture in a country can become traditional whether it has large farms or small farms, though generally people feel that traditional agriculture is associated with small farm Japan's agriculture is not traditional even if the farm size is very small. Similarly, traditional agriculture can be found both in 'countries with a high degree of owner cultivation or with a high degree of tenancy. For example, Holland is a country where tenant cultivation predominates. However, its agriculture's not traditional.

c) Schultz further points out that the technical attributes, of the factors

of production in an agriculture do not determine the character of agriculture in a country i.e. whether it is traditional in character or not. Generally it is felt fiat if the factors of production are highly productive, its agriculture can be called by a modern agriculture and if the factors of production have low technical efficiency, it is called a traditional agriculture, Schultz does not agree with this assertion. For him, traditional agriculture has some economic feature and if these features appear in agriculture even with technically efficient factors it will become traditional in character. According to him under certain circumstances, even American Agriculture which at present, is considered to be the most advanced agriculture can become, traditional.

9.3 TRADITIONAL AGRICULTURE ACCORDING TO SCHULTZ:

According to Shultz traditional agricultural is an economic concept. It implies a short of equilibrium. When agriculture of a country reaches such equilibrium, it will become a traditional agriculture and according to Schultz, as we have already pointed out, this equilibrium can be reached irrespective of the cultural attributes of the society, its institutional arrangements, or the technical efficiency of its factors. According to Schultz, the critical conditions underlying this type of equilibrium, either historically or in the future are as follow:

1. The state of arts remains constant
2. The state of preferences and motives for holding and acquiring sources of income remains constant and
3. both of these states remain constant long enough for marginal preference and motives for acquiring agricultural factors as sources of income to arrive at an equilibrium with the marginal productivity of these, sources viewed as an investment in permanent income streams and with net savings approaching zero.

The definition needs some elaboration. Schultz is of the opinion that when technology in agriculture remains unchanged for a longtime and when people using various inputs under such a technology have fully known the pros and cons of the use Of these inputs and have therefore finally decided their preference for various inputs, a time may arrive when in general the marginal productivities of these inputs and their costs have become equal to each other. This iş equilibrium. In such a case, further investment in these ''inputs will slop. Level of there use will no longer change, Further savings (except to keep these inputs at the equilibrium level) was no longer made. This is a state when agriculture will become traditional in character. Agriculture will no longer be progressive. It will be stagnant and will remain so, so long is the art of cultivation and preference to hold various factors of production remain unchanged.

It may be noted that Schultz's definition is unconventional in the sense that according to it, even a very advanced agriculture can become

traditional. It is not like Mellor's definition which considers only a backward and labour intensive agriculture using crude from of capital, as traditional agriculture. Mellor's definition is more Pragmatic and is historically sound.

9.3.1 Main Characteristics of traditional agriculture as defined by Schultz

1. Allocative Efficiency in Traditional Agriculture:

It is generally felt that resources in a traditional agriculture are not optimally allocated. Heady had conducted a study on resource allocation for six classes of farmers in India and found that allocation of resources was not perfect. Schultz's definition does not lead to such a conclusion. On the other hand, it leads one to conclude that resource allocation is perfect in a traditional agriculture. The argument runs as follows, Art of cultivation remains unchanged (for agriculture to become traditional) and so are the preferences and motives to hold various factors of production. When year after year farmer, under such circumstances, get the same return (under normal condition), they are bound to adjust their investment in various factors in such a way that the marginal productivity of each a factor is finely balanced with its price and this balance will stay so long as the art of cultivation etc. remains unchanged. As Schultz point - out, "There are comparatively little significant inefficiency in the allocation of factors of production in traditional agriculture."

9.3.2 Assumption for the state of perfect allocation of resources:

Schultz made certain assumptions for the equilibrium to prevail in traditional agriculture. These assumptions are as follows:—

1. The first assumption is about the nature of factors of production. The factors have been used for a long time without any change. If the factors have been changing in their nature, obviously, their returns too will be changing and consequently, long run equilibrium cannot be achieved. (In fact agriculture cannot be considered as traditional if the nature of factors of production goes on changing).
2. No Significant activity like construction of road or digging of a canal is taking place. Such activities will disturb the equilibrium temporarily.
3. Events like war, partitions recruitment of labour in the army also disturb the equilibrium temporarily. These are the assumed to be absent.
4. Relative prices of various factors as well as of agricultural products are assumed to be constant.
5. As the state of arts is assumed to be unchanged, the change in the technology, taking place at any time is ruled out.
6. There are no indivisibilities.
7. There is a perfect knowledge about the returns to various factors.

9.3.3 The Poor but Efficient hypothesis:

From the above implication about perfect allocation of recourses, as deduced from the definition of traditional agriculture Schultz moves on to the description of another hypothesis (based upon perfect allocation of resources) which, by now has become quite well known. It is known as the poor but efficient hypothesis, Schultz implies that people in a traditional agriculture are no doubt efficient so far as the allocation of resource is concerned but still they are poor. According to him, optimum allocation of resources fails to ensure a high income level for the farmers. This is because the returns from the resources themselves are quite low or using Schultz's terminology, we can say that the cost *OF* income stream is rather high. This is the reasons we shall see later, why Schultz suggests changes in the nature of factors of production in order to transform traditional agriculture.

9.3.4 Implication of the poor but efficient hypothesis:

From the fact that the allocation of resources is perfect in traditional Agriculture Schultz deduced some important conclusions. These are follows:

a) There is no possibility of increasing agriculture production by re-allocating the existing resources. The farmers have perfect knowledge about the returns from these resources and are already getting the maximum output from their use. As there is no wasteful utilization of these resources, no additional output is produced if these resources are reallocated.
b) Most factors is unemployed in traditional agriculture. The poor but efficient hypothesis also leads to the conclusion that no resources whether capital or labour, are unemployed involuntary, if any factor, say a labourer is without a job he is so only voluntarily. If such a factor demanded employment, it can offer itself in the market. The price of the factor will come down to such an extent that it will be finely absorbed in the production process.
c) The hypothesis leads to the conclusion that even in traditional agriculture, there is no dearth of efficient entrepreneurs.
d) The hypothesis also, implies that fanners in the traditional agriculture, too quite responsive to price changes. This is because perfect allocation of resources is not possible unless the producers are too sensitive to price changes. This conclusion is very important because generally it is held that farmers- in traditional agriculture are totally insulated from the effects of changes in market forces.

9.3.5 Tests of the Hypothesis:

Schultz did not stop only at deducing the conclusion about resource allocation from his definition. He relied upon studies conducted by two social anthropologists to prove his point. The first study was that made by Soltax. He had made a study of a Guatemalan community and had found that resource allocation was perfect, in such a community. The other study was by David Hopper who found that resource allocation was perfect in a village, (Senapur) in India. At the same time, Schultz rejected the conclusion arrived at by Heady who studied the resource allocation by six classes of Indian farmers and had concluded that there were imperfections' in the resource allocation in these villages. Schultz rejected Heady's conclusions with the plea that data used by him was unreliable. It may be noted here that Guatemalan and Indian agriculture are considered traditional by Schultz.

9.3.6 Critical review of Schultz views about perfect allocation of resources in traditional agriculture

No doubt, Schultz had found supporters for his conclusion about resource allocation in traditional agriculture. John Lossin Buck anu Baner and Yamey, for example, have supported his conclusions. Still, his views have not .been accepted by many. The methodology used by David Hopper on whose conclusions Schultz relies has been criticized by Dunn and Now shirwani. Lip on- questions the assumption of profit maximization for studying resource allocation. On the empirical level, many economists like Desai, Kahlon, Johl and Soni have found that misallocation, of resources exists in Indian agriculture.

As a matter of fact, Schultz's conclusions are not based upon extensive studies. Decision, making for allocation of resources is a complicated process and it is influenced by a. multitude of factors. It is very difficult to find a situation in which these factors allow the resource to be used in an optimum manner. . Generally resources allocation is imperfect whether agriculture is traditional or nontraditional in character.

9.4 THE DOCTRINE OF ZERO VALUE LABOUR:

Yet another conclusion can be derived from the definition of traditional agriculture as given by Schultz. It is that in a traditional agriculture, there is no disguised unemployment or what Schultz calls as zero value labour. We have already pointed out that in traditional agriculture, as per Schultz's views, no factor of production is involuntarily unemployed. Schultz specifically uses this implication of Poor but efficient hypothesis to emphasis that there is no unit of labour that is unemployed in traditional agriculture either openly or in a disguised manner. A labour is disguisedly unemployed when its marginal productivity is zero. As Schultz takes the plea that every worker, who is willing to work gets wages for his work, his marginal productivity can never be equal to zero or there is no zero value labour in traditional agriculture.

This is a very important conclusion because economists like Nurkse have pointed out that there is disguised unemployment in the agriculture sector and that the disguisedly unemployed labour can be used for capital formation in under developed countries. Schultz tries to negate this assumption of Nurkse and other economists.

In the first instance, he describes the reasons which have led- some economists to believe that disguised unemployment exists in a traditional agriculture. He is of the view that basically experts from the western countries have unnecessarily created this bogey of disguised unemployment. The visitors from the West found farmers wasting their time and this led them to profound the concept of disguised unemployment in agriculture. Another group put forth the view that during Great Depression while there was a fall ‘in demand, and-there was unemployment. They opined that there should be unemployment everywhere. As in providently agricultural economies no such open unemployment appeared. They declared that unemployment must be disguised. Schultz however points out that the interpretation is wrong. No farms were closed down while factories in the west stopped working. As farms continued to work, question of unemployment on these farms did not arise. Further, the experts in the western countries had found that there was a surplus labour in the agricultural sector in their own countries which needed to be transferred to the industrial sector. They presumed that surplus labour was bound to exist even in backward countries and thus they concluded about the existence of disguised unemployment in such countries (It may be noted here that need for transfer of labour from the agricultural sector to the industrial sector in developed countries is not, in fact, due to disguised unemployment. It is because of the fact per capita income of the labour in the agricultural sector in less man the per capita income of the labour in the industrial sector.)

So, Schultz in first instance, points out that due to a wrong interpretation of facts, it came to be held that there is disguised unemployment in traditional agriculture. Schultz also refers to a theoretical arguments advanced in favour of the existence of disguised unemployment in agriculture. It is that factors of production in agriculture have a limited technical substitutability and they become complementary after a point. In such a situation if one factor, i.e. capital is in. short supply, the other factor i.e. labour cannot be employed. This argument was advanced by Eckaus. Schultz does not agree with this contention and asserts that even when capital is limited in supply, additional labour always brings forth a positive (above zero) returns. He quote Viner in support of his view.

After trying to prove that assertions about the existence of disguised unemployment in traditional agriculture are based upon some wrong interpretation of facts and also on wrong theoretical grounds, he goes on to prove that there is no disguisedly unemployed labour in traditional agriculture and that each labourer has a positive marginal productivity (of

course, it may not be very high.) He gives two examples of construction work in South American countries when labour was withdrawn from the agricultural sector for this purpose. In both these cases, agricultural production fell down. This, according to Schultz, showed that marginal productivity of labour was not zero.

Schultz also gives an example from India to prove his point. In India, an epidemic called Influenza appeared during 1917-19 and it wiped out about 1/6 of the total population of the country. In 1919, according to Schultz agricultural production fell. This again showed, according to him, that labour makes a positive contribution of agriculture production.

9.4.1 Critical review of Schultz's views about disguised unemployment in traditional agriculture

Schultz's view about no zero value labour in traditional agriculture have been challenged both on theoretical as well as empirical groups. On the empirical plan, studies by Mazumdar, & Desai, by Mellor and Stevon and by Rosenstein Rodan have shown have that disguised unemployment exists in agriculture in the underdeveloped countries.

Schultz's conclusions about influenza and its effects on agricultural production have been challenged Sen has, for example, questioned the deletion of some states form being considered by Schultz to show a fall in agricultural production. He has .further questioned the logic of using area under cultivation as an index for agricultural production. He has further pointed out that natural calamities like Influenza affect farms of all types i.e. those using hired labour and those using only family labour. When hired workers of an epidemic, production of farms on which disguised unemployment exist falls. So Sen Feels that fall in production due to influenza should not be taken as a proof that disguised unemployment does not exist in traditional agriculture. In fact, influenza was such a terrible disease that it unsettled the whole nation for quite some times and there was every possibility that even labourers with positive marginal productivity failed to attend to the agricultural operations. Fall in production, due to influenza .vas thus a natural outcome.

The fact that Influenza is not a good example to prove that disguised unemployment does not exist in traditional agriculture *has* again been brought to light by S. Mehra. According to her after the epidemic subsided in 1919, the agricultural production increased in the first half of the year as compared with the base year of 1917 while it was less in the 2^{nd} half of 1919. If fall in production was due to loss of labour, it should have been so in the first half and not in the 2nd half of 1919. According toiler, fall in production was due to some other causes.

Bhagwati and Chakravarti put forth another argument to show that agricultural production can fall even when, there is disguised unemployment, when some labour leaves the agricultural sector. They refer to a situation where both types of farms i.e those using hired labour and those using family labour exist side by side. Disguised unemployment

exists on family farms only. Suppose from a farm with disguised' unemployment, a family member leaves. Agricultural production will not suffer. However, share of each of the remaining in.member will increase. This rise in the share will also prompt those members of such a family who are already working as hired laboured on some other farms to demand higher wages. Demand for higher wages on farms using hired labour will mean less employment on farms using such labour and therefore there will be a fall in production.

Thus our overall conclusion is that disguised unemployment exists in traditional agriculture that Schultz is not correct in holding the contrary view.

9.5 SCHULTZ'S SUGGESTIONS FOR TRANSFORMING TRADITIONAL AGRICULTURE

There are three ways of increasing production. These are to (1) make use of unutilized resources (2) Optimally reallocate the resources so as to take the production on to the production frontier and (3) change the nature of factors namely replace all or some of the old factor by new ones with higher output-input ratios.

Intentionally or otherwise, Schultz's ruled out the adoption of first two methods meant for increasing agricultural production. For 'instance, by his very definition of traditional agriculture, he has concluded that there is no factor of production lying unused in traditional agriculture. Land and labour and other capital assets are fully utilized in traditional agriculture. In the same way, he has concluded that resources in agriculture are always perfectly allocated. There is no misallocation of resources and therefore there is no possibility to increase production in a traditional agriculture, by further improving the resource allocation. So Schultz is left with only one way to increase production in a traditional agriculture i.e. by changing the nature of the factors of production.

Before we discuss in detail, Schultz's scheme of adoption of new factors of production it is necessary to discuss the approach to be followed for such an adoption.

9.6 MARKET APPROACH V/S COMMAND APPROACH:

By market approach, Schultz, implies that no factor of production should be imposed on the farmers. The farmers should be left free to decide whether to use a particular factor of production or not. Let them see for themselves the profitability of a given factor and decide about its adoption. The adoption in other words should be guided fry the market forces. The only responsibility of the government in this case should be to ensure that there is an easy availability of the factor of production and there is a good publicity about it and that necessary skills for the use of new inputs are property developed. By command approach, Schultz

means system on which the government supplies a new factor production to the farmers and that direct them to use it irrespective of its profitability.

Schultz prefers market approach to command approach. He feels that if a factor of production is voluntarily adopted by the farmer, its adoption will be wide spread and with full enthusiasm. On the other hand forced adoption not only, in many cases, ignores the problems faced by the farmers at the local level, but also at times, saps the skills and enthusiasm of the farmer. Schultz feels that the situation in a command approach can be compared to an absentee land lordism where the land lord knows nothing about the problems and difficulties of the actual cultivators but insists upon good harvests.

9.6 THE PROCESS OF TRANSFORMATION

In a market approach, ultimately the supply and demand for the factors of production will govern the actual use. So Schultz discusses in detail, the factors that influence the supply and demand for such factors.

We may in the first instance discuss the problems laced in the supply of new factors and me suggestion that Schultz makes to overcome these problems.

9.6.1 Supply of new 'factors:

According to Schultz, three important steps are involved in the supply of new factors, these are;'

(1) Research and Development of new factors.
(2) Distribution of inputs to the cultivators and
(3) Extension of new knowledge.

These steps are described in the paragraphs next follow

9.6.2 Research and Development of new factors by the Suppliers

Science and Technology, according to Schultz play a very important role in the transformation of traditional agriculture. As the art of cultivation in a traditional agriculture has been static for long time, it may not be possible to develop technologically superior factors or production from within the country. So what he suggests is that in the first instance, these factors may be imported from some foreign country and then this factor should be subjected to further scientific analysis so that it is finally adapted to the physical environments of the importing country. This will be the least costly method of developing a new factor of production.

With regard to the provision of scientific facilities for research, development and adaptation of a new factor of production Schultz raises an important question. It is as to who should provide facilities for such a job. The Government or the private persons?

According to Schultz a private person will hesitate to undertake this research work not only because it is costly but also because its results may appear after a long time and sometimes may even be totally

disappointing. Secondly, the benefits of a successful research are not going to accrue solely to the private person. Other members of the community will also benefit from this research. This may make the private person hesitate to take up the research work. On the other hand, the concept of benefit or profit is totally different for the government. It is rather very broad when compared with that of a private individual. The Government feels benefited if any member of the society benefits from its actions.

So, Schultz feels that so far as research and development of factors of production suitable for the agriculture of a country are concerned. It should invariably be undertaken by the Government, of the country concerned or by some non-profit making institution in the country.

9.6.3 The Distribution of New Inputs:

After the new inputs have been developed and technology for their mass scale production has been perfected, a question arises: Who should produce and distribute these inputs Schultz himself answers this question. In the beginning, when the new inputs are still untested by the farmers, no private person will take the risk of producing and distributing these inputs. There is a cost of entry into the market and his may be quite high in the beginning.

This cost consists of the following: (a) the cost of adaptation, though basically, the input has been adapted to the general condition of the country in the stale owned laboratories or in the laboratories rim, by the nonprofit making institution, still some modification in the nature of the inputs is required even at the local level. This will involve some expenditure, (b) cost of providing information to the users about the availability as well as about the nature of tie input. In a nontraditional agriculture where the level of literacy is generally high the print media like technical journal etc. can be used to inform the farmers about the new inputs. However, the print media cannot be very useful in an illiterate society. Here distributors will have to contact the farmers personally or in groups which may be beyond their capacity, (c) Other costs of entry e.g. Opposition of the vested interest. People so far supplying the traditional input are vehemently oppose to the introduction of new inputs. Some expenses will have to be incurred to overcome their opposition.

Due to these difficulties faced by the private agencies in the beginning, Schultz, suggested that initially the job of production and distribution of new inputs should be carried on cither by the Government agencies like Food Foundation etc.

After sometime when the demand for the new inputs has been generated and has stabilized, the last of distribution of new inputs can be passed on the private agencies, (d) Development of extension services. Availability of new input is not sufficient. Necessary skills for its use are also to be developed. This may be done through well developed extension

services. Extension services are essential even when new agricultural practices are to be introduced.

Here Schultz again feels that the cost of extension services is rather high and therefore, such services should be provided by the Government. Thus, on the whole, Schultz suggests that so far as the supply of new inputs is concerned, the Government should take over the jolt of research and development of the new inputs, of their production and distribution and of extension education with regard to them. However, at a later stage the government can offer to the private agencies, the task of production and distribution of new inputs.

9.7 DEMANDS FOR NEW FACTORS

Supply of new factors is of *no* use if the farmers do not demand them. Schultz therefore analyses the factors which should he kept in view while trying to ensure that a demand is generated for the inputs.

In the first instance, Schultz tries to dispel a few misconceptions about the attitude of the farmers in a traditional agriculture towards the new inputs. He points out that it is wrong to assume that a farmer in traditional agriculture is conservative and non-progressive and as such will refuse to adopt the new inputs. According to him, whether he is a farmer in traditional agriculture or a nontraditional one, he always goes by the economic motive. In this case, the economic motive is governed by profitability of the new inputs over a long period. If the new inputs profitable the farmer will accept it and substitute it for an old input.

Profitability of a factor, according to Schultz depends upon two factors. These are (a) the prospective yield and (b) the supply price of the new input. We describe these two factors in the paragraphs that follow.

9.7.1 The Prospective Yield:

Schultz uses this concept to bring the future yield of the input into the picture. The inputs are totally new and how their yield behaves in the future is uncertain. The farmers are ignorant about the fluctuations in its future yield, but somehow or other this factor is to be considered by the farmers while deciding to accept the new input. Schultz feels that if the present yield of the input is extremely high farmers are likely to accept the input, even if they discount the future yield at a high rate.

9.7.2 Supply Price of the new input:

For estimating the profitability of the new inputs, the fanner has to consider other factor also. It is the supply price of the new input. The farmer will discount the yield from the inputs over its life span and then compare it with its supply price. If discounted value of the prospective yield is more than its supply price, the farmers will consider it profitable to accept the input. So Schultz suggests that whereas the prospective yield from the input should be quite high, its supply price should be quite low. He infect, suggests that in the initial stages, it may be desirable to

subsidies the new inputs so that they appear profitable. In the same vein, he suggests that if the tenurial arrangements are good, acceptance of new inputs will be easy. For example, if a tenant shares the gross produce but bears all the costs himself, he will be more hesitant to accept the new input as compared with the situation when besides sharing the output. He also share the costs on the same grounds he advocates peasant proprietorship as an arrangements conducive to transformation of traditional agriculture.

9.7.3 Importance of acquired skills in transformation of agriculture

Supply of new inputs is essential for transformation of agriculture. However, additional knowledge and skill is also needed to use them true, in some cases, special training may not be needed to use these inputs. However,, if the new inputs are technically, far superior to the old' input, imparting of special knowledge to the farmers becomes very important.

Schultz considers three methods which can be used for imparting such knowledge. These are (1) trial and error method (2) on the job training through demonstration, short-term courses etc. and (3) Schooling, Schultz but of these three methods commends the third method i.e. schooling, the maximum. According to him, the other two methods are slow and limited in effects. He feels that general education at the school level will equip the farmers with capabilities to handle all types of inputs involving technical intricacies. He considers this as an investment in human capital and quotes the examples of Israel and Japan to prove that schooling has contributed a lot to the increase in agriculture production in these countries.

9.8 CRITICAL REVIEW OF SCHULTZIAN THESIS:

We have already critically examined the definition of traditional agriculture as given by Schultz and also its implications namely the poor but efficient hypothesis (perfect allocation of resources) and the non-existence of disguised unemployment in a traditional agriculture. Some of his other assertions also suffer from infirmities. For example, his too much emphasis on market approach is not correct. In a situation of shortages, too much emphasis on freedom to buy and sell can lead to an allocation of resources which may not be optimum from the social point of view. Social interests are likely to be sacrificed in favour of private interests if a total market approach is followed. Further his suggestion that only use of modem inputs will transform the traditional agriculture is inaccurate. Traditional inputs 'like conservations of soil, irrigation etc. cannot be discarded in any agricultural economy.

Further, Schultz has totally ignored the differences in factor endowment of different poor economies. These differences do affect the pace at which the new inputs can be used. Differences in the availability of infrastructure, in administrative efficiency in the degree of

commercialization, in the extent of monetization etc. do matter so far as the pace of adoption of new inputs is concerned.

However, despite these infirmities, one must accept his basic suggestion that 'transformation of traditional agriculture cannot take place unless new factors of production with much improved output-input ratios are adopted.

10.9 BOSERUP'S THEORY OF AGRICULTURAL DEVELOPMENT

Boserup's analyses the problem of agricultural development in primitive communities from entirely new angle. According to her agricultural development is due to some compulsion. Population growth is here regarded as the exogenous variable which in its turn is a major factor determining agricultural development. Malthus and his followers, believed that the supply of food for the human race is inherently inelastic, and that this lack of elasticity is the main factor "governing the rate of population growth. They treated population growth as dependent variable, determined by preceding changes in agricultural productivity which, in their turn, is explained as the result of extraneous factors.

Boserup has tried to show that this line of causation, where agricultural developments are caused by population trends rather than the other way round, is the dominant one, development generally.

Malthusian theory of population says that if at any time food supply increases, population will increase and new equilibrium will be restored between population and food supply. If,' on the other hand, the population is already beyond the means of subsistence, the population itself will come down to reach an equilibrium level through the positive, checks.

Both the strands of Malthusian theory have been refuted by Boserup's theory of agricultural development. Boserup refutes first part of the theory by saying that the low rates of population growth found in pre - industrial communities cannot be explained as the result of insufficient food supplies due to overpopulation. And tremendous increase in the rates of population growth after Second World War in underdeveloped countries occurred despite food shortages, and some room should be left for other factors in the explanation of demographic trends. Boserup maintains that whenever there is population pressure, the population does not go down. It rather leads to various technical changes which positively affect the increase changes' which positively affect the increase in food supply. Her main-thesis is that contrary to the prevailing view, primitive communities with a sustained population growth have a better chance of getting into a process of genuine economic development than primitive communities with stagnant or declining population.

9.9.1 Stages of Agricultural Development

The intensity of land utilization differs throughout the world. In large regions of Africa and Latin America, and in some part of Asia, the system

of land use is very extensive. The other extreme is found in Egypt and Japan, where the land use is intensive. Between these extremes are intermediate intensities of land “use. Boserup has given five types of land use, in order of increasing intensity.

(1) **Forest-fallow cultivation**

Under this system of land use plots of land are cleared in the forests each year and sown or planted for ‘a year or two after which the land is left follow for a number of years sufficient for the forest to regain the land.

(2) **Bush - fallow cultivation**

Under this system the fallow is much shorter, usually somewhere between six and ten years. When repeated burning of less matured forests take place,’ we find ourselves in the “Bush-fallow stage”. Many authors do not distinguish between forest and bush fallow system, but group thorn together under the label of long fallow cultivation or shifting cultivation.

(3) **Short - fallow cultivation**

Changes in patterns of land utilization and in agricultural methods usually occur gradually over long periods, and same is most often true of demographic changes. Further growth of population and accordingly greater need for food grains pushes agriculture into the ‘short fallow’ stage. The society cannot wait for hushes to grow. The implements which were important during the ‘bush fallow could not kill grassroots and weeds. Need for a plough arises. This is called the ‘short fallow’ stage the period of fallow lasting for a year or two. In such a short fallow period, nothing but wild grasses can invade, the fallow, before the cultivator returns to the same plot or field. The system could therefore also be described as grass fallow cultivation, but the term short fallow is to be preferred since under certain conditions land may lay fallow for some time without being invaded by anything but wild grasses.

(4) Annual Cropping

This is usually not considered a fallow system, but may be classified as such, because the land is left uncultivated usually for several months, between the harvesting of one crop and the sowing of another crop. This is, in fact, a type of annual rotational system in which one or more of tile successive crops are sown, grass or other produced fodder.

(5) Multiple cropping

This is the most intensive system of land use, since the same plot bears two or more successive crops every year. Under the pressure of increasing population, there has been a shift from more extensive to more intensive systems of land use in virtually every part of the underdeveloped regions. As the density of population in the area

increases, the fertility of the soil can no longer be preserved by means of long fallow and it becomes necessary to introduce other systems which require a much larger agricultural labour force. Overall utilization of labour will therefore increase. From this Boserup further concludes that there will be no unemployment when population grows. By the gradual change from systems where each cultivated plot is matched by twenty similar plots under fallow to systems where no follow is necessary, the population within a given area can double several times without having to face either starvation or lack of employment opportunities in agriculture.

According to the explanation offered here, population increase leads to the adoption of more intensive systems of agriculture in primitive communities and an increase of total agricultural output. On the one hand, the intensification of agriculture may compel cultivators and agricultural labourers to work harder and more regularly. This can produce changes in work habit§ which help .to raise overall productivity. On the other hand, the increasing population density facilitates the division of labour and the spread of communications and education. The important corollary of this is that primitive communities with sustained population growth have a better chance to get into a process of genuine economic development than primitive communities with stagnant or declining population, provided of course, that the necessary agricultural investments are undertaken.

Boserup also advances another argument that a period of sustained population growth would first have the effect of lowering output per man-hour also in agriculture. But in the long run the effect might be to raise labour productivity in other activities and eventually to raise output per man-hour also in agriculture. In a development pattern of this type, there is likely to be an intermediary stage where' labour productivity in agriculture is declining while that of other activities is increasing. This period is likely to be one of considerable political and social tension because people in rural areas, look for more remunerative and less arduous work in non form sector and large scale migration to urban areas takes place which result into tough completion in urban labour markets. The migration from the rural areas may reach such proportion that it precludes the necessary increase of food production in the villages, with the result that the urban population must bear the double burden of high food prices and lacking employment opportunities. The problem of rural migration has been tackled by various nations in different ways. The ensuing relative rise of food prices may provide the needed incentive for an intensification of agriculture and be followed by a rise, of rural money wages which helps to keep migration within bounds.

9.9.2 Critical Appraisal

Boserup’s theory of agricultural development is not applicable to those economies where the urban industrial sector is well developed. Her theory expresses the hope that growing population can be adsorbed,

because of the system of multiple cropping. But this is not the case with many developing countries. The prevalence of disguised unemployment in traditional agricultural economics of south Asia again points to the fact that agricultural development has failed to absorb growing population. The unfavourable effects of growing population are completely ignored.

Exercise 9.1

Q1. Give the Critical Review of Schultzian Thesis?

Q2. What are the Main Characteristics of traditional agriculture as defined by Schultz?

Q3. Explain the Stages of Agricultural Development as given by Boserup in his theory of Agricultural Development?

9.10 SUMMARY

In this lesson we have examined how the traditional agricultural can be transformed. We examined Schultz's views on traditional agriculture and Boserup's theory of agriculture development this lesson.

Traditional agriculture has nothing to do with the traditions of a society. According to Schultz agriculture can become traditional in any country, irrespective of the customs and conventions which its people have generally practiced. For example, it is not necessary that only a conservative, superstitious and a whimsical society can have a traditional agriculture. Even a forward looking society can find its agriculture to be traditional in nature. Schultz feels that most of the factors that influence' production i.e. Thrift, attitude to work, industriousness etc, are not affected by the cultural traits of *A* society. These are Infact economic variables. People do not save for investment simply because the method of production does not give a high return. Again people do not work much because the return to labour is rather low. Accumulation of more capital or use of more labour are the governed by economic factors and not by the cultural factor.

Boserup's analyses the problem of agricultural development in primitive communities from entirely new angle. According to her agricultural development is due to some compulsion. Population growth is here regarded as the exogenous variable which in its turn is a major factor determining agricultural development. Malthus and his followers, believed that the supply of food for the human race is inherently inelastic, and that this lack of elasticity is the main factor "governing the rate of population growth. They treated population growth as dependent variable, determined by preceding changes in agricultural productivity which, in their turn, is explained as the result of extraneous factors.

Boserup has tried to show that this line of causation, where agricultural developments are caused by population trends rather than the other way round, is the dominant one, development generally.

9.11 GLOSSARY

- **Forest-fallow cultivation:** Under this system of land use plots of land are cleared in the forests each year and sown or planted for ‘a year or two after which the land is left follow for a number of years sufficient for the forest to regain the land.

- **Bush - fallow cultivation:** Under this system the fallow is much shorter, usually somewhere between six and ten years. When repeated burning of less matured forests take place,’ we find ourselves in the “Bush-fallow stage”. Many authors do not distinguish between forest and bush fallow system, but group thorn together under the label of long fallow cultivation or shifting cultivation.

- **Short - fallow cultivation** In such a short fallow period, nothing but wild grasses can invade, the fallow, before the cultivator returns to the same plot or field. The system could therefore also be described as grass fallow cultivation, but the term short fallow is to be preferred since under certain conditions land may lay fallow for some time without being invaded by anything but wild grasses.

- **Annual Cropping:** This is usually not considered a fallow system, but may be classified as such, because the land is left uncultivated usually for several months, between the harvesting of one crop and the sowing of another crop. This is, in fact, a type of annual rotational system in which one or more of tile successive crops are sown, grass or other produced fodder.

- **Multiple cropping:** This is the most intensive system of land use, since the same plot bears two or more successive crops every year. Under the pressure of increasing population, there has been a shift from more extensive to more intensive systems of land use in virtually every part of the underdeveloped regions.

9.12 ANSWERS TO SELF-CHECK EXERCISES

Exercise 9.1

Answer 1. Refer to section 9.8.
Answer 2. Refer to section 9.3.1.
Answer 3. Refer to section 9.9.1.

9.13 SUGGESTED READING

1. T.W. Schultz, (1964): Transforming Traditional agriculture, New Heaven, Yale University Press.
2. R. N. Soni, (2006): Leading Issues in agricultural Economics Jalandhar, Shoban Lal Nagain Chander & Co.
3. Easter Boserup, (1970): The Conditions of Agricultural Growth, George Alien and Unwin London.

9.14 TERMINAL QUESTIONS

Q1. Explain the Schultz's Thesis of Agricultural Transformation?

Q2. Critically examine the Boserup's Theory of Agricultural Development?

UNIT-10

MODELS OF AGRICULTURE DEVELOPMENT-II

STRUCTURE

10.0 OBJECTIVES

Studying of this unit will enable you to:

- Explain the Different phases of Mellor's Theory of Agricultural Development
- Give the Critical evaluation of the Mellor's Theory of Agricultural Development
- Enlighten the Working of Lewis Model of Economics Development
- Present the Critical Review of the Lewis Model of Economics Development

10.1INTRODUCTION

In an earlier lesson we have examined how the traditional agricultural can be transformed. We examined Schultz's views in that

lesson. However, Schultz was not the only economist who made suggestions about, development of agriculture. Mellor is another Economist who tried his hands at a theory of agricultural development. As we shall see, his focus in his theory of agricultural development is different from that of Schultz in two major respects. Firstly, he does make suggestion, like Schultz, for developing agriculture. However, suggestions that he makes are many and these are not confined only to the use of some new inputs. Secondly Mellor tries to study with the help of history, how a developing agriculture passes through various stages of development. In fact, according to some, this is the major • difference between Mellor's theory of agricultural development and that put forth by Schultz.

10.2 MELLOR'S THEORY OF AGRICULTURAL DEVELOPMENT

The first part of Mellor's theory is not uncommon 'n this art, he emphasizes importance of agricultural development, in the overall development of the economy. He asserts that in the beginning all underdeveloped economies are predominantly agricultural in character. He tries to prove his point by quoting a large amount of statistics. And, he feels that for overall economic development, the resources must flow from the agricultural sector to the non-agricultural sector. Agriculture provides labour, capital and foreign exchange the expansion of the non-farm sector Food for those engaged in the non-farm sector as well as the raw material too, will he provided lot the non-farm sector by the agricultural sector. But for all, the agricultural sector itself must be developed first of all. And this brings us to the 2nd part of Mellor's theory for which he is generally known.

From the point of development, Mellor divides agriculture to fall in one of the three phases. The phases are:

(i) Traditional Agriculture,
(ii) Technologically Dynamic-Agriculture Low capital Technology and
(iii) Technologically Dynamic Agriculture-High capital Technology.

We describe below the main features of agriculture in each of these three phases.

10.2.1 Traditional Agriculture:

Mellor's definition of traditional agriculture is much different from that given by Schultz. He does not define agriculture in the: sense of'equilibrium. For him, traditional agriculture is a backward labour intensive agriculture which uses only crude, form, of capital. It is not simply a stagnant agriculture as is implied by Schultz's definition.

According to Mellor, farm organizations in traditional agriculture, though different in different countries because of difference in physical, economic and social factors have some common features also. For instance, most of the farms are cultivated by the farmers with their family

labour. Even the capital is provided by the farmer from his own source. The farms are generally small in size and the work force per farm is higher on this farm when compared with that in high income countries. These features result in low productivity and low income in these farms.

So' far as resource allocation on these farms is concerned Mellor follows Schultz. According to him resources arc optimally allocated on these farms. According to Mellor, land and Labour constitute the major inputs on these farms.' The capital is in a very prude form. It is direct embodiment of human labour and therefore, its productivity is quite low.

10.2.1.1 Law of diminishing returns to labour

As land is limited and so is the capital, additional labour force is the only source of increasing income in such agriculture. However due to the application of law of diminishing returns to labour, per capita productivity and income falls as more and more labour is used to produce more output.

Mellor does admit that in traditional agriculture, some nontraditional inputs like fertilizers have been used. But he points out that their use has not added significantly to the output mainly because other complementary inputs are not used along with the fertilizers.

Mellor is of the view that there is much underemployment in traditional agriculture. But this need not be due to the existence of zero value labour. This is mainly because of uneven distribution of land in the society with traditional agriculture.

Mellor feels that while on the small farms, under employment for disguised unemployment) may exist due to the existence of zero value labour, on larger farms, underemployment exists due to another reason. According to Mellor, the pattern of consumption in a traditional agricultural is rather rigid. As, on larger farms, income is likely to be more than what is needed to meet the requirements of a rigid consumption pattern, the amount, produced on such farms *i.e.* the amount[1] of labour to be used is to be not to be disguised. For proving this point Mellor uses the following analytical tools.

1. **The Production Possibility Curve.** For Mellor, this curve shows the relationship between total output of a given farm and the amount of labour used to produce that output. In other words, It is total productivity curve in value terms with labour as the independent variable. The total output in ‘the curve, however, is not shown purely in terms of the value of actual physical agricultural output. It is rather in terms of the value of combination of agricultural output and the non-agricultural goods and services that are exchanged for agricultural goods at each level of labour use. As the law of diminishing returns starts applying to agricultural product from the very beginning this curve progressively becomes flat as the amount Of labour use increases along x-axis. Ultimately, the curve becomes parallel to X axis a point where the marginal productivity

of labour becomes equal to zero. This curvature of the production possibility curve is valid for farms of all sizes. The only difference will be that the production possibility curve will be higher for larger farm than for the smaller farms though it will start from the origin in each case. In diagram I curves A to G are production possibility curves. All of then start from the origin C in the direction of CO. Axis CO shows man-time at C, it is presumed that zero work is put in while leisure availed of is OC. At O, all man-time has been used and mere is no leisure left.

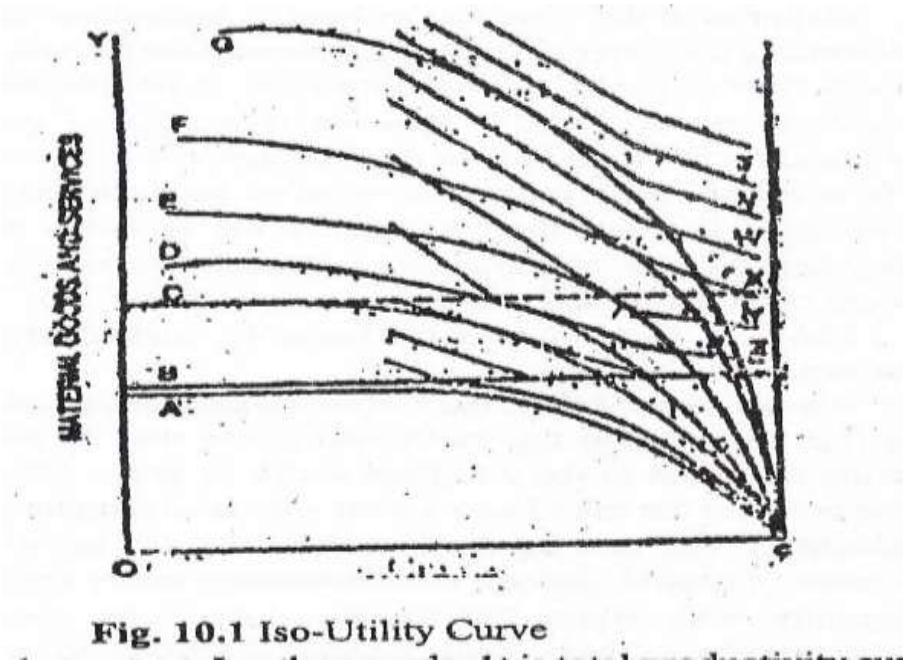


Fig. 10.1 Iso-Utility Curve

2. **Iso-Utility Curve:** The other tool that Mellor uses to show that labour is underemployed on larger farms is the iso-utility curve. It is just like an indifference curve (with O as the origin) a curve that shows at each point, the same amount of satisfaction from two commodities, and one the goods and services and other the leisure (opposite to work as measured from e). If a farmer wants more of goods and services, he will have to have so less of leisure, i.e. put in so much more work that he gets the same amount of satisfaction. A curve showing all such combinations of goods and services, on the one hand and leisure on the other which give him the same satisfaction is called Iso-utility curve. The rigid consumption pattern of the farmers affect the shape of the iso-utility curve as drawn with O as the origin. As each dose of additional goods and services has little utility due to rigid consumption pattern, it will progressively exchange for a smaller amount of leisure. In other words each unit of It leisure added (or work put it)' will be progressively exchanged with larger dose of goods and services. The iso-utility curve will thus be convex to O from which leisure is measured in the direction of

Cc. the marginal rate of substitution between the two commodities falling as is shown in diagram 1 (It may be noted that we can also say that the iso-utility curve has been drawn with C as the origin in diagram 1. In that case of course we shall consider work put in and not the leisure as the other commodity on better say, the discommodity in the combination).

3. **Iso Utility Map:** Just as there is n set of indifference curves, there is also a set of iso utility curves, each higher curve indicating a higher level of satisfaction as compared with the one below it. If all such curves are drawn use get what is called, an iso-utility map. Curves T to Z in diagram 1 show a part of the Iso-utility map. This map is considered to be same for each farmer.

10.2.1.2 Three Types Income levels

Before we follow Mellor to find out the point of equilibrium of labour use on large farms, we may refer to the three types of incomes levels as distinguished by Mellor. These are (a) level which ensures only the minimum food, clothing shelter and other essentials for maintaining human life OYo in the diagram shows this level, (b) the culturally defined subsistence level. OY indicates this level in the diagram. According to Mellor, in a traditional agriculture, OY should indicate the maximum level of income which a farmer can aspire for. Income level beyond O Y is deemed to be a nontraditional agriculture. It is a level which indicates changing standard of living found in dynamic, non-traditional agricultural societies.

10.2.1.3 Equilibrium Level of labour use

According to Mellor equilibrium level of labour use on such small farms ensures income level only up to Oyo will be indicated by the point where marginal productivity of labour becomes equal to zero. This is because all efforts should be made by the farmers to get the maximum output from land. Between OYc and OY, the equilibrium level of labour use will be determined at the point where the satisfaction from output produced is the maximum. This will be obviously a point[1] where the 'given production possibility of a farm is just tangent to one of the iso-utility curves. The shape of the iso-utility curves and the production possibility curves are such that according to Mellor, the equilibrium point will always be to the right of the point where the marginal productivity of labour is equal to zero. In other words, on such farms, there will be underemployment of labour even when the marginal productivity of labour is positive and is more than zero.

The above diagram, as given by Mellor, clearly shows that as the production possibility curve moves upwards its tangency point with an iso-utility curve move towards the right at least up-to the level of income defined as culturally determined subsistence level the income level relevant for traditional agriculture.

In the diagram production possibility curves A&B pertain to subsistence or below subsistence farm. It is only here that labour will be used up to a point where its marginal productivity is equal to zero.

From the above analysis, Mellor further concludes that income in traditional agriculture can be increased if move labour is used on the farms. For this he suggests redistribution of land and taxation on agricultural incomes as the methods to promote the use more labour on the larger farms.

10.2.1.4 Backward sloping supply curve in traditional agriculture:

Mellor is of the view that supply curve for agriculture production in traditional agriculture is backward sloping. His argument is as follows: when prices of agricultural products are raised, two things happen. On the one hand, there is a temptation to produce more, i.e. One likes to substitute labour for leisure. This is what he calls positive substitution effect of rise in prices of agriculture production on their land, the pattern consumption in, a tradition society is tradition bound is rigid. Now when the prices rise, income, of the farmers rises. But the consumption, pattern is rigid. So there is a temptation to produce less by using less labour in production. Thus is negative income effect of rise in prices of agricultural products. According to Mellor, in a traditional agriculture, negative income effect is stronger than the positive substitution effect, so far as the labour use & therefore output is concerned. The supply therefore falls when prices of agriculture products increase.

In the same way Mellor feels that whether zero value labour exists in traditional agriculture or not, withdrawal of labour from the agricultural sector will result in the fall in agriculture output. This is because withdrawal of labour will give a higher per capital income to the people who are still left in the agricultural sector. As their income rises, the phenomenon of back ward loping supply curve relevant for the traditional agriculture will apply and the total agricultural output will fall.

Mellor is of the view that so long as agriculture is traditional in character it cannot help the non-farm sector through flow of funds. Capital formation in traditional agriculture is very low. It must be taken out of its traditional rut if it is to help in the development of them on-farm sector. And it cannot move out of the traditional rut by itself. For this, the Government has to devise a policy aimed at the “complex but potential productive process of technological change”.

10.2.2 Phase II Technologically Dynamic Agriculture Low capital technology

According to Mellor, only when agriculture moves into this phase, from the traditional phase that it can provide resources to the non-farm sector to grow. This phase involves the use of new inputs with high marginal productivity. The new inputs do not involve the use of too much

of capital, and are complementary rather than competitive with labour. The traditional inputs are also used in this phase. These inputs increase the productivity per acre. Fertilizers, new seeds, power are some of these inputs.

10.2.2.1 Important features:

1. Agriculture still occupies the most important position in the economy in terms of income generation
2. Demand for agricultural products continues to grow due to increasing population
3. Size of the farms continues to be small due to slow growth of the non-farm sector
4. Agriculture does not use machinery due to availability of cheap labour.

Mellor feels that the following steps are necessary, if the traditional agriculture has to move into the 2nd phase of development and also if the second phase is to be all embracive.

1. **Institutional changes** for creating necessary incentives for development. Mellor is firmly of the view that institutional changes like land reforms are necessary for giving incentives to the cultivators to produce more. Technological changes will follow only the institutional reforms.
2. **Encouragement of research**. Mellor emphasizes scientific research at regional level. Sometimes, the research findings prove ineffective because these are not based upon regional variations.
3. **Supply of new and improved physical inputs**. This is one of the most important measures that Mellor suggests for pushing a traditional agriculture into the 2nd phase of development. These inputs include new crop varieties, improved breeds of livestock, inorganic fertilizers, insecticides etc. Organizations for their proper distribution need to be set up. Mellor feels that some of these inputs may have to be imported from outside as their production in the country itself may be rather costly.
4. **Infrastructure necessary for the development and production** of these inputs is to be developed. Efforts have to be made to make them acceptable to the fanners.
5. **Setting up of institutions to services agricultural production**. There are many supporting services which have to be developed if the agricultural production proper is to increase. The institution includes those distributing modem inputs, those facilitating marketing of agricultural products, those engaged in processing agriculture crops.
6. **Development of communication system to help farmers** make choices. Extension, services have to be developed to enable farmer make choices out of various alternative inputs and practices which

go on appearing in a dynamic agriculture. With regard to all these steps Mellor points out that, no doubt, in the beginning large return technical innovations may be adopted even when some of these steps are not taken, however, if the 2nd phase of agricultural development is to be wide spread, all those services are to be provided in a package, He further points out that all these steps have to be taken by the Government itself. Private individual are not in position to provide this package to the farmers. In this regards, he further points out that regional diagnostic studies be conducted to ensure suitability of the package.

Mellor also emphasizes the development of a broad range of educational institutions in order to ensure that the capacity of the farmer to grasp the new technicalities is increased. Two important points may be noted in Mellor's steps for pushing a traditional agriculture into the 2nd phase. The first is in consumption to a suggestion made by Schultz. It is that Mellor is not much against command approach. He expects much from the Government to push traditional agriculture into a non- traditional phase. Secondly, in this phase, the inputs are not highly capital using. The inputs suggested to be used are low capital intensive and are complementary to labour. There is no displacement of labour.

10.2.3 Phase III - Technological Dynamic Agriculture- High Capital Technology

Mellor has not discussed this phase in detail as he was mainly interested, like Schultz in transformation of a backward agriculture. However, he points out that when agriculture gets going in the 2nd phase, it will provide funds for the non-farm sector to develop. After some time both' the sector start developing with mutual help and agricultural will automatically enter the Third phase of development. Here heavy machinery will be used in agriculture; labour will be available for absorption in the developing non-farm sector. The heavy machinery will be developed in the expanding non-farm sector. Size of the farm will increase due to the transfer of tax from the farm sector to the non-faun sector High level of investment in machinery in agriculture becomes possible because of two factors:

(1) Capital formation in the developed agricultural sector grows further and
(2) The developed non-farm sector begins to use its own savings for investment and therefore does not need any capital from the agricultural sector.

One point may be noted with regard to all these three phases of development. Mellor is of the view that the three phases should be followed in the sequence, he has given. This will ensure an optimum use of resources from the long term point of view. Historically too, this pattern of development is more correct. Only the United States entered the third phase first and the 2nd phase, later. This is because United States,

agricultural machinery was developed earlier than the fertilizers were developed. However, as the present situations when both machinery and fertilizers are available the world over, it is desirable that the traditional agriculture of a country enters the 2nd phase and third phases of development in the order.

10.2.4 Critical evaluation

Mellor has presented a theory of agriculture development which is more exhaustive and historically more sound than that given by Schultz. No doubt, in some respects, he agrees with Schultz e.g. in case of perfect allocation of resources in a traditional agriculture. He also agrees with Schultz that if labour is withdrawn from the agriculture sector, production will fall. Of course, he does accept, unlike Schultz that no zero value labour exists on small farms.

His views about command approach are balanced. He assigns balanced positions both to the Government as well as to the farmers in taking various decisions. His definition of traditional agriculture is more pragmatic and is also historically sound. His analysis of labour use in different phases of development is quite logical. Labour is not displaced at all till the 2nd phase is over. This is what should be when the non-farm sector is not developed. His sequence of the development phases is also historically correct.

10.3 LEWIS MODEL OF ECONOMICS DEVELOPMENT

We have studied Schultz's theory of transformation of traditional agriculture and also Mellor's theory of agriculture development. These theories concerned the development of the agricultural sector proper. Lewis's model on the other hand is concerned with the development of the non- agriculture sector. He published his model entitled.

"Economic Development with Unlimited Supplies of Labour" in 1954

In his model, Lewis divides the economy in an underdeveloped country in two sectors namely the sector subsistence sector and the capitalist sector. Subsistence is identified with the agricultural sector of the economy while the capitalist sector implies mainly the manufacturing sector of the economy. Capitalist sector also includes plantations and mining where hired labour is employed for purposes of production. The capitalist sector can either be private or public in nature. Subsistence sector, that the agricultural sector is considered to be labour intensive. It does not use reproducible capital. It uses poor techniques of production and has very low productivity.

10.3.1 Assumption of the model

1) The basic assumption of the model is that there exists surplus labour in the subsistence .sectors. It includes labour whose marginal productivity is zero as well as that whose marginal productivity, is positive

but is less than the institutional wage. This labour comprises farmers, agricultural labourers, petty trader's domestic servants and women. The surplus labour in the agriculture sector acts as a source of unlimited supply of labour for the manufacturing sector. By unlimited supply of labour. Lewis means that the supply of labour is perfectly elastic at a particular wages. This particular wage is somewhat higher than the institutional wage which each worker in the agricultural sector gets. Lewis calls it as an institutional wage because every worker gets this wage because of some institutional, arrangements. This wage is equal to an average share of each worker in the total output in the subsistence sector. If market forces were allowed to operate in the subsistence sector labourers with zero marginal productivity or those with a very low marginal productivity would not have received this wage.

2) Importance of saving: Another important assumption that Lewis makes is about the sayings generated in the capitalist sector and in the subsistence sector. The capitalist sector invests its entire savings for its further expansion. Those, in the subsistence sector, on the other hand squander away their saving, if any in purchase of jewellery & for construction of temples etc. The propensity to save of the people in subsistence sector is also lower when compared with that of those in the capitalist sector. Lewis in fact so much fascinated by the higher propensity to save of the capitalist sector that he even advocates a transfer of income from the subsistence sector to the capitalist sector. He feels that steps have to be taken to raise the rate of savings from 10% to 15% if the development of the economy has to be smooth.

10.3.2 The Working of the Model:

The explanation of working of the Lewis model is quite simple. He feels that if a wage, higher than the institutional wage prevailing in the subsistence sector, by a certain proportion of the institutional wage, is fixed in the capitalist sector, the capitalist sector will be able to attract in an unlimited quantity, the labour from subsistence sector. This will enable the capitalist sector of expand. It will, in turn lead to the generation of more savings in the capitalists sector The additional saving, will not only help the entrepreneurs to invest more but also to improve the quality of capital invested. This will result in more employment of labour from the subsistence sector This will lead to generation of more savings in the capitalist sector which can be further invested leading to employment of more surplus labour and so on.

Figure 10.2 explains the processes of expansion of the Capitalists sector

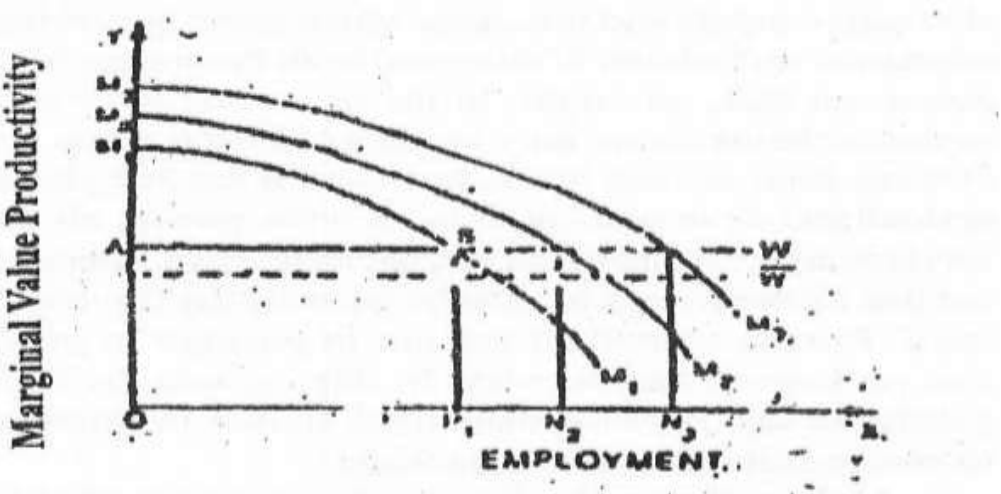


Fig. 10.2

In the diagram AW is the wage rate fixed in the capitalist sector. It is higher than, W which represents the institutional wage. The wage in the capitalist sector has to be higher than the intuitional wage because only such higher wage can attract labour from the subsistence sector. At first, ON-I labour is employed. This will lead to the generation of surplus equal to AM'S, after the wages at the rate W have been paid. According to Lewis this surplus AMIS will be reinvested cither in old type of capital or may even be used to improve the existing techniques. All this will result in marginal productivity curve of labour moving M2M2. Now more labour at wage. We can employ ON2 amount of labour will now be employed. More surpluses will then be generated. It would be reinvested. Marginal productivity of labour curve will shift to M3M3 more labour can now be employed. Still more surplus will be generated and reinvested and so on. The process of transfer of labour from the subsistence sector to the capitalist sector will continue for some times till some obstacles, hindering this transfer appear.

10.3.3 Role of Bank Credit

From the above analysis, one might get the impression that it is only through the surplus generated in the capitalist sector that the development of the capitalist sector takes place. This however is not correct. The process of development can also start if the capitalist sector initially does not invest its savings in the capital but borrows from the banks. According to Lewis the basic problems is to employ the labour from the subsistence sector and this can be initially done through investment of funds borrowed from the banks.

Lewis is conscious of the fact that creation of bank credit will give rise to inflationary increase in prices. However, he is not much perturbed

by this prospect. He is of the view that inflationary pressures will not continue forever. A time will come when the additional savings generated by the investment of borrowed funds become equal lo these very funds. At that time, prices will stop rising further. As he says, equilibrium is reached when savings generated through the investment of additional bank credit become equal to the amount of bank credit itself.

He is also aware of another fact that If inflation can make the distribution of income unfair. However, he says, it will be good for the manufacturing sector if the distribution of income moves in favour of the capitalists. Of course, if inflation tilts the distribution of income in favour of the traders it will be bad for the economy.' It will only lead to more speculative activities.

10.3.4 Slowing of the Pace of expansion of the Capitalist Sector

According to Lewis, expansion of the capitalist sector will continue unhindered so long as the supply curve for labour from the subsistence sector is perfectly elastic so long as the labour can be transferred to the capitalist sector at a constant wage. Lewis, of course is conscious of the fact that under certain circumstances, the supply curve for labour can turn, upwards. These circumstances are:

i. The pace of expansion of the capitalist sector is more rapid when, compared with the rate of growth of population in the subsistence sector. The surplus labour in that case will ultimately be fully exhausted.

ii. Technological development in the subsistence sector raise the predictability of labour with in that case will rise. We too will have to be raised then.

iii. As population increase, due to law of decreasing marginal return, prices of food and raw materials will rise. This will increase both W and W.

iv. When workers in the capitalist sector start imitating the living pattern of the capitalist themselves, they may ask for higher wages.

v. If any of the above four factors start operating, then according to Lewis, the expansion of the capitalist sector will slow down.

10.3.5 Impact of the Open economy:

The open economy can encourage the immigration of labour. If this happens, it will help in the expansion of the capitalist sector. But immigration may not be so easy. If, in that case the pace of expansion of the capitalist sector slows down, capital may move out of the country as

the economy is an open one. This may in turn lead to balance of payments problems and the problem of stability of rate of exchange.

10.3.6 Critical Review of the Model

Some of the objections against Lewis's model are as follows:—

1. The assumption that disguised unemployment exists in the agriculture sector has not been accepted by many economists. Schultz, Viner, Heberler and Hopper are a few of such economists. According to them, the production in the subsistence sector will be affected when labour is withdrawn from it. With this will change.
2. Lewis ignored the cost involved in training the unskilled worker transferred from the subsistence sector. Even if it is obtained at a constant wage rate, so for as its transfer from the subsistence sector is concerned, the supply curve may slope upwards so for as the capitalist sector is concerned if the cost of training rises is more and more labour is transferred.
3. When labour is transferred from the subsistence sector share of agricultural output falling to each one left in the agricultural sector will go a rising. This means the institutional wage will go on rising with every transfer and so will be the wages paid in the capitalist sector.
4. The model assumes that, besides labour, there is unlimited supply of entrepreneurs in the capitalist sector. This is not the in the case, of many of the underdeveloped countries.
5. It is wrong to assume that a capitalist will, always re-invest their profits. They too can indulge in Unproductive pursuits. They can use their profits for speculative purposes.
6. It is also wrong to assume that landlords always squander away their savings. The role of land lords of Japan in industrialization of the country is well known.
7. The model assumes that there already exists a market for in the industrial products in the country. This is wrong. People of an underdeveloped country may not be able to purchase the products produced by the expanding capitalist sector. Foreign markets, too, may not be available for the capitalist sector in the 'beginning.
8. Inflation is not liquidating, as has been assumed by Lewis. Experience of various countries shows that if once prices start rising, it becomes difficult to control them.
9. It is not easy to transfer labour from the subsistence sector to the capitalist sector by offering them an incentive of a little higher wage. Mobility of labour is very low. Many factors like family affection, difference in language, caste, religion etc, affect it adversely.
10. Every underdeveloped country does not have surplus labour in the subsistence sector. As such the model does not apply to countries which are sparsely populated.

The only positive point in the model is its ‘general' emphasis on the role of saving in economic development and on the potential that over populated countries have in developing themselves with the help of surplus labour.

Exercise 10.1

Q1. Explain the Different phases of Mellor’s Theory of Agricultural Development?

Q2. Explain the Working of Lewis Model of Economics Development?

10.4 SUMMARY

In this chapter we have studied the Mellor’s model agricultural development and Lewis’ model of Economic development. We have studied in that model that transfer of labour from the agricultural sector helps the development of the industrial sector.

According to Mellor the main features are (i) Agriculture still occupy the most important position in the economy in terms of income generation (ii) Demand for agricultural products continues to grow due to increasing population (iii) Size of the farms continues to be small due to slow growth of the non-farm sector and (iv) Agriculture does not use machinery due to availability of cheap labour.

10.5 GLOSSARY

- **Iso-cost line:** A line along which the cost of something -- usually a combination of two factors of production -- is constant. Since these are usually drawn for given prices, which are therefore constant along the line, an iso-cost line is usually a straight line, with slope equal to the ratio of the (factor) prices.
- **Iso-quant:** A curve representing the combinations of factor inputs that yield a given level of output in a production function.
- **Law of Diminishing Returns:** The principle that, in any production function, as the input of one factor rises holding other factors fixed, the marginal product of that factor must eventually decline.
- **The Production Possibility Curve:** For Mellor, this curve shows the relationship between total output of a given farm and the amount of labour used to produce that output. In other words, It is total productivity curve in value terms with labour as the independent variable.

- **Iso-Utility Curve:** The other tool that Mellor uses to show that labour is underemployed on larger farms is the iso-utility curve. It is just like an indifference curve. A curve showing all such

combinations of goods and services, on the one hand and leisure on the other which give him the same satisfaction is called Iso-utility curve.

- **Iso Utility Map:** there is a set of iso utility curves, each higher curve indicating a higher level of satisfaction as compared with the one below it. If all such curves are drawn use get what is called, an iso-utility map.

10.6 ANSWERS TO SELF CHECK EXERCISES

Exercise 10.1

Answer 1. Refer to section 10.2.1, 10.2.2 & 10.2.3.
Answer 2 Refer to section 10.3.2.

10.7 SUGGESTED READINGS

1. Mellor, J.W.: "Towards Theory of Agriculture Development in Herman, M. Southworth & B.E, Johnson (ed.) (1974) "Agriculture and Economic Growth", London Cornell University Press.

2. Lewis W.A. (1954): Economic Growth with Unlimited Supplies of Labour", The Manchester School of economics and Social Studies, May 1954.

3. Soni R.N. (2006): Leading Issues in Agricultural Economics, Jallandhar, Shoban Lal Nagin Chand & Co.

10.8 TERMINAL QUESTIONS

Q1. Examine the Mellor's Theory of Agricultural Development?
Q2. Critical evaluate the Lewis Model of Economics Development?

UNIT-11
MODELS OF AGRICULTURE DEVELOPMENT-III

STRUCTURE

11.0 OBJECTIVES

After going through this lesson you will be able to:

- Explain the Ranis-Fie Model
- Analytically differentiate between the Lewis' model and the Ranis-Fei model
- Give the critical evaluation of the Model

11.1 INTRODUCTION

We have earlier studies Lewis' model of Economic development. We have studied in that model that transfer of labour from the agricultural sector helps the development of the industrial sector. Lewis has ignored one important point in his model. He did not analyze as to what happened in the agricultural sector when labour was transferred from the agricultural sector, to the industrial sector. Such an analysis has been attempted by Ranis and Fei in their model. They have also examined how the changes that take place in the agricultural sector, consequent upon transfer of labour from it, affect development of the industrial sector.

11.2 RANIS-FIE MODEL

The model assumes that an underdeveloped economy is predominantly an agricultural economy. It is a labour surplus and resources poor economy. The model assumes a close economy. In the model, the economy is divided into two parts, namely the agricultural sector and the industrial sector. The agriculture sector is assumed to produce only food grains. The model further assumes that disguised unemployment exists in the agricultural sector. It is also assumed that the law of diminishing marginal returns to labour applies in the agricultural sector from the very beginning and that after a point, the marginal productivity of labour falls to zero.

The industrial sector is assumed to depend upon the labour in the agriculture sector, for its development. In this the model follows Lewis.

11.2.1 The Initial Position

On the assumption that there is disguisedly unemployed labour in the agriculture sector and that the development of the industrial sector is yet to start, the situation in the two sector can be shown by diagram 1 In figure 1.1 the process of the development of the industrial sector has been shown. Along OP, the marginal productivity of labour and wages has been shown in real terms, Curve dt and d't' are the marginal value' productivity curves as shown in the Lewis model Stt's is the labour supply curve. This supply curve shows that labour is available at constant wage OS up to St. and at a rising wage level after this point, thus indicates the turning point for the labour supply curve as assumed by Lewis.

This model, with the help of other figures i.e. fig.1.2. & 1.3 explains why the turning point for labour supply curve for the industrial sector.

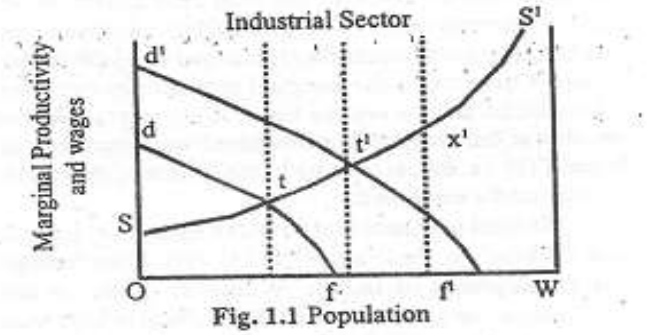


Fig. 1.1 Population

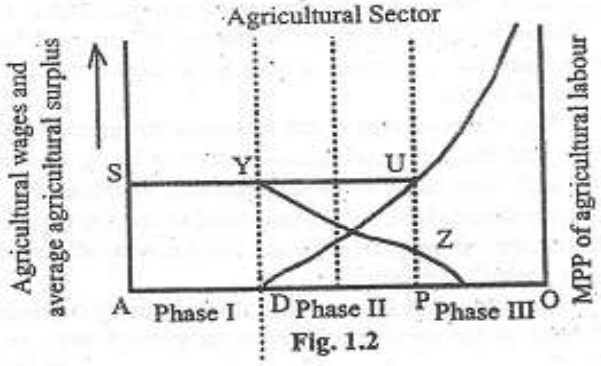


Fig. 1.2

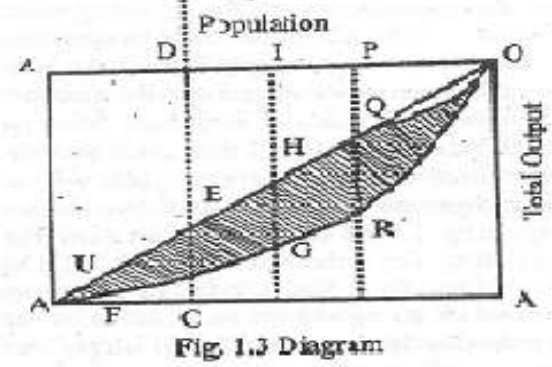


Fig. 1.3 Diagram

For this, we may first of all look at diagram 1.3. In this diagram OA (read from 0 to A) is the total labour force in the agriculture sector. Curve RGCFX shows the total productivity of this labour. It is assumed that law of diminishing marginal returns to labour operates in agriculture. AD is the zero value labour because total production remains unchanged after. The model assumes, like Lewis that each labour whether disguisedly unemployed or not gets an equal share in the total agricultural output. The authors call this share, again like Lewis, the institutional wage. Slope of the line OX (i.e. AX/OA) shows the value of the industrial wage.

In fig 1.3 we can also fine a point beyond which along OA the marginal productivity of labour becomes less than the institutional wage. Thai point obviously is the one where the slope of the total productivity curve (i.e. the marginal productivity) is equal to the slope of the line OX, this point is accordingly reached when OP labour' is used, Curve OQ is the marginal productivity Curve for labour which falls below the line OX beyond Q. We can say that at the prevailing institutional wage rate, labour beyond OP i.e. PA, according to the author of the model is disguisedly employed.

We must note here that the three figures i.e. 1.1, 1.2 and 1.3 lined i.e. these are related to each other through the employment of labour. Whatever labour is not employed in the agriculture sector is deemed to have been transferred to the industrial sector and employed there. If for example, only OD labour is employed in agricultural sector, then AD is deemed to have been employed in the industrial sector.

Fig. 1.2 represents a link between the agricultural sector and the industrial sector. It tries to show, oh the one hand, how much of food grains can be released by the agricultural sector for the industrial sector. On the one hand, it shows marginal physical productivity of labour in the agricultural sector.

We may in the first instance, look at the food grains released by the agricultural sector on average basis i.e. per labour, transferred to the industrial sector. In the diagram (1,2) for AD labour, this average is just equal to its institutional wage, simply because the labour left in the agricultural sector will get only the institutional wage and redundant labour (i.e. zero value labour) will bring the balance with it. It will thus, bring its own share of institutional wages. So average surplus will be equal to the institutional wage itself. As shown the institutional wage in fig. 1.2 and the AD labour get an average surplus equal to it. The authors of the model call it as the first phase of transfer of labour. In fig. 1.2 the average surplus released by the agriculture sector falls after the transfer of redundant labour is over. It falls simply because now labour with positive-productivity is transferred to the industrial sector. As the labour left in agriculture sector ‘will continue to get the industrial wage. As there will be no cut in its share, all the cut will be faced by the labour that is

transferred. So average surplus beyond AD in fig.1.2 will fall, this will continue to fall till another bunch DP labour is transferred.

The authors do point out that P in fig. 1.2. shows the end of the 2nd phase of labour transfer. The phase signifies the point where marginal productivity of agricultural labour becomes equal to the institutional wage. After the second phase, the average surplus falls at still higher rate because now the labour left in the agricultural sector will not be paid wages equal to the institutional wage. After the second phases, the average surplus, falls at still a higher rate because now the labour left in the agricultural sector will not be paid wages equal to the institutional wage but higher than this simply because marginal productivity of labour in the agricultural sector is higher than the institutional wage. This will further cut down the share of the labour" transferred to the industrial sector SYZO shows the complete curve for average agricultural surplus.

In fig. 1.2 VDA is the marginal productivity of labour in the agricultural sector (read from O to A). It falls as more and more labour is used and becomes equal to zero when OD labour is used. We know that beyond D towards A, the labour is zero value labour: We may now look at the curve SYUV in fig. 1.2. This can be taken as the curve showing the wages paid to the workers in the agricultural sector during various phases. We have already explained that during phase 1 and 2 the agriculture labourers will get wage equal to the institutional wage. This is shown in fig 1.2. as the curve SYU After that they get wages equal to their marginal productivity. This is indicated by UV part of the curve. The authors call point U point P as the point of commercialization of agriculture because if the labour transferred to the industrial sector is such that in the agricultural sector only OP labour is left, then its wages will be determined by its marginal productivity (indicating a commercial motive) and will not be equal to the institutional wage. This is phase EH which according to the authors can be called phase of commercialization of agriculture.

11.3 Lewis Turning Point

We may look at fig. 1.1 again. The labour has to be transferred from the agricultural sector to the industrial sector. The industrial sector therefore must pay to the labour, the wages at least equal to the wages that it gets in the agricultural sector. Of course, it is presumed that the labour in the industrial sector will be paid in terms of the industrial products. In fig. 1.1, OS indicates the level of institutional wages of course, expressed in terms of industrial products. In the first phase, the transferred labour brings with it the average surplus equal to the institutional wage. So long as the transferred labour brings this constant level of surplus with it, it will go on getting the same wage of course, in terms of industrial products.

The rate at which the wages in terms of industrial products are determined will be governed by the terms of trade between the agriculture

products (food grains in this case) and the industrial products. If a term of trade remains constant (as is the case in the 1st phase) the level of institutional wage expressed in terms of industrial products will remain the same. What we find in fig 1.3 up to point *t* OS continue: to be the constant wage rate (equal to the institutional wage paid to the agriculture labour but expressed in terms of the industrial products. Here the term of trade between agriculture and industry remain unchanged. This is because, according to the authors of this model, the terms of trade between the two sectors depends upon the fluctuations in the average agriculture surplus. If the average agricultural surplus remains unchanged, so will be the wages paid to the industrial workers. This very explanation follows for changes in the phase 2. As soon as the 2nd phase starts, average agriculture surplus released for each transferred labourer falls. This creates a shortage of food grains for the industrial sector. Terms of trade will rise for the agricultural sector.

Now we have already seen that agricultural labour in the 2nd phase of labour transfer is also paid wages equal to the institutional wage. So labour in the industrial sector should also be paid wages equal to the institutional wage, though expressed in terms of industrial products. Now, as the terms of trade have started moving against the industrial sector (i.e. for the agricultural sector) when the second phase starts and this movement continues with every further transfer of labour, more, and more of industrial products have to paid as wages per labourer so that their value remains equal to the institutional wage as paid to the agricultural worker in phase II. This is the reason why the supply curve for labour in the industrial sector goes on rising upwards after point. In phase 3, this curve becomes still steeper. This because not only do the terms of trade continue to turn against the industrial sector, the labour in the agriculture sector also starts getting wages which are higher than the institutional wage. This is the reasons why in fig. 1.1 the supply curve for it labour becomes till steeper after t.

11.4 ANALYTICAL DIFFERENCE BETWEEN THE LEWIS' MODEL AND THE RANIS-FEI MODEL UP TO THE PRESENT POINT OF DISCUSSION

According to Ranis-Fei model point tend of the first phase) in fig. 1.1 shows the Lewis turning point i.e. the point after which the supply curve of labour in the industrial sector will turn upwards. However Lewis himself did not consider this point as the upward turning point. For him all labour in the agriculture sector whose marginal productivity was either zero or was less than the institutional wage was available to the industrial sector at the institutional wage (or at a rate a little above it.) He never pointed out that as soon as the zero value labour was transferred to the industrial sector (i.e. up to the end of phase I in the present model) the supply curve for labour will start turning upwards. For him, some other labour too (whose marginal productivity was less than the institutional

wage, was also available at a constant wage rate. The reason for tins difference in the views of the authors of two models is that unlike Ranis and Fei, Lewis did not take into account the effect of changing terms on trade on the supply price, of labour in the industrial sector. He totally ignored it, he assumed as if the wages to the transferred labour will be paid in agricultural products and as the institutional wages fixed in terms of agricultural produce, 'the labour transferred to the' industrial sector will continue to be available at the constant wage rate i.e. that institutional wage Ranis and Fei,, on the other hand assumed that the labour in the industrial sector will be paid, in terms of the .industrial products and they had to bring the hanging terms of trade into the picture So We find that whereas according to Ranis and Fei, Lewis" turning point appears as soon as phase in their model ends, according to Lewis himself, the turning point will appear at the end of the phase II If i.e. up to the point where labour in the agricultural sector is paid institutional wages.

11.5 IMPACT OF INCREASE IN PRODUCTIVITY OF AGRICULTURAL LABOUR ON THE LABOUR SUPPLY CURVE FOR THE INDUSTRIAL SECTOR

Ranis and Fei refer to two factors that put off the Lewis turning point, i.e. the end of first phase when terms of trade changing against the industry. These factors are (i) the increase in population and the (2) the increase in the productivity of agricultural labour. Increase in population by supplying more redundant labour can put off 'the end of the phase I. In this lesson script, we will pay our sole attention in the 2nd factor i.e. increase in labour productivity For this purpose we use diagram II, This diagram contains all that have been included in diagram I as the starting point. At the same time, it tries to show the impact in agricultural productivity on various aspects of the model.

Before we proceed further, we may refer to certain assumptions that the authors make while discussing the impact of increase in agricultural productivity on the process of transfer of labour from the agriculture sector to the industrial sector. The first assumption is that even when the productivity of agricultural labour increases, the size of the labour force that has positive marginal productivity remains the same or in other words, the size of the zero value labour force in the agriculture sector remains unchanged. This is obviously a questionable assumption. Second assumption is also questionable. It is assumed that when the labour productivity increases, the institutional wage in the agricultural sector remains unchanged. Everybody will be getting the same old wage even why now there is more to share.

Now, we may have a look on diagram 2. In the first instances we examine fig 2.3, shows how the increase in the productivity of agricultural labour effects the total productivity curve. Curve I shows the original total productivity curve. Curves II and III show the total productivity. After the increase in labour productivity has taken place in the agricultural sector.

It is clear from the fig 1.3 that as per assumption 2 described above, marginal productivity of labour becomes zero (i.e. total productivity curve becomes maximum, at the same point of labour, use i.e. OD labour and the institutional wage (as per assumption 2) is represented by the slop of the old line OX.

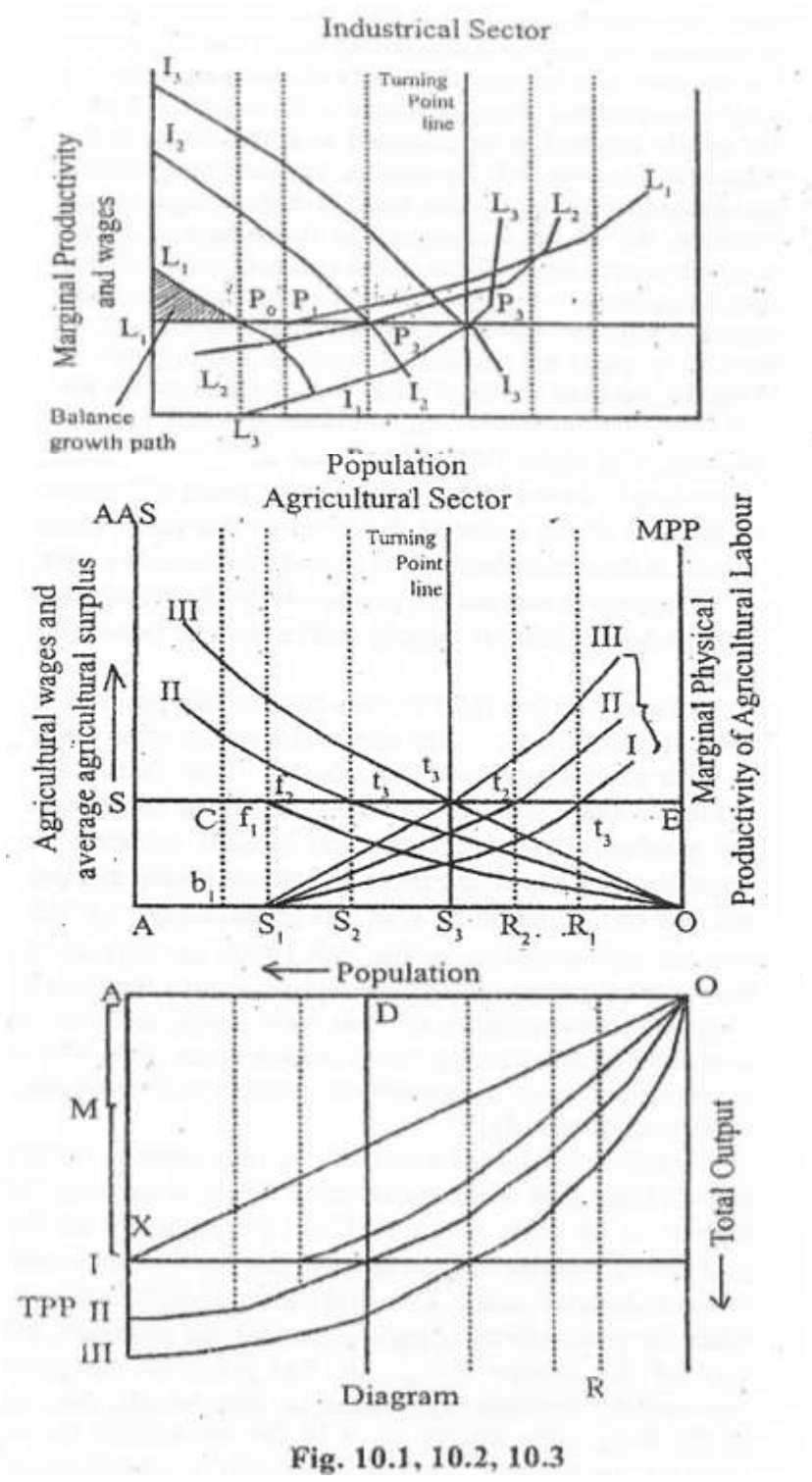


Fig. 10.1, 10.2, 10.3

Diagram 2.2 shows how the average agricultural surplus and the marginal physical productivity of labour is affected by increase in labour productivity. So far as Marginal Physical productivity of labour .is concerned, curve MMP, shows the original marginal physical productivity of labour. The two other curves MPP_{ii} and MPP_{iii} are the two new curves showing an upward, movement in productivity of labour. As it has been assumed that the size of the zero value labour is the same all the marginal productivity curves reach zero point 6n OA as soon the first phase of transferred labour ends.

So far as the average agriculture surplus curves are concerned. St is die original Average Agricultural surplus curve. As now agricultural productivity of labour has incased the curve shifts upwards. As curves II and ill show the average agricultural surplus curves corresponding to the increased total productivity curves in fig 2.3. It may be noted that curves AASII and III have not part parallel to OA as the AASI curve has. Rather, the curves are higher than the original one and slope downwards to the right from the very beginning. This is because, in the first instance, as the labour left in the agricultural sector still gets only the institutional wages in phase I the balance passed after increase in labour productivity will than the- institutional wage as was the case in the original situation. The average surplus will then goes on declining even in the first phase because in the first phase, the total additional output due to increase in labour productivity is the same throughout. This total addition goes to the share of the transferred labour as we have just pointed out. However, when more and more labour is ‘transferred in the first phase, the share of this additional output going 13 the transferred labour will go on falling. The result will be that each worker, originally in the first phase will be getting along with it an average agricultural surplus, which be over and above institution wage that it had receive earlier and that this additional average will go on declining as the labour is transferred from. In the agricultural sector to the industrial sector in the old phase 1.

When we go through the increased average agricultural surplus curves i.e. AAS_i and AAS_{ii} we will note one more point. In each curve, the average agriculture surplus is equal to the institutional wage at a point to the right of the original, point Y in diagram I (Pt fi in fig.2.2). This means that increase in the average agricultural surplus shifts the end of phase I (Original) towards the right. For example only after point of 2 in fig 2.2., the average agricultural surplus will be less then institutional wage (when we consider AAS_{ii}, Similarly, If we consider curves AAS_{iii} it will show that the end of phase I has shifted to point f3.

We may again look at the marginal productivity of labour curve in fig. 2.2. We have seen that as agricultural productivity of labour increase, these curves shift towards the left. This shift indicates another change. With every leftward shift, marginal productivity of labour rises and therefore the point where marginal productivity of labour institutional

wage becomes equal to each other is reached with comparatively smaller number of workers being transferred to the industrial sector when we compare this situation with the original one. For example in fig. 2.2 originally at point Marginal productivity of labour was equal to the institutional wage A.S. After the increase in the productivity of labour io this point shifts to the left i.e. to 12. And..... MPP_{iii}, this point further shifts to the left i.e. to t3. This has an important implication for further analysis. We know that the point where institutional wage and the marginal productivity of labour are equal lo each other, has been treated by the author of the model as beginning of phase III so far as the transfer of labour from the agricultural sector to the industrial sector is concerned. We can therefore say mat with every increase in the productivity of labour, the beginning of II shifts left wards. Or in other words, the starting point of phase III is reached earlier when an increase in labour productivity lake place.

The preceding discussion throws up an important point. We have seen that where an increase in productivity of agricultural labour pushed the end point of the first phase (also called the shortage point) to the right through increase in average agricultural surplus, it also pushed the point of commercialism of this agriculture towards the left. According to the authors of this model, there is bound to be particular increase in productivity of labour which will make the end of 1st phase and the beginning of III phase confided with each other. In other words, the II phase will, then disappear, In diagram 2.2, this point is reached at S3 where average Agricultural surplus and marginal productivity of labour are both equal to institutional wage. The authors call it the 'turning point'. (This point is not the same as been referred to the model given by Lewis. This point is arrived at, after there is a certain amount of increase in agricultural productivity). This is a very important concept in this model. However we shall explain the importance of this point only alters we have discussed the impact of increase in the productivity of agricultural labour on the labour supply curve for the industrial sector. This impact can be read through diagram 2.1.

In diagram 2.1 $L_1P_1L_{1,}$ is the original labour supply curve OL, is the equivalent of the institutional wage prevailing in the agricultural sector but paid in term of industrial goods. Now, as the average agricultural surplus increases due to increase in labour productivity in the agricultural sector, terms of trade will change in favour of the industrial sector (i.e. against the agricultural sector). A smaller basket of industrial goods will have to be paid for ensuring the equivalence of the old institutional wage (For that mailer, even for wages higher than this) in the agricultural sector. Of course, as the average agricultural surplus declines with more and more transfer of labour to the industrial sector, the terms of trade will change in favour of agriculture and wages paid to the transferred labour in terms of industrial goods will go on rising.

The new supply curve, for industrial labour (because of increase in the productivity of labour in the agricultural sector) will thus start from a point below the old wage OS in the industrial sector and go on moving upward to the right (L_2L_2 and L_3L_3 are the new labour supply curves for the industrial sector). There is no horizontal portion in the new supply curves of labour.

We may note one more point with regard to the new supply, curves for labour for the industrial sector. Each curve, based on a relatively greater increase in the productivity of agricultural labour, thought lying below the previous curve (showing, comparatively a small increase in the productivity) in the beginning, intersects this curve at some point on or intersects above the level of institution wage. For example curve L_3L_3 intersect both L_2L_2 & L_1L_1 curves and curves L_2L_2 insects curve L_1L_1. In other words, new labour supply curves do not lie below the previous labour supply curves throughout. This is because, according to the authors of this model, in the first instance, each change in the terms of trade against agriculture due to its increasing average agricultural surplus because of increase in the productivity of agricultural labour will push down the supply curve of industrial labour. But at the same time increase in agriculture productivity will make the new supply curve for industrial labour move upwards to the right more steeply especially for that part of the transferred labour which is paid not the institutional wage but an amount equal to its marginal productivity while in the agricultural sector. Following this, the authors of the model imply that greater the increase in the productivity of agricultural labour, lower will be supply curve for industrial labour in the beginning and greater will be its gradient in its later part and as a result, it will be ultimately intersecting the curve corresponding lo a smaller increase in agricultural productivity at one point or the other.

Another point needs explanation, With new supply curves for labour, it is quite possible that the wage determined in industrial sector though the changed supply curve of labour and the demand curve for labour (as represented by its marginal productivity) are lower than before. However, even the lower wage so determined because of a favourable terms of trade for the industrial sector, due to increased productivity of agriculture labour, will ensure an amount of food grains equivalent to the institutional wage prevailing in the agriculture sector. If the marginal productivity curve of industrial labour also moves higher due to more investment in the industrial sector, the wages can rise back to the old level of institutional wage when paid in terms of industrial goods. In other words, one can say that now more labour can be employed at the old institutional wage in the industrial sector when labour productivity rises in the, agricultural sector or we can say that Lewis upward turning point is postponed with increase in the productivity of labour in the agricultural sector. However, an important point must be noted in this regard. Every increase in the productivity of agricultural labour will not push this point to the right. The

'turning point' as defined by the authors of this model is the ultimate limit. As soon as this point is crossed, wage in the industrial sector must become higher than the original institutional wage prevailing in the industrial sector.

This is simply because wages in the competing agricultural sector, after the 'turning point' are above the institutional Wage itself. It may further be noted that the analysis in the model implies that this turning point for labour supply in the industrial sector will remain unchanged, other things remaining the same, even if the increase in productivity of agricultural labour is more' than that winch has brought about this point. It can neither move to the right not to the left. New labour supply curves for industrial labour of course; will appear with every further increase in the productivity of agricultural labour but they will all be passing through the turning point itself.

11.6 THE GROWTH PATH

The horizontal line in diagram 2.1 showing the institutional wage in the industrial sector has been called the balanced growth path up to the turning point. The authors of the model suggest that the two sectors should grow in such a manner that wages in the industrial sector /coincide with the old institutional wage up to the turning point. If only the agricultural sector develops, the industrial wage can, no doubt, fall below the .original institutional sector wage. But once this lower wage is fixed the industrial sector will not be able to employ more labour than that which is available at this wage. More labour is available to the industrial sector only at a higher wage. The industrial sector therefore should expand and increase the marginal productivity of its labour. Because it is only thon mat it can afford a higher wage in terms of industrial goods. Similarly, if the industrial sector wages are higher than the institutional wage (as fixed originally in the industrial sector) these should be brought down if the industrial sector is to grow up to the turning point smoothly. In case this is not done, higher wages will unnecessarily cat up the surplus in the industrial sector. It is possible to reduce the wages in the industrial sector by increasing productivity of labour in her agricultural sector and thereby to shift supply curve for industrial labour to the right. The authors, thus, suggest that the ideal solution before the 'turning point' is to develop both the sectors in such a way, may be, one at a time-that the initial advantage (or disadvantage) in terms of trade accruing to the two sector is maintained and the institutional wage (as originally paid in term of industrial products) prevails in the industrial sector.

After the 'turning point' has been reached, the institutional wage loses its importance. Agriculture becomes commercialized and wages in this sector are higher* than the institutional wage and so will be wages in the competing industrial sec or, Wages in the industrial sector cannot be constant after the turning point.

11.7 CRITICAL EVALUATION OF THE MODEL:

The model is, in a way, a pioneer in analyzing how changes take place in the agricultural sector as well as in the industrial sector and also in studying how the relations between the two sectors change when labour is transferred from the agricultural sector to the industrial sector. However, it suffers from certain limitations. Few of them are listed below:-

(1) The model assumes that labour will shift from the agricultural sector to the industrial sector at the same wage, same wage which it is getting in the agricultural sector. This assumption is not correct, without some additional incentives no labourer will ever leave its original place of work.

(2) There is another wrong assumption which underlies the' model. The model assumes that when the redundant labour or the disguisedly unemployed labour leaves the agricultural sector, the labour left behind the agricultural sector will continue to get wages equal to the institutional wage. This will never happen. It passes comprehension why should the agricultural sector, voluntarily spare the surplus over what the institutional wager determine for the labour left behind in the agricultural sector, for the industrial sector. The logical conclusion appears to be that when some labourers have left the agricultural sector those left behind will try to consume more of what was being produced by the agricultural sector. There per head consumption will then go above that indicated by the institutional wage. In other words, diagrammatically, a new line greater with a slope than that of OX (dig. 1.3) will come into existence, thereby .reducing the agricultural surplus available for workers transferred to the industrial sector (below what the model assumes).

(3) The demand of the labour for agriculture surplus transferred to the industrial sector jean also go up even when their wages are not-higher than what they were getting in agricultural sector. Lewis gives a reason for this increase. The industrial workers may start imitating their capitalist employees and demand more of everything. This increase in turn, may affect the terms of trade etc. The model does not consider this aspect at all.

The above discussion, in fact leads to another important conclusion which too goes against; the model. The model assumes that the, terms of trade change only when production falls, says, with the beginning of phase

However, according to above analyses, the terms of trade will change in favour of the agricultural sector even with the beginning of the first phase, not due to fall in production but due to increase in demand for agricultural surplus.

(4) The model assumes that increase in productivity of labour is nothing to do with the transfer of labour from the agricultural sector. This, however, may not be true. With the reduction in labour, there might be a reorganization of agriculture which in turn may lead to an improvement in the productivity of labour.

(5) The model assumes a closed economy. It is assumed that neither

there is an export of manufactured goods to the other country, nor there is an import of food grains from outside. If both these assumptions are dropped, the terms of trade will not move in favour of agriculture to the extent, as assumed under the model. Import of food grains will add to the supply of agriculture surplus, thus' changing the terms of trade against agriculture. Same will be the case if manufactured goods are exported to other countries.

(6) The assumption that the agricultural surplus is limited is also questionable. There may be more surplus than what the transferred labour really needs. Is the extra surplus is exported to foreign countries, capital goods can be imported in exchange for it this will hasten the pace of economic transformation.

(7) The model assumes that the agricultural surplus- will be automatically transferred to the industrial sector when labour is transferred to it. This is a questionable assumption. However, it has been suggested that if taxes in kind are imposed on the agriculturalists, some surplus can be collected by the government and the industrial sector.

(8) In the analysis of the model, we come across another assumption. It is that even when there; is an improvement in agricultural productivity of labour, none of the zero value labour will give a positive productivity. It will still remain a zero value labour. This assumption is not correct. The logic says that when the productivity of all labour with positive marginal productivity increase-, some labour, earlier with zero marginal productivity should now start yielding positive marginal productivity. It is quite possible that the new technology responsible for improvement in agricultural productivity is at the same time labour using. This is, what was the case with Japanese technology for rice cultivation or with the recent seed- cum fertilizer technology adopted in India.

(9) The model assumes that institutional wage will remain unchanged when the productivity of agricultural labour rises. This assumption is not correct. It seems unlike that the agricultural labour which increases the total production will be debarred from sharing in the additional produce. However, this is one of me basic assumption of the model. If this assumption is dropped, the model will fail to arrive at its various conclusions. The whole model will become topsy-turvy.

(10) The model assumes that zero value labour exists in the agriculture sector. Many economists like Schultz have questioned this assumption.

(11) The model further assumes that only food grains are produced in *the* agricultural sector. This is against facts.

(12) Mellor feels that what the model tries to prove, is nothing new. It is all a matter 'common sense. It is always true that when labour is transferred from the agriculture sector to the industrial sector, demand for food grains will rise and this will turn the terms of trade against industry. It is also a matter of common knowledge that if agricultural productivity rises, food grains will become cheaper and this will reduce the hindrance in fie way of development of the industrial sector.

11.8 THE JORGENSON MODEL

The Jorgenson model has been considered by some as the application of the neo-classical theory of growth in LDCs, Actually, Jorgenson's model has elements of both of classical and the neo-classical theory. On the one hand, Jorgenson assumes, along with Lewis and Fie, that 'Surplus' labour may exist in LDCs but not in the sense of zero MP_L in agriculture. The framework of analysis is still a 'dualistic' model which consists of an industrial and an agricultural sector. Total (=Qa) in agriculture sector is given by land (=L) and labour (=N). Such a production function is subject to the operation of the law of diminishing-returns; 4t is also assumed that technical progress in agricultural is neither labour nor capital using, that is, it is neutral. Let the production function to be given by the following equation:

$$Qs = e^{\alpha t} N^{1-\beta}$$

Where $e^{\alpha t}$ measures a change in output due to technical progress. If it is assumed that supply of land is given the equation can be written as follows:

$$Q. = e^{\alpha t} N^{1-\beta}$$

Let per capita output be given by

$$Y = Q/N$$

$$YsQ/N = e^{\alpha t} N^{1-\beta} \quad \text{.....(3)}$$

If equation (3) is differentiated with respect to time (= t) and the equation is divided by Y, the follow equation is obtained.

$$\frac{\hat{y}}{y} = \alpha - \beta \frac{N}{N} \quad \text{..... (4)}$$

If $N^1/N = \eta$ *(i.e.* the rate of growth of labour) than equation (4) cash written as follows.

$$\hat{Y}/Y = \alpha - \beta\eta \quad \text{.....(5)}$$

$$\hat{Y} = (\alpha - \beta\eta)\, Y \quad \text{.....(6)}$$

The time path of output is then given by the following equation:

$$(Y+)\, e^{\alpha\ \beta\eta}\, Y(0) \quad \text{..... (7)}$$

It is clear that to get a positive growth of output, we should have .....(7)

$$\alpha - \beta\eta > 0$$

In many LDCs, it is reasonable to assume that the value of P will remain constant as the output elasticity with respect to changes in labour

is relatively stationary, hence to reduce the rate of growth of population. As long as α-η or positive growth of agricultural output per captia will be ensured the economy will grow. But when α-η or positive growth of agricultural output per caption will not be ensured the economy will stagnate at low level equilibrium trap;

11.8.1 In Jorgenson's Model:

More generally, savings = gross investment = net capital formation in the absence of depreciation is assumed to depend upon time. In Jorgenson's model, however, the way in which capital accumulation depends on the income of society is through profits in the industrial sector, it is all of capital share. If there were capital used in agricultural, and therefore the possibility of investment in the agricultural sector existed, a mechanism for the allocation of investment between the formulation would make clear the importance of people's preferences in determining how an economy grows, preferences which are almost universally neglected in discussion of growth.

Jorgenson avoids all this by simply assuming all profits are invested, an assumption which is common to the Lewis model and to the Ranis - Fei extension of it, but this means role of preferences, particularly those for present versus future consumption which play such a crucial role in Schultz (1964) characterization of traditional agriculture, are essentially suppressed. A necessary condition for a "Jorgenson" take off into non agricultural growth is a sufficient rate of increasing efficiency in' agriculture and a sharply falling income elasticity 6f^{+}demand for food, which taken together, permits the emergence of an agricultural surplus available to support a non-agricultural population. In Jorgenson model of dual economic growth, once an agricultural surplus emerges that permits sustained non agricultural growth, the agricultural sector declines relative to the overall economy but continues to expand absolutely.

The main criticism against Jorgenson model is that it is" based on the experience of Japanese economy and short run prediction of classical model has been compared with the asymptotic result of the neo-classical theory. He has not included the capital in his description of agricultural production function where as it is a well established fact that Capital has played a tremendous role in agricultural development. Only the role of supply factors has been highlighted and demand factors are totally ignored. Finally both, the 'classical' (Lewis and Ranis— Fei) and the 'Neo-classical' (Jorgenson) models have overlooked the important role played by services sector. Without proper infrastructure, growth rates in both sectors could be significantly reduced.

Exercise 11.1

Q1. Analytically differentiate between the Lewis' model and the Ranis-Fie model?

Q2. What is the Impact of increase in productivity of agricultural labour on the labour supply curve for the industrial sector?

Q3. Examine the Jorgenson Model?

11.9 SUMMARY

No doubt the Ranis- Fie model suffers from many infirmities and empirically its conclusions cannot be substantiated. Still it has some home truths. For instance, it is correct in saying that efforts must be made to ensure that agricultural surplus available for the industrial sector should increase as the industrial labour force increases. Similarly, agricultural productivity should be increased if the industrial development is to be smooth. Again the suggestion that steps should be taken to change the terms of trade for one sector at one time and for the other at another time is also quite sound.

11.10 GLOSSARY

- **Elasticity of demand**: the percentage change in demand for an item in response to changes in its market price. It assumes that income and other variables remain constant. Also called demand elasticity.
- **Investment:** the placing of money so that it will increase in value and produce an income (either in an asset, such as a building, or by purchasing shares, placing money on deposits, etc.)
- **Per capita income**: the total national income divided by the number of population. It can be calculated more accurately by giving more weight to adults. Also called income per capita, income per head.
- **Industrial sector**: the sector of the economy dealing with industry which produces goods. Also called secondary sector.
- **Agricultural sector**: the sector of an economy formed by agriculture, forestry and fishing.
- **Closed economy**: a type of economy which does not trade internationally and is not subject to outside influences.

11.11 Answers to Self-Check Exercises

Exercise 11.1

Answer 1 Refers to section 11.4.
Answer 2 Refers to section 11.5.
Answer 3 Refers to section 11.8

11.12 SUGGESTED READINGS

1. R.N. Soni: *Issues in Agricultural Economics*, Shoban Lal Nagin Chand & Co. Jallandhar.

2. Ranis G and John: C.II. Fie (1901) “A theory of Economic Development American Economic Revieul 1961.”

11.13 TERMINAL QUESTIONS

Q1. Critically examine the Ranis-Fie model?

UNIT-12
NEW AGRICULTURAL STRATEGY AND GREEN REVOLUTION

STRUCTURE

12.0 OBJECTIVES

Studying this chapter should enable you to understand:

- Meaning and Components of Green Revolution
- Economic Impact of Green- Revolution on Indian agriculture
- Problems associated with Green-Revolution

12.1 INTRODUCTION

The dramatic transformation in agriculture practices that involves the use of new methods of cultivation and inputs refers to as Green Revolution in India. The green revolution consists of technological improvements which were mainly adopted to increase agriculture productivity. The green revolution occurs as a result of adoption of new agriculture strategy during mid 60's by Government of India to achieve self-sufficiency in the food-grains production. These changes bring about a substantial increase in agriculture production in a short span of time.

12.2 THE NEW AGRICULTURAL TECHNOLOGY

The new agricultural technology consists of a package of complimentary inputs, high-yielding varieties of a seed, fertilizers and pesticides which can be utilized only on water assured areas. The strategy of agricultural growth adopted since the mid-sixties has come to be known as new agricultural strategy. The green revolution can be described as the large-scale adoption of an agricultural technology, adopted for use in tropical regions. The transfer of this technology from

developed to developing countries was made possible by the work of scientists from OECD countries and from developing countries, much of it within non-temperate environment because of the 'location specificity' of improved varieties of seed. The technology embodied in the new varieties of seed has provided the potential for increasing yields and output of selected food grains.

The first stage of new strategy related to Intensive Agricultural District Programme (IADP) was started in 1960-61 in three districts and was subsequently extended by stages to another thirteen. A modified version of the same approach was extended to several other parts of the country in the form of Intensive Area Agricultural Progamme (IAAP), During mid-sixties, a major change occurred with the introduction of HYV seeds with complementary inputs in areas with assured irrigation. The year 1967-68, therefore, marks the beginning of a new agricultural strategy.

The new agricultural strategy is concerned not only with a higher yield but with a greater intensity of cropping. Entirely new crop rotations have been made possible by the development of short duration varieties of paddy, Jowar, bajra, maize suited to different agro-climatic conditions. The new strategy relies on high-yielding varieties of crops multiple cropping, the package approach, modem farm practices and spread of irrigation facilities.

The 'green revolution' can be described as the large scale adoption of new agricultural strategy, adapted for use in tropical regions or rise the result of this strategy, in the form of enormous increase in food grain output, is often referred to as the green revolution.

Various development programmes initiated the government and the adaptability of the fanners have given rise to a sleep upward trend in agricultural production, particularly in the food grains In. the preceding chapter we have analyzed the trends in production and productivity of major food crops in India suite 1951. The food grains production increased from 51 million tons in 1951 -52 to 89 million tons in 1904-65. The year 1965- 66 and 1966-67 were the severe, draught and caused a severe setback to food grains product-oil and dislocated the whole economy. The impressive increase in farm production that occurred during 1967 to 1971 revived the hopes about agricultural progress that waş stagnant during 19555-66 and 1966-67. Thus optimism prompted some economist to identify the increasing production of food grains as 'green revolution.' The technology embodied in the new varieties of seed provided me potential for increasing yields and output of wheat and rice.

The 'green revolution' also incorporates a package of new agricultural practices, and two together from the technology of the high yielding varieties. 'The technology fallows new crop Calender, given the shorter maturing period of the new varieties and the possibilities of multiple cropping. Each new input bring with it a new set of cultural practices. 'The farmer should know how much fertilizer to use in which

type of soil, when an in what proportion between nitrogen, phosphate and potash. Similarly, the farmer should know which type of insect to which the particular variety of seed is vulnerable. Fanner using tractors, seed drills, and so on should learn their use and maintenance.

It is interesting to note that the share of rice and wheat in total food grains production which was 39.56% & 17.39% during 1967-68 and has gone up to 44% and 33.26 percent during 2005-06 respectively. The overall production of food-grains was estimated at 217.3 million tons in 2006-07. For three consecutive years (2005-06 to 2007-08), food-grains production recorded an average annual increases of over 10 million tones. The total food-grain production in 2007-08 was estimated at 230.78 million tones as against 217.3 million tons in 2006- and 208.60 million tons in 2005-06.The important point to note is that thé share of course grains has been decreasing not only in relative term but also in absolute terms. This mean that increase in production of rice and wheat has been brought about partly by increase in yield and by diverting me aʳea under other food crops of wheat and rice since the production of wheat and rice has became relatively profitable and there, are shifts in cropping pattern, 'technological breakthrough in rice and wheat combined with price support, market infrastructure, subsistence requirements, les price and yield risk have been the causes of continuous increase in area of these crops.

The productivity of wheat has increased from 851 kgs per hectare in 1960-61 to 2679 kgs per hectare in. 1996-97 per hectare yield of rice has also increased from 1013 kgs to 1882 kg during the period. These trends do not reveal much about the recent developments that are otherwise visible. Rice production for example, has started gaining momentum in the areas which traditionally belong to wheat belt. These areas include Punjab, Haryana and Western Uttar Pradesh. Similar is the case with the production of Wheat, Rice production states are also contributing to the production of wheat. The new technology for these crops has started percolating to the small'farms.

The high growth rates is the adoption of the new technology demonstrates the capability of Indian farmers to use new input effectively despite the fact that illiteracy still ranks high in rural areas. M.S. Swaminathan has truly commented, "The wheat example clearly disproved old notions on the conservation of established beyond doubt that our peasants will take to new technology. Speedily and efficiently provided they are convinced that the technology is economically sound and they are enabling to adopt it through appropriate input supply and extension activities."

12.3 FACTORS RESPONSIBLE FOR GREEN REVOLUTION:

1. Adoption of high-yielding varieties of seeds:

The use of high-yielding varieties of seeds since 1966 has resulted in substantial increase in food grain production. The cause of breakthrough

in the production of wheat and rice has been attributed to magic seeds and certified seeds adopted by the agriculturists. The role of National Seeds Corporation, State Seeds Corporation and Agricultural Universities in distributing these seeds to the farmers, indeed, has been commendable. The following table shows the progress' of area under yielding variety of crops since 1965-66 onwards. "

Area under high yielding variety of selected crops in India (Million Hectares)

Year/crop	1965-66	1970-71	1980-81	- 1991-92	1997-98
Wheat	0.54	6.5	16.1	-21.4	23.0
Rice	0.89	5.6	18.3 -	27.2	32.0
Maize	0.21	0.5	1.6	3.0	3.6
Jawar	0.19	0.8	3.5 '	.8.0	9.0
Bajra	0.6	2.0	3.7	6.0	7.0
Total HYV		**15.4**	**43.1**	**66.6**	**76.6**

Distribution of certified seeds for wheat and paddy has shown a tremendous increase during the period 1970-71 to 1997-98.

2. Supply of chemical fertilizers:

Besides high-yielding varieties of seeds, chemical fertilizer is the other input which is responsible for making the green revolution a signal success. In fact, the latest agricultural technology is referred to as the seed- cum-fertilizer technology.

The demand for fertilizers has been increasing after green revolution. The total amount of fertilizers used in 1960-61 was 292 thousand tones (nutrients). In 2001- 02, the total consumption of fertilizers was 17400 thousand tones (nutrients). The annual rate of growth of certified/quality seeds distribution is expected to accelerate from 12.1 per cent in 2005-06 to 18.1 per cent in 2006-07 Per hectare consumption of fertilizers has increased from 69:8 kg in 1991-92 to 113.3 kg in 2006-07 at an average rate of 3.3 percent {Economic Survey 2008-09}.

3. Expansion of irrigation facilities:

Contribution of irrigation facilities is yet another important aspect-of green revolution which merits attention. Thé net area irrigated has increased from 24661 thousand hectares in 1961-61 to 80700 hectares in 1996-97.

The role of irrigation facilities in bringing about the green revolution cannot be gainsaid. Sir Charles Trevelgan rightly observed, "Irrigation is everything in India. Water is more valuable than land, because when

water is applied to land it increases its productiveness at least six-fold and renders great extent of land productive, which otherwise, would produce nothing or next to nothing."According to the Indian Council of Agricultural Research (ICAR), the production of irrigated crops is on an average 50 to 100 per cent higher than that of unirrigated crops in the same locality.

Extension of irrigation facilities in the form of major and medium projects, minor irrigation projects like wells and tube wells has led to the adoption of multiple cropping pattern, introduction of modern farm technology and protection of the crops from drought. All these factors result in spectacular increase in agricultural production. Further, many economists consider irrigation as an important factor for providing employment opportunities to the ruralites." Increased irrigation facilities have resulted in the increase in area under double cropping and has increased the cropping intensity which has as been discussed in the previous lesson.

4. Use of machinery:

Economists like Bergmann hold the view that despite its adverse effect on overall employment, the role of machinery in accelerating the growth of green revolution is, indeed, great. The use of modern agricultural tools and implements like tractors, harvestors, threshers, pump sets sprayers etc. has led to progressive agriculture. As a consequence of the use of machinery, there has been substantial increase in the area under assured irrigation, multiple cropping and increase in agricultural productivity.

5. Provision of agricultural credit:

Credit is another necessary input to increase agricultural productivity. Co-operative credit institutions such as Primary Co-operative Societies, Central Co-operative Banks and State Co-operative Banks for short- term credit and Land Development Banks for long-term credit have been set up throughout the country in quite large numbers. Besides this, Regional Rural Banks, commercial banks like State Bank of India and National Bank for Agriculture and Rural Development have also helped the farmers to grow more output.

6. Soil conservation:

Soil conservation is another significant cause of green revolution. Various soil conservation schemes have led to the conservation of soil fertility and thereby contributed to increased output.

7. Development of infrastructure:

Green revolution in the Indian context has attained considerable success. It is mostly because infrastructural facilities in the form of transport and communication, regulated markets, storage and

warehousing, agricultural education and training etc. have enabled the farmers to take recourse to the modern art of cultivation.

8. Multiple cropping programmes:

The multiple cropping programmes aims at increasing the cropping intensity of land. Further, it is instrumental in increasing agricultural production.

9. Incentive prices:

The incentive price policy of the government has induced the agriculturists to grow more. Besides fixing remunerative prices for agricultural crops, the government has also been subsidizing the purchase of various agricultural inputs used by the farmers.

10. Land reforms:

The adoption of land reform measures in the form of abolition of intermediaries, security of tenure, consolidation of holdings, ownership right on the tenants, regulation of rent, ceiling on land holdings and co-operative farming goes a long way in increasing agricultural productivity.

11. Development programmes for small and marginal farmers:

So far as District Rural Development Agency is concerned, special attention has been given to the problems of small and marginal farmers. They are being provided with loans at subsidized rates. As a result they can adopt NAT without any difficulty.

12.4 EFFECTS OF GREEN REVOLUTION

The place of agriculture in Indian economy has never been so prestigious and important as it is today. Today, agriculture is a revolutionary concept to an Indian farmer. The green revolution holds a green promise for future growth of agricultural production and productivity.

The impact of green revolution can be discussed as follows:

1. Spectacular increase in agriculture production: The dependence on food imports is eliminated with the increase in agriculture production. The country becomes self-sufficient in food-grains. In fact India was the second largest importer in 1966 and it imported no food-grain in subsequent decades except during late 80's and early 90's mainly due to failure of monsoons or untimely rains or floods in different regions. However, it may be noted that in recent years annual growth in the food grain production is losing its momentum.

2. Improvement in productivity: The tremendous increase in agriculture production occurred as a result of improvements in productivity. The

productivity was quite low in the pre-green revolution period. The substantial increase in the productivity occurred in wheat and rice in the earlier periods but later on it spread to other crops also.

3. Increase in Employment: Green revolution generated employment opportunities into diverse activities which were created as a result of multiple cropping and mechanization of farming. It helped to stimulate non farm economy that generated newer employment in various services such as milling, marketing, warehousing etc.

4. Food grain Price Stability: The adoption of new agricultural technology has led to the increased production and marketable surplus of crops especially food grains that have resulted into price stability of food items.

5. Strengthening of forward and backward linkages with industry: The increase in agriculture production has strengthened the forward linkage of agriculture sector with industry in the sense of supplying inputs to the industry. The backward linkage with the industry has also received a boost as agricultural modernization created larger demand for inputs produced by industry.

(1) Increase in personal inequalities in rural areas: The income inequality between rich and poor increases due to:

(i) The owners of large farms were the main adopters' of new technology because of their better access to irrigation water, fertilizers, seeds and credit. In other words, given the need for complex agricultural techniques and inputs, the green revolution benefits the large farmers. The small farmers lagged behind the larger farmer as small farmers had to depend upon traditional production method. Since the rich farmers were already better equipped, the green revolution accentuate the income inequalities between rich and poor.

(ii) Green revolution resulted into lower product price and higher input prices which also encouraged landlords to increase rents or force tenants to evict the land.

(iii) The mechanization pushed down the wages of and employment opportunities for unskilled labor in the rural areas thereby further widening the income disparities.

(2) Increased Regional disparities

Green revolution spread only in irrigated and high-potential rain fed areas. The villages or regions without the access of sufficient water were left out that widened the regional disparities between adopters and non-adopters. Since, the HYV seeds technically can be applied only in land with assured water supply and availability of other inputs like chemicals,

fertilizers etc. The application of the new technology in the dry-land areas is simply ruled out. The states like Punjab, Haryana, Western UP etc. having good irrigation and other infrastructure facilities were able to derive the benefits of green revolution and achieve faster economic development while other states have recorded slow growth in agriculture production.

(3) Environmental Damage

Excessive and inappropriate use of fertilizers and pesticides has polluted waterway, killed beneficial insects and wild life. It has caused over-use of soil and rapidly depleted its nutrients. The rampant irrigation practices have led to eventually soil degradation. Groundwater practices have fallen dramatically. Further, heavy dependence on few major crops has led to loss of biodiversity of farmers. These problems were aggravated due to absence of training to use modern technology and vast illiteracy leading to excessive use of chemicals.

(4) Restrictive Crop Coverage

New agriculture strategy involving use of HYV seeds was initially limited to wheat, maize and bajra. The other major crop i.e. rice responded much later. The progress of developing and application of HYV seeds in other crops especially commercial crops like oilseeds, jute etc has been very slow. In fact, in certain period a decline in the output of commercial crops is witnessed because of diversion of area under commercial crop to food crop production. The basic factor for non-spread of green revolution to many crops was that in the early 1960's the severe shortage in food grains existed and imports were resorted to overcame the shortage. Government initiated green revolution to increase food grain productivity and non-food grain crops were not covered. The substantial rise in one or two food grain crop cannot make big difference in the total agricultural production. Thus new technology contributed insignificantly in raising the overall agricultural production due to limited crop coverage. So it is important that the revolutionary efforts should be made in all major crops.

Exercise 12.1

Q1. What are the important components of Green Revolution in India?
Q2. Explain the meaning of HYV seeds?
Q3. What are effects of green revolution?

12.5 SUMMARY

It can be concluded that green revolution is a major achievement for India which has given it a food-security. It has involved the adaptation of scientific practices in the agriculture to improve its production and productivity. It has provided benefits to poor in the form of lower food prices, increased migration opportunities and greater employment in the rural non-farm economy. However, the inequalities between region and individuals that adopted green revolution and those who failed to adopt has worsened. Further, green revolution has led to many negative environmental impacts. The policy makers and scientists are urged to develop and encourage the new technologies that are environmentally and socially sustainable. The green revolution resulted quantitative and qualitative development in the agriculture in India. The quantitative improvement occurs as a result of steep increase in the production of agriculture output. The qualitative improvement resulted into adoption of modernized technology in the agriculture.

12.6 Glossary

- **Green revolution:** the development of new forms of cereal plants such as wheat and rice and the use of more powerful fertilisers, which give much higher yields and increase the food production especially in tropical countries.
- **The new agricultural:** technology consists of a package of complimentary inputs, high-yielding varieties of a seed, fertilizers and pesticides which can be utilized only on water assured areas. The strategy of agricultural growth adopted since the mid-sixties has come to be known as new agricultural strategy.
- **Multiple cropping**: agriculture, multiple cropping is the practice of growing two or more crops in the same space during a single growing season.
- **Regional disparity:** The differences between regions with respect to specified variables such as income, employment etc,

12.7 Answers to Self-check exercise

Answer1. Refer to section 12.3.

Answer1. Refer to section 12.3.

Answer1. Refer to section 12.4.

12.8 SUGGESTED READING

1. R.N., Soni (2006): Leading Issues in Agricultural Economics".
2. Chand, Ramesh, S.S. Raju and L.M. Pandey (2007): *Growth Crisis in Agriculture,Economic & Political Weekly*, June 30.

3. Mishra, Srijit and D. Narasimha Reddy (2011): *Persistence of Crisis in Agriculture: Need for Technological and Institutional Alternatives* (in India Development Report, 2011, edited by D.M. Nachane, Oxford University Press,New Delhi).
4. Rao, P. Parthasarathy, P.S. Birthal and P.K. Joshi (2006): Diversification towards High Value Agriculture, *Economic & Political Weekly*, Vol. XLI, No. 26, June 30.
5. Report of the National Commission on Agriculture (1976): Ministry of Agriculture, Government of India, New Delhi.
6. Saggar, Mridul (1992): *Issues and Concerns in Indian Agriculture*, Reserve Bank of India Occasional Papers, Vol. 3, No. 3, September.
7. D.N Dhanagre (1987) "Green Revolution and Social Inequalities in India". EPW, May 1987.
8. George Blyn: "The Green Revolution Revisited *Economic development and Cultural Change*' Vol. 31, No.4 July, 1983.

12.9 TERMINAL QUESTIONS

Q1. "Green Revolution has increased he production level substantially. At the same time it has led to substantial increase in the inter-regional and inter-personal inequalities". Discuss?

Q2. "Technological progress is a necessary but not sufficient condition for agriculture growth in India." Comment on the statement.

UNIT-13

AGRO-CLIMATIC ZONAL PLANNING

STRUCTURE

13.0 OBJECTIVES

After going through this lesson you will be able to:

- Explain the Programme for Agro-Climatic Regional Planning
- Define Macro Objectives of Agro-Climatic Zonal Planning
- Describe the basic Concerns Underlying the ACRP Approach

13.1 INTRODUCTION

India's experiment with planning has resulted in many notable successes as well as many deficiencies in the agricultural front. Important changes have taken, place in Indian agriculture since the introduction of the new agricultural technology, increased incidence of multiple cropping permitted by increased irrigation has led to increase in effective area under cultivation which has resulted in increased production/productivity and employment gains and converted the nation from an importer to a marginal exporter of food grains. Though new agricultural technology has succeeded in enhancing food grains production, but some distortions have occurred in the pattern of agricultural development. Firstly, very large interpersonal inequalities continue to exist in land distribution. Secondly, employment opportunities remain bleak in the rural sector. Thirdly, new agricultural strategy has now spread to all regions with the result that regional inequalities have remained quite high and in some cases have tended to increase. Finally, it is seen that new technology has been more concerned with promotional aspects and the efficiency in resource use has not been given importance. Though green revolution has helped in

achieving the goals of enhanced food production, yet it has led to farm practices which appear non-sustainable.

The basic need in these circumstances is to review our agricultural policy, to recast our priorities and to formulate an integrated multi-sector programme within agriculture to reverse the downward slide and to put the economy on the path of equitable growth. It is necessary to identify the critical problems in each region and plan for their removal.

13.2 THE PROGRAMME FOR AGRO-CLIMATIC REGIONAL PLANNING (ACRP)

The programme for agro-climatic regional planning - (ACRP) was initiated by the planning commission in 1988 to develop regional perspectives for agricultural growth, diversification and development of agro-processing activities. The objective was to identify the comparative advantages of different regions and the region-specific potentialities for growth. Once these are scientifically identified, they would provide the basis for preparing regional plans which, in turn, through aggregation would give the agricultural part of the plan. The country was delineated into fifteen regions for this purpose and for each region a planning team was set up headed by the vice- chancellor of Agricultural University and consisting of experts drawn from the region. In the subsequent steps, the fifteen regions were further subdivided into smaller zones. Currently ACRP has begun preliminary exçrcises at the district level to prepare district plans consistent with the plans at the higher level of hierarchy. The target-guiding ACRP is to build up an effective link between the national plan and the plans prepared at the district and sub-district levels during the Ninth Five Year Plan. The Panchayati Raj Institutions at village, taluk and district levels would prepare the district plans. The plans prepared by the PRI's, based on participatory processes involving people's representatives, would form the ACRP approach. Above the district level, the present planning machineries at the state and central levels would continue to operate but they would play primarily a supportive role to eventually convert the present top-down planning into an integrated system with the dominant role played by the bottom-up process. The ACRP aims at reducing regional imbalances in agricultural growth and policy on farm development through agro- climatic regions and sub-regions, diversification of agriculture and boosting of farm exports, distribution of quality seeds, agricultural credit and higher employment generation in the farm sector. This also aims at scientific management of regional resources to meet the requirements of food, fiber, fodder and fuel wood without eroding the status of natural resources and environment. For attaining this end, the development will have to be achieved through an appropriate mix of crop production and allied activities including animal husbandry, horticulture, forestry and agro- processing etc.

13.3 THE MACRO OBJECTIVES OF AGRO-CLIMATIC ZONAL

PLANNING

The macro objectives of agro-climatic zonal planning are:
(a) To attempt to board demand supply balance of major commodities at the national level based on careful analysis of the potential and prospects of various zones,
(b) To maximize the net income of the producers,
(c) To generate additional employment for the benefit of the landless labourers and
(d) To provide a scientific and sustainable use of natural resources particularly land, water and forests in the long run.

13.4 ACRP PROGRAMME

In the ACRP programme the country was divided' into 15-agro-climaie regions. The criteria adopted were homogeneity in agro-characteristics and feasibility in terms of planning and operationalization with reference to the geographical area covered.

The salient-features of the 15 agro-characteristics delineated by the planning commission are presented in Table 1. Each zone vas divided into several sub-zones the number of sub zones *or* sub-regions being restricted to five or six for each zone, in order not to clutter up the overall perspective. To increase the degree of homogeneity pertaining to agro-climatic parameters, these 15 agro- climatic zones have been further divided into .73 sub-zones on the basis .of more specific soil topography, climate and cropping pattern characteristics, for the sake of administrative convenience a district has been taken as the ultimate planning unit. Based on these guidelines, we illustrate its essential methods by describing the plan for three different regions, a hill region, a high rainfall region and a dry region.

13.4.1 Western Himalayan Region (Zone I)

The Western Himalayan zone consists of three district sub-zones of Jammu & Kashmir, Himachal Pradesh and the hills of Uttar Pradesh. Its salient features are given in Table 1. The core strategies suggested for development of zone 1 are: (i) soil and water conservation; (ii) land use; (m) fruit ‘crop development; (iv) high value crops; and (v) transport, and communication. This should be supplemented with (a) marketing and storage; (b). Water management; (c) agro processing; (d) livestock production; (e) social forestry; (i) Seed production; and (g) fisheries, An integrated development of soil and water through land treatment and plantation of, tree crops- according to topography was suggested.

It was also proposed that land suitable for agriculture/horticulture/pasture/forestry should be demarcated. To overcome the: major constraint of transport of perishable commodities, rope trollies were recommended. For irrigation purposes, rainwater runoff

should be collected in tanks. Setting up of more agro-processing units was also proposed, since the number of these units was quite less.

In order to meet with the requirements of fuel and fodder, prevent further degradation of forest and preserve the eco-system, social forestry development was accorded the top priority.

13.4.1 Lower Gangetic Plains Region (Zone III)

The West Bengal lower gangetic Plain was subdivided into four sub-regions the Baring Plains, the Central Alluvial Plains, the Alluvial Coastal Plains and the Rash Plains. This zone accounted for 12 percent of rice production of the country. Per capita NSA of the zone was only 0.095 ha as compared to the national average of 0.223 ha in 1981 reflecting excessive pressure of population on land and the major problems in the development of agricultural were water management and drainage.

The following strategies were suggested for the water management and development of irrigation potential.

a) Proper control of irrigation system and regulating supplies of irrigation water.
b) To check water logging, increase in conjunctive use of canal and groundwater was suggested.
c) Rising of embankments in naturally depressed spots to serve as reservoirs to collect rainwater and inundation.
d) Congested water in southern part of the zone needed consideration for development of drainage system that could discharge excess water.

Development of irrigation potential was vital in the sub-regions of Barind and Rash Plains and the following actions were to be taken deepening of about 10 lakh Small tanks to add to their storage capacity Excavation of about 1.50 lakh dug wells to generate irrigation potential and employment during the eight plan.

In rice cultivation, selectivity with reference to land capability would be an important element of the development strategy for this zone. Once the drainage, flood and irrigation problems were attended to, the crop production strategy envisaged diversification from rice monoculture in most of the areas. Thus:

a) Area under HYV Kharif rice and rabimix should be enhanced by 15 percent.
b) In upland rainfed areas, instead of rice high value crops like groundnut and arhar should be introduced, especially in Rash plains.
c) Crops like mung and “‘groundnut in Kharif and gram and peas in rabi, under irrigated conditions, should be increased in uplands.
d) Evolution of early maturing varieties of rice would make areas available in lime for mustard cultivation. Sunflower and safflower in rice fallows were more suitable for saline areas.

13.4.3 Eastern Plateau and Hills Region (Zone VII)

This is one of the most backward and poor region of the country. It consists of the plateau and hill-areas of the eastern district of VYB* nine districts of Orissa, nine districts of MP, twelve districts of Bihar and western districts of Maharashtra. It is a plateau region with undulating hills and slopes. The cropped areas as well as population densities of this zone are lower than the national average, its agricultural input and productivity levels are much lower than the national average.

In 'such' type of zone, an emphasis on crop planning and extension would be of little significance. Land and water development strategies of an appropriate kind were advocated to avail of anticipated benefits in time during the Eighth plan.

Minor irrigation works include renovation of existing tanks and excavation of new tanks. The integrated watershed development programme included water harvesting/ storage structures aimed at rainwater conservation to be used for lifesaving irrigation which has been found to make tremendous difference in output in dry land crops. Once a more optimal land and water development strategy was developed,' a new cropping pattern could be envisaged. The following action points were proposed:

(a) seed supply was to be strengthened so as to cover large areas with quality seeds of HYV.

(b)In upland rain-fed areas high value crops could be taken up.

(c) Crops like urad, castor and groundnut in kharif and mustard and vegetables could be taken up under irrigated areas.

(d) The proposed cropping sequences based on research findings for irrigated and un-irrigated conditions were suggested.

The scope for extension of fruit plantation existed, in all sub-zones. Adequate provision would need to be made for institutional support for planting material and scientific extension support. A forestry, animal husbandry and fishing programme was suggested.

In fact, one advantage of agro-climatic planning is that it builds up investment infrastructure options for alternative agricultural and fanning systems and thus removes the shortcoming of a favoured crop/region approach say, wheat based in canal irrigation. Also the locked up resource potential of different regions which can be released with marginal investment becomes feasible. To diversity and stabilize the earnings of the farmers, there is a need to strengthen the livestock sector— mainly milk cows and buffaloes, sheep's goats, piggery, poultry, fishery and bee keeping enterprises may suit more the landless rural households. Zones I, II, VII, are relatively more suited for forestry and horticultural crops due to heavy rains. In the coastal zones (XI and XIII), fisheries need to be given a big boost; Simultaneous efforts are also needed to establish agro-processing units and to improve' market infrastructure.

13.5 Basic Concerns Underlying the ACRP Approach.

It is important to take note of the three basic concerns underlying the ACRP approach.

First, while the agricultural technology achieved a breakthrough in the production of a few crops by concentrating on the fertile irrigated areas and on the relatively better-off groups of farmers, ACRP focuses on the far more difficult task of sustained rise in growth by helping all the areas including the backward and stagnant areas to activate, the growth processes by utilizing the area specific resources and opportunities.

Second, considering the crucial place which the district plan occupies in ACRP, the emerging system needs a double adjective ”liberalized-cum-decentralized”—to describe it. In this system, the government would transfer decision- making functions not only to markets and private enterprise but also to people’s organizations like PRJS and voluntary organizations. The working and dynamics of the system would depend on the behaviour and relationships among these entire four groups plus the government.

Third, ACFP approach stresses the principles of comparative advantage, cost effectiveness and economic viability. These principles would apply only when markets are competitive, are left free- to reflect the changing .supply and demand conditions and the prices get determined in such markets. When growth begins to spread to areas with weak infrastructures, tenuous links with mainstream economy und modest surpluses to sell, it is very likely that market in such areas take time to develop the point, where they could function with the requisite degree of
It would be a tough test for ACRP in making the transition from an experimental programme on probation to a continued reutilized system shouldering the responsibility for agriculturist al planning. A number of difficult problem has to be tackled viz., Co-ordination among, government departments; establishing working relations between people’s representatives and bureaucrats; reconciling people’s demands and expectations articulated through bottom-up plans with resource availability and other systematic constraints indicated by top-down planning, etc.

Table 1. Salient Features of Agro-climatic zones delineated by the Planning Commission.

Zone No.	Name of Zone	States represented	No. of Subzones	No. of Districts	Geograpic area (kms)	Population Density	Rainfall range (mm)	NIK use	Major crops of the zone
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
I	Western Himalayan Region	J&K, H.P. U.P.	3	34	246	62	165-2000	23	W,W,R.P.
II	Eastern Himalayan Regions	Assam, WB, Manipur, meghalaya, Arunachal, Nagaland, Tripum, Mizoram	5	58	275	126	1840-3528	9	R,M, Ju.
III	Lower Gangetic Plain Region	WB	4	12	69	684	1302-1607	65	R,J,W. RLM
IV	Middle Gangetic Plains Region	U.P. Bihar	6	38	170	531	1211-1470	68	R,W,M
V	Upper Gangetic Plain Region	UP	3	32	143	464	721-979	86	W,R,M,T
VI	Trans Gangetic Plains Region	Punjab, Haryana, Ragashan Delhi	3	27	125	329	360-890	105	W,R,MS
VII	Central Plateaus Hill Region	Maharashtra, M.P. Orissa, WB	5	34	395	136	1271-1470	15	R,W,M,Ra
VIII	Central Plateaus Hill Region	M.P. Rajasthan, U.P.	14	46	376	137	490-1590	16	W,G,J,R,B
IX	Western Platean & Hills Region	Maharashtra, M.P., Rajasthan	4	34	332	189	602-1040	28	J.B.C.W
X	Southern Plateau & Hills Region	Karnatka, AP. TN	6	35	394	199	570-1001	57	J,R,Ra, Gr
XI	East Coast Plains & Hills Region	Orissa, AP, TN. Pondicherry	6	25	193	321	780-1267	77	R,Fr,Ra; J,B
XII	West Coast Plains Ghats Region	TN, Goa, Kerala, Karnatka Maharashtra	4	27	114	414	2226-3640	52	R,Ra G, To
XIII	Gujarat Plains & Hills Region	Gujarat	7	22	196	174	340-1793	38	R,Gr. C, B, W.
XIV	Western Dry Region	Rajasthan	-	9	176	-	340-1793	-	R,Gr, C, B,W
XV	The Istalds Region	wwA & N, Lakshdweep Islands	2	3	8	29	1500-3086	-	B,G,W,Ra Coconut

Sourse : - Vaswani, L.K. (1990), "Agroclimatic Regional Plannin-Concept and Approach," Fertilizer News, Vol. 35 No. 6, June, 6 B = Bajra, C = Cotton, G = Grarr, Gr = Grounnut, J = Jawar, Ju = Jute, M = Mize, P = Potato, R = Rice, Ra = Ragi, R and M = Rape and Mustard, S = Sugarcane. T = Ter, To = Tapioca, and W = wheel.

13.6 AGRO CLIMATIC REGIONAL PLANNING IN CHANGING CONTEXT OF PLANNING FOR LIBERALIZATION

Liberalization is expected to stimulate growth processes and bring about growing integration between the domestic market and the world market. This long transitory phase would have to be steered by the policymaker through continuing corrective, regulatory and promotional .interventions and, in this sense, planning would become more important than now rather than less until the economy folly assimilates the changes occasioned by liberalizations. The purpose here is to enumerate the task the ACRP may have to take up in the transitory phase to help agriculture in adjusting to liberalization and making effective use of the opportunities it offers for growth and development.

Since agriculture in India is practiced on million of farms by producers who are too small to influence markets and prices ruling in them. While discussing the likely impact of liberalization on agriculture, the intra-sectoral differences in the course of growth and diversification in agriculture should be kept in mind. Rice and wheat are the two green revolution crops in which India has a comparative advantage in international trade. Removal of restrictions movements, trade and export and the resulting access to growing markets would create a favourable environment for the green revolution areas to scale new heights of performance. Another sector in agriculture which is still in an embryonic state but which could grow fast in a liberalized economy is live modem corporate sector capable of giving a big thrust to production and exports in areas like specialty crops including horticulture and floriculture. There two subsectors of agriculture account for a small proportion of our agriculture population and resources.

The predominant part of agriculture consists of millions of farmers, mostly small and marginal in size, operating in sharply differing soil-climatic conditions with market nexus ranging from near subsistence to extensive involvement in market. The trends are toward further reduction in the size of holding along with deeper intrusion of markets into farmers' decision processes and activities. The impact of liberalization would not be uniform on these vast number of farm operators.

Two dimensions of differentiation need to be taken into account while assessing their impact.

First, marketization does not operate evenly across space, regions and farmer categories; further markets tend to differ from commodity to commodity in their structure and performance.

'Secondly, the policies pursued so far development of agriculture have had pronounced biases.

Keeping in mind the sub sectors of agriculture described above, the policies needed to help agriculture in adjusting to liberalization can be put into two major categories. The first category would include the macro- economic policies for growth and stabilization. The second category would consist of a wide range of programmes and measures to

promote agricultural growth in areas which have remained backward so far by undertaking investments, building up infrastructure and creating institutional arrangements and procedures for people's participation. The gains of liberalization for the farm sector would be realized fully only when both these categories of policies for intervention in agriculture operate effectively complementing and reinforcing each other.

An important requirement of such intervention is a steady flow of data and research input for monitoring, projecting, and visualizing alternative scenarios corresponding to different variant of policies and their combinations ACRP can play a valuable role in providing these essential inputs on a continuing basis in a systematic and co-ordinate manner. ACKP would have to operate with two distinctly different but complementary orientations to serve this role. The aggregation of state level indicators of agricultural performance would reflect the changing parameters of agriculture at the national level. The state level ACRP units would have to bear in mind the changes in national level parameters while deciding on their annual programmes and medium term targets.

The second and, in a sense, a much more important function of ACRP is to serve as a two way communication system between state level planning and those located at different decentralized levels including grass roots level development personnel representatives bodies of rural people and NCOs. A necessary condition for successful decentralized system is the techno-economic foundation provided by ACRP whose reflection would show that optimum úse and development of land and water resources in the area-which is the chief concern of ACRP would be at centre piece in rural development planning and it would have to play a key role is bringing together the sectoral programmes and service centre schemes into a coherent area development plan; Being a component in a multilevel system, operationalization of ACRP has to' be sychronised with the changes in the Other tiers in the planning system Planning in a liberalized economy has to operate chiefly through timely and such interventions 'help the economy without interrupting its basic mechanism

As regards decentralized planning at the grass roots level, the progress is likely to be even slower as a number of state governments are still at the preliminary stage of setting up Panchayati Raj institutions. ACRP could keep three intermediate targets in mind to lend a sharp focus to these activities. First, the preparation of sub-regional and zonal plains in each slate should be pushed to the point Where they could be synthesized into a resources development plan for the, state as a whole. Second, with the crowing rapport between ACRP and state governments, it should be possible for ACRP to encourage the .implementing agencies in the state to take up the priority schemes comprised in its plans. Third, the planning commission should use the occasions of annual consultations on the state plans to bring the latter more and more in conformity with the ACRP philosophy and development approach. What is

required is a firm commitment of the planning commission to the objectives of ACRP and readiness to put its developmental precepts into practice in a steady and systematic manner.

Exercise 13.1

Q1. What are the Macro Objectives of Agro-Climatic Zonal Planning?
Q2. What is basic Concerns Underlying the ACRP Approach?

13.7 SUMMARY

This chapter was devoted to the study of Agro climatic Zonal Planning. India's experiment with planning has resulted in many notable successes as well as many deficiencies in the agricultural front. Important changes have taken, place in Indian agriculture since the introduction of the new agricultural technology, increased incidence of multiple cropping permitted by increased irrigation has led to increase in effective area under cultivation which has resulted in increased production/productivity and employment gains and converted the nation from an importer to a marginal exporter of food grains. Though new agricultural technology has succeeded in enhancing food grains production, but some distortions have occurred in the pattern of agricultural development. Firstly, very large interpersonal inequalities continue to exist in land distribution. Secondly, employment opportunities remain bleak in the rural sector. Thirdly, new agricultural strategy has now spread to all regions with the result that regional inequalities have remained quite high and in some cases have tended to increase. Finally, it is seen that new technology has been more concerned with promotional aspects and the efficiency in resource use has not been given importance. Though green revolution has helped in achieving the goals of enhanced food production, yet it has led to farm practices which appear non-sustainable.

The basic need in these circumstances is to review our agricultural policy, to recast our priorities and to formulate an integrated multi-sector programme within agriculture to reverse the downward slide and to put the economy on the path of equitable growth. It is necessary to identify the critical problems in each region and plan for their removal.

13.8 GLOSSARY

- **Gangetic Plains:** The Indus-Ganga Plain also known as The North Indian River Plain is a large and fertile plain encompassing most of northern and eastern India, the most populous parts of Pakistan, parts of southern Nepal and virtually all of Bangladesh. The region is named after the Indus and the Ganga, the twin river systems that drain it. The plain's population density is very high due to the fertile soil for farming.

- **Agro Climatic Zones:** The important rational planning for effective land use to promote efficient is well recognized. The ever increasing need for food to support growing population @2.1% (1860 millions) in the country demand a systematic appraisal of our soil and climatic resources to recast effective land.
- **The agro-climatic classification** is nothing but an extension of the climate classification keeping in view the suitability to agriculture. Earlier many methods have been devised for climatic classification and the most widely used classifications being Koeppen's and Thronghwaite's. Generally, the climate types may be distinguished on the rainfall, temperature and as these two characteristics are influenced by altitude, the climate can also be classified on the basis of above three parameters. National commission on agriculture (1971) classified the country into 127 agro-climatic zones. The planning commission has adopted agricultural Zones on the various parameters for agricultural planning. The soil climatic zones can be classified on the basis of rainfall, temperature and prevalent soil types in the region.

13.9 ANSWERS TO THE SELF CHECK EXERCISES

Exercise 13.1

Answer 1. Refer to Section 13.3.

Answer 2. Refer to Section 13.5.

13.10 SUGGESTED READINGS

1. Y.K. Alagh (1990): "Agro- Climatic Planning and regional Development" I.J.A.E. July – September.

2. D.N Vasu & V. Rajgopalan: "Agro-Climatic regional Planning: Regional Indicators and Typologies" I.J.A.E. July – September.

3. V.M. Rao (1995): "Planning for Liberlization ACRP in changing context" EPW, June, 24.

4. V.M. Rao (1996): "Policy research for Liberalized Agriculture: some Illustrative Research Areas" I.J.A.E., Jan-June 1996.

13.11 TERMINAL QUESTIONS

Q1. What do you understand by Agro Climatic Zonal Planning? Explain the Programme for Agro-Climatic Regional Planning (ACRP)?

Q2. What are the major Objectives of Agro-Climatic Regional Planning (ACRP)?

UNIT-14
AGRICULTURAL PRICE POLICY IN INDIA

STRUCTURE

14.0 Objectives

Studying this chapter should enable you to understand:

- Major Objectives of Agriculture Price Policy
- Major Instruments of Agriculture Price Policy (APP) in India
- Appraisal of Agriculture Pricing Policy

14.1 INTRODUCTION

Agricultural price policy is basically aimed at intervention in the agricultural produce markets with a view to' influencing the level of and fluctuations in prices and price spread from the farm gate to the retail level. Price policy is an important instrument of planning. The government can influence the, "allocation of' resources, distribution of incomes and capital formation through price manipulations. Prices give signals to allocate resources between sectors and even within a sector. Determination of agricultural prices is intensely political because of its profound influence on equity, income distribution, consumption, production and economic development. For a variety of political, social and economic reasons agricultural policies will continue to be at the forefront of public policy debate domestically and internationally.

The small, family-size farms that dominate the agriculture of most developing countries are responsive to prices as well as to other economic forces. Consequently, agricultural prices play a role in achieving efficient allocation of resources within agriculture, between agriculture and non-agriculture, and between domestic production and imports. Changes in prices that affect relative profitability may occur through market forces, in which case the farmers' response may increase 'efficiency. Within agricultural sector, prices of individual commodities

determine the relative profitability of different crops and hence shape the cropping pattern.

14.2 AGRICULTURAL PRICE POLICY

Agricultural price policy, in a developing country, not only aims at providing incentives for increasing production or marketed surplus, but also is expected, at the same time, to ensure that the prices of agricultural products, are not so high as to hinder the smooth progress of the industrial sector. Minimization of fluctuations in the prices of agricultural crops, insurance of minimum price of a crop in the case of over production, protection of the interest of weaker action of the society, removal of price uncertainty are some of the objectives of agricultural price policy.

Agricultural price policy in India since independence has passed through two distinct phases, the cut off year being 1965. Before mid-nineteen sixties, the state intervention in food-grain economy was limited to the import of grains and to protect the consumers interests whenever the agricultural prices showed a rising trends. There were two main elements of agricultural policy. Land reforms and large public investment, in infrastructure with a view to increase the supply potential of agriculture The food grain policy committee (1947) had recommended, besides a progressive decontrol of agricultural commodities, measures to increase the domestic production and for reducing dependence on imports. The food grains procurement committee (1950) recommended continuation and extension of rationing of food grains. It was only the third five year plan document which recognized the importance of remunerative agricultural prices as an incentive for greater production by the farmers.

14.3 OBJECTIVE OF AGRICULTURE PRICE POLICY

The stability of agriculture price is essential since the higher agriculture prices affect purchasing power of consumers and greater input cost to the industrial users. The reduction in the purchasing power of the consumer has implication on demand for industrial goods. The broad objectives of agriculture price policy in India are:

- To set remunerative prices with a view to encourage higher investment and production in the agriculture.
- To set the prices at levels so that the consumers are not adversely affected.
- Agriculture prices should be such that the terms of trade between agriculture and non-agriculture sector is not adversely affected.
- To set price in such a manner so that optimal crop mix can be achieved. Thus, theoretically, Agriculture Price Policy (APP) accounts for various economic factors such as the rate and quality of economic growth, in identifying and promoting the optimal crop mix. This consequently ensured appropriate allocation of resources, capital formation in the agriculture sector and fair inter-sectoral terms of trade.

In pursuance of this objective, the partial price control of agricultural commodities was dispensed with and a committee known as food grains prices committee (Jha committee) was setup in 1964. Jha committee recommended that the following guideline; be kept in view while fixing prices for agricultural crops.

1. Prices should give incentives for widest adoption of improved technology and for maximization of production.
2. Prices should encourage optimum utilization of land.
3. Price; should aim at ensuring as near a balance between supply and demand for various crops as possible.
4. The impact of the prices on exports and imports of the crop concerned should be kept in view.
5. The effect of the overall price policy on the other sectors of the economy.

The committee also recommended that efforts should be made to reduce the cost of production through supply of subsidized inputs. Both before and after independence adhoc commission and ’committee’s used to investigate the 'food problem' and suggest ways to solve it. It was only in 1965 that a permanent body, viz, the Agricultural Prices Commission, was set up with presumably long run goals in view. The broad framework of the policy was to advise the government on regular basis, for evolving a balanced and integrated price structure. The terms of reference of commission refer not only to the need for providing price incentives for promoting agricultural growth but also to the need to 'ensure rational utilization of land and other productive resources' and to the likely effect of the policy on the rest of the economy, particularly on the post of living, level of wage's, industrial cost structure. Production elasticity's with respect to price showed an increase in the wake of the technological breakthrough, which was due to increase in the yield elasticity. In view of the responsiveness of supply to changes in prices inter alia other factors, the government of India is intervening in food markets with twin objectives of attaining self-sufficiency in food grains through better prices to farmers and also ensuring consumer protection.

In response to sortie changes in agrarian economy in the last sixties and seventies, some modifications were made in the framework of APC. Terms of trade were accorded special significance in price fixation. APC was later renamed as Commission for Agricultural costs and Prices (CACP), and it was emphasized that production pattern should be developed such which is consistent with the overall needs of the economy.

Since the mid-sixties, the Government has been announcing minimum support and procurement prices for important agricultural commodities on the recommendations of the (CACP). The Commission has been guided by two main considerations in determining support prices- the cost of production and some principle of parity. Broadly speaking, in the fifties, the purchase price of wheat did not cover the full

cost of production (cost c). This situation was reversed in the mid-sixties when the procurement price has been well above the cost of production.

Given the set out nature of the objectives of price policy, the APC had to recommend not one but several set of prices; its recommendations had also to cover issues relating to the procurement and distribution of food-grains by government agencies. It had to develop notions about: 'support' prices to prevent farmer distress, 'interactive' prices to promote investment and growth in agriculture, 'procurement' prices-possibly involving an element of tax- at which grain could be procured by the government under varying degrees of compulsions (or none) and 'issue' prices - involving an element of subsidy - at which grain could be distributed under the public distribution system whatever be its coverage.

14.4 MAJOR INSTRUMENTS OF AGRICULTURE PRICE POLICY (APP) IN INDIA APP INCLUDES THE FOLLOWING INSTRUMENTS:

In pursuance of these objectives, the government *employs three operational instruments,*

a. Procurement of important agricultural commodities at the predetermined procurement/ minimum support prices which offer an inadequate return to formers;
b. supply of selected commodities through PDS as reasonable prices; and
c. Open market releases of food grains edible oil, sugar, pulses etc. in order to maintain open market prices of these commodities within a reasonable range.
d. The procurement' and support prices for important agricultural crops are fixed by the Government on the recommendations of the CACP. The Commission formulates its recommendations on the basis of several factors such as cost of production, changes in market prices, input output parity, intercrop price parity,, effects on industrial cost structure, general price level, international market-situation, etc.

Criteria of Price Fixation Many criteria for fixation of agricultural prices have been evolved to provide sufficient incentives to the farmers for realizing maximum possible output. Presently the prices are fixed on the basis of one or more of the following criteria.

(i) Cost of production Criterion,
(ii) Ruling Prices Criterion
(iii) Parity Prices Criterion.

(i) Cost of Production Criterion:

The average cost or the bulk line of production calculated with the help of cost accounting technique can be made a basis for determining the level of minimum, support prices. Another variant of cost account method is budgeting technique. In this, approach, the cost of

recommended farm practices and their average yields are taken into account to estimate the cost per unit of output.

As cost of production is one of the most important criteria in the determination of procurement / minimum support prices (MSP), an expert committee was set up early in 1990 under the chairmanship of Prof. C.H. Hanumantha Rao to review, inter alia, the methodology for the estimation of cost of production of crops and adjustment of MSP before the arrival of the crops in a market with a view to improving remuneration for crop production and to protect the farmer interest.

The Expert Committee for Review of Methodology of Cost of Production Crops has made two important suggestions: Firstly that the family labour should be evaluated on the basis of actual wages paid to casual labour and secondly, the cost of, management should also be included as part of cost of production. The increase in procurement prices on account of the above will lead to increased production which will have sobering effect on the market and help in food security. A price covering such as complete cost has been described as a 'forward looking' floor because it ensures cash income to fanners over and above the actual money expenditure occurred. Moreover, it is seen to incorporate-at least one principle of parity, viz, input, return parity, since the family inputs are given the same remuneration that they could notionally earn outside the family.

Though cost of production is an important criteria, yet it is not the role basis for arriving at the level of MSP. However, as several aspects of the farm economy like profitability of farm enterprises, efficiency of resource use, allocative efficiency and pricing of inputs are generally discussed in relation to the cost of production, the issue of appropriate level of MSP naturally revolves on the cost of production. The problems encountered in considering the cost of production for the purpose or determinations of the level of MSP have been discussed at various levels by different researchers.

The foremost among them is which cost to be considered for this purpose. The CACP now examines eight concepts of cost, viz, cost A_1, Cost A_2, cost B_1, cost B_2, cost C_1, cost C_2, cost C_2* and cost C_3. Cost C_2 contains all paid out and fixed costs including imputed interest on owned fixed capital imputed rental value of owned land and imputed value of family labour. Cost C_2" is the same as C_2 with all labour evaluated at statutory minimum wages in case tiles; are higher than the actual wages paid to the farmer. Naturally cost C_2* is marginally higher than the cost C_2 To account for managerial input of the farmer, cost C_3 is computed by raising cost C_2" by ten percent.

Even if this complete cost principle of pricing is accepted, it is beset with many operational difficulties - arising from the fact that even for a single crop the cost of production varies a lot not only from region to region but also within regions across different farm Apart from the question of which cost and whose cost to be considered for arriving at the

level of MSD, there are several problems that are encountered in adopting a cost plus approach. The demand dimension remains ignored. It does not permit encouraging the production of a commodity in which case new technology is available and farmers need to be given signals for its adoption. It is true that even a fixation can become meaningful and reasonably operational only in relation to a clearly specified policy goal.

A certain degree of informed judgment is required to be used for arriving at the prices of farm products. The CACP so far has preferred not to follow a fixed formula approach in the determination of MSP. In Punjab alone, the margin allowed over C_2 cost of production in the case of wheat showed variation between 10 to 30 per cent, (-) 21.6 per cent and 14.4 per cent for Madhya Pradesh. It clearly shows that average price realize by the farmers in MP was quite high. The minimum support price differs according to the grade and the differences reflect the demand dimensions.

(II) Ruling price Criterion:

This criterion requires that the price be linked to moving average market prices in the recent part. This criterion takes into account the demand side in fixation of prices, whereas the supply side remains altogether ignored. In an economy, where the agricultural prices are kept deliberately low in the past, the moving average fails to properly reflect the market trends.

(III) Parity Prices Criterion:

The parity with input costs is only one among different kinds of parity one can think of in the context of product pricing. For example, there is parity between farm incomes and income earned in other sectors of the economy. There is a problem in maintain such a parity through a product pricing alone, as variations in agricultural output is a rule rather than the exception. A system of taxes and subsidies is required to limit the range of fluctuations in farm incomes and ensure their parity with incomes in other sectors. A uniform output price consistent with the income parity criterion cannot be calculated simply because the commodity baskets of consumption vary as between the different rural classes.

Parity ratio may be conceived in a number of ways some of these are:

(i) Parity between prices of all agricultural commodities and all non-agricultural commodities is calculated as:

$$\frac{\text{Price index of all agricultural commodities}}{\text{Price index of manufactured commodities}} \times 100$$

'The above parity ratio does not distinguish between protection given to the farmer as a producer and as a consumer, and it has get utility in adjusting movements in terms of trade between farm and non-farm sectors.

(ii) Parity between prices received for the farm products and prices paid for farm inputs. This is calculated as:

$$\frac{\text{Price index of all agricultural commodities}}{\text{Price index of farm inputs}} \times 100$$

This concept of parity, is useful when the objectives is to protect the interests of the farmer as a producer. An increase in the parity ratio exhibits favourable movements of terms of trade for .the agricultural sector.

(iii) Parity between prices of individual agricultural commodities and general agricultural prices. This is calculated as:

$$\frac{\text{Price index of all individual agricultural commodities}}{\text{Price index of all agricultural commodities}} \times 100$$

This concept of parity is useful in bringing about adjustment in crop mix for the purpose of achieving planned targets of production in respect of certain crops. The other factors suggested above are also taken into consideration while fixing the minimum prices. These *factors* may lead *to* price higher than the one fixed purely on the basis of cost of production.

However, if the other factors suggest a downward adjustment of the price it will never be fixed at a level below total cost of production. Cereals for which CACP recommends MSP are paddy, wheat Jowar, bajra, maize and ragi. It also recommends prices for four pulses i.e. gram, arhar, moong and urad, six oilseeds namely groundnut, sunflower, toria, and one tree crop, namely copre. It also recommends MSPs for four non-food crops i.e. cotton, jute, sugarcane and tobacco.

As far as Wheat is concerned the minimum support price was fixed at Rs. 35.50 per quintal in 1964-65. This was raised to Rs. 57.50 in 1968-69. After this the government did not announce minimum support prices for wheat and restored to the policy of purchasing all quantities of wheat offered for sale at procurement prices which are higher than the minimum support prices. The procurement 'price' has been consistently raised upward. In 1990-91, it was fixed at Rs. 255 (Rs 280 if the state government bonus of Rs. 5 is also added) per quintal and was raised to Rs. 550 per quintal .in 1998-99. The procurement price of paddy which was fixed Rs.'205 per quintal in 19t')-91 has been now raised to Rs. 440 per quintal in 1998-99. The procurement price for coarse grains has been fixed at Rs. 360 per quintal in 1997-98.

The Commission for Agricultural Costs & Prices (CACP) recommends the Minimum Support Price (MSPs) for 24 important crops. The Commission, apart from other factors, considers the cost of production which includes the cost of paid out inputs, imputed value of family labour and rentals for the own land which recommending MSP. The MSPs are normally announced upfront before the commencement of sowing operations of the particular crop and have usually been

remunerative and significantly higher than the cost. The MSP, by definition, becomes the floor price and farmers are assured of getting that price. In most of the crops, the MSP inclusive of bonus has been above the cost of production. MSPs were revised substantially in 2007-08. Increase in the MSPs for paddy (common), wheat, moong, urad, arhar, jute in 2007-08, over the MSP for 2004-05, was 33 per cent, 56.3 per cent, 23.4 per cent, 23.4 per cent, 14.4 per cent and 18.5 per cent, respectively. The purchase price offered to farmers particularly is significantly higher than the cost of production.

In fact, 'procurement prices of almost all crops have been raised substantially during the last few years. While some hike is of course necessary to neutralize the increasing cost of production, the hefty increase in procurement prices is due to the increasingly dominant role played by the large fanners' lobby in the country's political scene.

The other constituents of the agricultural policy in India are running of Public Distribution system for low income groups of then consumers; and operation of buffer stocks of food grains for checking a rise in their prices. The fixation of minimum support procurement prices are meant mainly for producers to ensure remunerative prices, whereas PDS and buffer stock operations are to be used for ensuring that consumers in general and the weaker sections of the societies in particular, pay reasonable prices, for some essential commodities.

14.5 FOOD STOCKS AND MANAGEMENT

Another important aspect of the agricultural price policy relates to the level of stocks of food-grains with the public agencies. The stocks with the public agencies consist of buffer stocks and operational stocks. The buffer stocks include base level stocks which cannot be pulled out from the system and food security stocks which are used to reduce the fluctuations in the availability of grams from year to year. The size of the stocks required to be maintained by the public agencies depends inter-alia, on the nature and amplitude of inter-year fluctuation in production and the scale of public distribution system desired to be maintained. The' norms have been revised from time to time, for the Eighth Five Year Plan period, based on the recommendations of Technical Group on Buffer stocking Policy of Food grain (GOI, 1989), the GOI prescribes, the minimum level of Stocks to be maintained by the public agencies at the beginning of each quarter of a year. The prescribed minimum levels are 22.3 million tons for July, 16.6 million tons for October, 15.4 million tons for January and 14.5 million tons for April. The stocks of food-grains which stood at 15.1 million tons during 1992 increased to 36.5 million tons during 1995. Thé minimum buffer stock norms were revised with effect from October 30, 1998 which are as follows:

BUFFER STOCK NORMS
(million tonnes)

Norms 1998	Jan	April	July	Oct.
Pre-revised Norms				
Wheat	7.7	3.7	13.1	10.0
Rice	7.7	10.8	9.2	6.0
Total	15.4	14.5	22.3	10.6
Revised Norms 2004				
Wheat	8.4	4.0	14.3	11.6
Rice	8.4	11.8	10.0	6.5
Total	16.8	15.8	24.3	18.1

Norms 2007	Jan	April	July	Oct.
Wheat	8.2	4.0	17.1	11.0
Ric	11.8	12.2	9.8	5.2
Total	20:0	16.2	26.9	16.2

The actual stock of wheat and rice in January 1999 (P) has been 24.4 million tons against the minimum norms of 16.8 million tones.

Due to a quantum jump in the production of food-grains, the procurement exceeded the off-take by a considerable margin and as a consequence, the level of stocks of food-grains with the public agencies had increased by a considerable margin.

The 'excess stocks' stood 'at 7.6 million tons during 1999 which further increased to the high level of 41.2 million tons in January 2002. in July 2002. While the stipulated buffer stocks were 24.3 million tones the actual stock stood at 63.0 million tons (the highest level attained) with the result that 'excess stocks' were 38.7 million tones. In April 2005, the actual food stocks were 17.4 million tones which were higher than the buffer norms of 16.2 million tons by only 1.2 million tones. The stock of food-grains as on April 1, 2006 was 15.7 million tons against the buffer norms of 16.2 million tones. The present stock position of food-grains as on January 1.2008 is 19.2 million tones comprising of 11.5 million tones along with projected arrivals of wheat imports will be sufficient in meeting the requirements under TPDS and Welfare schemes.

As regards reaching the grains to the poorer section, a revamped public distribution scheme (RPDS) was launched in 1992 with a view to extending the coverage of distribution-of specially subsidized food-grains to the population living in the hilly and arid areas also. The off take of

cereals under TPDS remained considerably lower than the assessed requirement, of about 8 million tons for these areas. The off take of food grains under general PDS was also considerably lower during 1993- 92 off take of the food grains, however is lower than the allocation because some of the beneficiaries under the TPDS may not take the delivery of food grains as per their entitlement. Total off take of food grains, however, has been in line with the procurement in the last four years. The off take was 12.21 million tons in 1998-98 as against 19 million-tones in 1991-92. The explanation for lower off take could be found in increased production in both surplus and deficit areas resulting in comfortable availability of the food-grains in the open market was also the steep like in central issue price during this period with a view to containing the food subsidy.

Food and input subsidies have been used as complementary instruments of agricultural price policy which sought to (i) assure a remunerative and relatively stable price environment for the farmers for inducing them to increase the production and thereby augment the availability of food-grains; (improve) the physical and economic access of the masses to food: and (iii) evolve a production pattern which is in line with the overall needs of the economy.

14.6 AGRICULTURAL PRICE POLICY IN THE CONTEXT OF NEW ECONOMIC POLICY

The beginning of 'nineties' was associated with far reaching changes in the economic policy framework in all developing countries and efforts are being made to integrate the domestic economy with the world economy. The new economic policy is a bold attempt tp restructure the economy placing much greater emphasised on the market forces and at minimizing the decree of state intervention [1] with a view to achieving efficiency in resource use. It becomes important to identify the main challenges likely to be faced by the agricultural sector in India in the changed scenario during the 'nineties' with a view to suggesting an appropriate policy framework.

Though the programme did not initially cover agriculture, it was recognized that new economic policy may not succeed in their objective of broad based growth in incomes and productive employment without sustained development of the agricultural sector. The package of reforms in the farm sector is based on the diagnosis that while the sector remained net dis-protected, the subsidies arising out of inappropriate pricing of inputs and outputs led to insignificant resource use, resulting in decaling rate of capital formation and benefited only the producers of few crops and that too in some regions. The suggested agenda for the farm sector, therefore, revolves on removing the price distortions, withdrawal of subsidies on inputs, forgetting the PDS, abolition of food management system and its attendant costs and liberalization of the package is that as the subsidies on farm inputs and food are no longer sustainable in terms

of fiscal management, and these be phased out and adjustment in agricultural prices be made for arresting the deterioration in the terms of trade for the farm sector. The agenda of removal of price distortions means the movement towards 'high input high output prices' and aligning the inter-crop price ratio in the domestic market with that of world market It becomes pertinent to analyze the short and medium term implications particularly for the farm sector. Firstly, the envisaged benefits to the farm sector that are supposed to accrue as a consequence of reform in trade policy including real devolution can materialize only when agricultural production is highly responsive to increased *prices. It* is *a* known *fact that production infrastructure* has a much more positive impact on promoting agricultural growth.

A policy of gradual withdrawal of input subsides besides adversely affecting domestic output, would lead to rise in procurement and issue prices. The impact of rising prices of food grams in a country where 73 per cent of holdings are less than 2 hectares, and the owners of those holdings are not buyers of grains, needs to be examined carefully.

Capital formation in the farm sector has shown a downward trend, despite the fact that terms of trade have • moved in favour of farm sector This has teen due to decline in public investment in agriculture which will have serious implications for future pattern of growth. Productivity increase in agriculture is also considerably dependent on capital formation both from the public and private sectors. Gross capital formation (GCF) in agriculture as a proportion to the total capital formation has shown a continuous decline. GCF in agriculture relative to GDP in this sector has, however, shown an improvement from 9.6 per cent in 2000-01 to 12.5 per cent in 2006-07. This, however, needs to be raised to 16 per cent during the Eleventh Five Year Plan to achieve the target growth of 4 per cent in this sector.

Decline in capital formation on the one hand and reduction in the horizontal spread of infrastructure on the other may have adverse effect on food grain production.

However, reduction of subsidies would not have been a real cause of concern if these were to be balanced by an increase in public investment in. agriculture. Furthermore, the effective decline in financial transfers to the states will have negative impact on investment in agriculture.

Employment which has been the high priority issue in our planned strategy has suddenly become far less important issue under the new regime of SAP. The scope for generating more employment with the adoption of high productivity equipment is bound to be low and more biased towards skilled manpower.

Producing for export to generate foreign exchange has become a national goal throughout the world, despite the environmental and distributional impact of such policies. Emphasis on increasing exports will

most likely be accompanied by more from share cropping to contract farming having adverse implications.

Finally, food security is likely to be adversely affected due to yet another reason. A serious concern has been expressed over the increasing trend of diversion of prime food' crop area to commercial crops like oilseeds. It is further pointed out that the scope for agro-based exports may not be very great.

In short, developing countries like India could derive the avowed benefits of NEP if and only if they are able to mobilize large resources for public investment in agriculture, particularly in irregular and scientific research and extension On-the other hand, should the axe of fiscal compression and discipline far among other areas, on public investment in agriculture (as is the case of many south American and African counties), the structural adjustment programme can only lead to deceleration of agricultural growth, high food prices, decline in employment opportunities and endangered food security.

14.7 APPRAISAL OF PRICE POLICY

The policy has been instrumental in creating a fairly stable price environment for the farmers to induce them to adopt new production technology and thereby increase the output of food grains. The subsidized distribution of food grains has helped in improving economic access to food. Owing to the decline in the real prices (prices vis-à-vis the income) of basic staple food, the organized sector and the industry could keep their wage bills low. The benefits of price policy and input/food subsidies, have, thus been shared by all the sections of society. However, the present price policy has certain shortcomings discussed as follows:

(i) The price policy has to evolve a qualitatively superior crops mix i.e. to provide incentive for growth of crops which are nutritionally superior or the crops where the country has comparative advantage. In India this aspect of agricultural price policy has remained largely neglected.

(ii) During the last few years, lack of prudence in fixing the level of support prices of rice and wheat led to not only accumulation of excessive stocks but also raising the public cost of food grain policy. During these years, the government fixed MSPs of rice and wheat at much higher levels than that recommended by CACP. Currently however the stocks are below or almost close to the minimum prescribed levels.

(iv) The farmers in the new emerging states could not get the minimum support prices for their produce. This happened mainly because the nodal agency (FCI) and state agencies in the new emerging surplus states are not geared to undertake price support operations. The FCI remains occupied with large volumes of purchases traditional surplus producing states (like Punjab, Haryana, and western U.P).

Exercise 14.1

Q1. What is the rationale of agriculture pricing in India?

Q2. What are important instruments of agriculture price policy (APP) in India?

14.8 SUMMARY

This chapter has focused its attention on agriculture price policy, its objectives and instruments.

The agricultural price policy has relied too heavily on price incentives in the form of assured crop prices for achieving increase in production. The non-price factors such as efficient technology, financial inputs, land reforms and improved human resources are all very significant in expanding the volume of aggregate output and productivity. The scarce state's economic resources should be used in improving social and economic infrastructure in the rural area rather than providing subsidized agriculture output to the public at large. The price policy cannot produce desirable effects of improving agricultural productivity if the agricultural infrastructure is weak. It is desirable that the agricultural prices are announced for few commodities as it is commercially unsustainable for government to procure food-grains at higher price and allow off-take at subsidized price. Further, an adequate attention is given to the infrastructure development.

14.9 GLOSSARY

- **Public Distribution System** is an Indian food security system. Established by the Government of India under Ministry of Consumer Affairs, Food, and Public Distribution and managed jointly with state governments in India, it distributes subsidized food and non-food items to India's poor.
- **Minimum Support Price:** the minimum support prices was announced by the Government of India for the first time in 1966-67 for wheat in the wake of the green revolution and extended harvest, to save the farmers from depleting profits. Minimum support price is the price at which government purchases crops from the farmers, whatever may be the price for the crops.
- **Green revolution:** the development of new forms of cereal plants such as wheat and rice and the use of more powerful fertilisers, which give much higher yields and increase the food production especially in tropical countries.

- **The National Policy on Agriculture:** The National Policy on Agriculture seeks to actualise the vast untapped growth potential of Indian agriculture, strengthen rural infrastructure to support faster agricultural development, promote value addition, accelerate the growth of agro business, create employment in rural areas, secure a fair standard of living for the farmers and agricultural workers and their families, discourage migration to urban areas and face the challenges arising out of economic liberalization and globalisation. Over the next two decades, it aims to attain.
- **New Economic Policy:** The New Economic Policy (NEP) refers to a set of transformational policy changes introduced by the Indian government in 1991 to reverse the then existing economic policies to achieve the country's macroeconomic objectives.

14.10 ANSWERS TO SELF CHECK EXERCISE

Exercise 14.1

Answer 1. Refer to Section 14.2.
Answer 1. Refer to Section 14.4.

14.11 SUGGESTED READINGS

1. R.N. Soni (2006): Leading Issues in Agricultural Economics.
2. G.S. Bhalla and Mnamohan Aggrawal (1996): World Economy in Transition. An Indian Perspective: IIAS.

14.12 TERMINAL QUESTIONS

Q1. Distinguish between MSP and procurement price?
Q2. Give critical appraisal of APP in India?

UNIT-15
TERMS OF TRADE BETWEEN AGRICULTURE AND INDUSTRY

STRUCTURE

15.0 OBJECTIVES

After going through this lesson you will be able to:

- State the Impact of change in terms of trade in favour of the agricultural sector
- Utter the Impact of change in terms of trade against agriculture
- Explain the terms of trade between Agriculture and Industry in India since Independence

15.1 INTRODUCTION

Agricultural and industrial sector depend upon each other for their mutual growth. Agriculture helps the industrial sector by providing capital (domestically as well as through export earnings), and labour (factor contribution), raw material and wage goods (product contribution) and market for the industrial products (market contribution). Industrial sector on the other hand, promotes the development of agricultural sector by providing market for its products and modem inputs to it for production, reducing population pressure on it, and by providing infrastructure for its development.

The two sectors, as is clear from the above narration, sell their goods and services to each other. The prices for these goods and services supplied to each other are different. By comparing the overall level of prices for the basket of goods and services flowing from one sector to the other sector at a given point of time, one can determine the ratio of exchange between the two baskets. This ratio of exchange between goods and services from each sector to the other is called “terms of trade between two sectors” or more accurately, the “barter terms of trade”.

For example, suppose a unit of industrial goods (A) costs Rs. 20/ and a unit of agricultural goods (B) costs Rs. 10/. This means that if A is exchanged against B, the ratio of exchange or terms of trade will be A: 2B. One unit of industrial goods will be exchanged for 2 units of agricultural goods.

15.2 THE TERMS OF TRADE BETWEEN AGRICULTURE AND INDUSTRY

The terms of trade between agriculture and industry undergo a change when the relative prices of the agricultural and industrial products change. If the overall prices of agricultural products rise more than those of the prices of industrial products, terms of trade will change in favour of the agricultural sector *(i.e.* against the industrial sector). On the other hand, a relative increase in the prices of the industrial products as compared with those of the agricultural products will turn the terms of trade in favour of the industrial sector (i.e. against the agricultural sector) If the terms of trade change in favour of the agricultural sector, agricultural sector will be benefiting at the cost of the industrial sector after the change and vice-versa. However, the gains for sector need not be unmixed. Some other changes initiated by the changes in the terms of trade may adversely affect the overall development of the economy and therefore the farming sector as well. It has been described in the following paragraphs:

15.2.1 Impact of change in terms of trade in favour of the agricultural sector (against the industrial sector):

(i) The agricultural sector benefits by getting agricultural inputs from the industrial sector at cheaper rates. The lower cost of fertilizers, pesticides, agricultural machinery etc. will increase the profitability of agriculture.

(ii) Industrial products for rural people will also be available at cheaper rates. As the price elasticity of demand for the industrial products is generally more than unity, it is likely that the total revenue earned by the industrial sector will also increase after the change in tern s of trade in favour of agriculture.

(iii) The industrial sector suffers because of relatively higher prices of food and industrial raw materials which lead to higher wages demand which will cut down the profit of the industrialists. This will slow down the process of industrial expansion.

(iv) It is generally felt that people in the agricultural sector have lower propensity to save as compared with those in the industrial sector. Terms of trade favourable to the agricultural sector will transfer income from the industrial sector to the agricultural sector. This can reduce the overall savings of the economy. Capital formation will thus be affected adversely.

(v) It has been pointed out by J.W., Mellor that higher prices of agricultural products can lead to greater transactions in land. Land values can use without adding in any way to agricultural production.

(vi) Higher agricultural prices can affect the exports of agricultural products adversely. On the other hand imports of these products can be encouraged. Foreign exchange earnings of the country can go down. This can affect adversely the import of capital goods and the over all development of the economy.

(vii) There is another ambiguous a priori impact of the terms of trade on marketed surplus of output. This occurs from the input market for labour which is the sum of own family and hired labour. An improvement in the terms of trade has both a wealth effect and substitution effect. The wealth effect is that better terms of trade raise farmer's income and induce a fall in family labour supply which in. turn reduces output assuming that the fall in supply of family labour is not substituted by increased hired Labour. The substitution effect is that the resultant increase in farmer's income creates an incentive to increase family labour supply as the returns to labour has increased which raises output, assuming again that increased family labour supply is not substituted by reduced hired labour. The aggregate impact of a rise in terms of trade is thus two fold. Self-consumption may rise or fall, and labour supply may rise or fall.

15.2.2 Impact of change in terms of trade against agriculture (in favour of industry).

The effects of change in terms of trade in favour of industry are just the reverse of what happens when these change in favour of agriculture. The industrial sector gains through reduction in the cost of production' due-to lower wages and low cost of raw materials supplies by the agricultural sector. Income distribution shifts in. favour of those with higher propensity to save. Capital formation is thus encouraged.

The agricultural sector suffers. Its profitability goes down. Investment in agricultural inputs goes down. Sometimes crop pattern undergoes a change. Farmers start producing cash crops rather than-food crops if attempts are made to peg the food prices at a fixed level.

15.3 Changes in Terms of Trade between Agriculture and Industry during 'the Course of Economic Development

The growth process is generally initiated in the agricultural sector. In the initial stages of development, the income elasticity for agricultural products is quite high in LDCs arid the pattern of industrialization is agro-based. Because of these two characteristics, there is an increased demand for new materials provided by the farm sector. On the other hand, relatively more rapid rate of technical progress in the non-farm sector will bring about a larger increase in the supply of industrial products than in that of farm products. This will make favourable terms of trade for agriculture.

Various models by Fei and Rani's and Jorgenson strongly mention-the fact that terms of trade will change in favour of agriculture as the industrialization goes ahead. Fei and Rani's feel that terms of trade change only after the surplus labour in the farm sector has been exhausted. Jorgenson is of the view that terms of trade start changing in favour of agriculture as soon as industrialization starts through transfer of labour and capital from farm sector to non-farm sector. It' is believed that terms of trade against industry m the initial stages should be kept under check through artificially lowering the prices of farm products or through heavy direct taxes on the farm sector.

In U.K., Japan and Argentina, the terms of trade, were kept against agriculture to supply capital for rapid expansion of the non-farm sector. In India, too, the government had followed a negative price policy so far as the agricultural products are concerned. However, terms of trade cannot be kept against agriculture for long after the development process has been initiated.

Now a question arises. Will not the terms of trade favourable to agriculture ultimately affects the growth of the industrial sector. The answer is in affirmative so long the interdependence between farm and non-farm sector remains as strong as ever. As a matter of fact, the terms of trade in such a situation have to be manipulated in favour of one sector or the other, from time to time, according to circumstances, during the course of economic, development. Regarding' the role of terms of trade in

agricultural development is complex arid a mere favourable terms of trade cannot do the trick.

Many economists are of the view that agriculture should be developed through various non-price factors. Price changes from year to year should be avoided. For example, government should invest more for providing irrigation facilities, provide input facilities and improve the infrastructure and marketing facilities for agricultural development.

15.4 Terms of trade between Agriculture and Industry in India since Independence

The terms of trade, between agricultural and industrial sector, since independence have been changing from one extreme to another, sometimes moving in favour of agriculture and sometimes against it. There is a broad agreement among economists that the terms of trade were against agriculture between 1952-53 to and 1964-65. Since 1966-67, the terms of trade had moved in favour of agriculture and continued to be so till 1977-78. However after 1978-79, the terms of trade again 'turned-against agriculture, the degree of un-favourableness has continued to decline.

It is interesting to note that terms of trade have, at times, moved against agriculture even though the prices of farm products have been consistently raised (after 1965).

Favourable terms of trade for agriculture have at times failed to protect the real income generated in the agricultural sector.

15.4.1 Terms of Trade, changes in Income and Investment

The large investment made by the government in irrigation works reflecting in the-increase of total gross fixed capital formation at the rate of 4.36 per cent per annum seems to have helped in raising the value added in agriculture at the rate of 3.30 per cent per annum and crop production by 2.88 per cent per annum during the first phase (Table 15.1). Despite traditional technology and unfavourable terms of trade, the crop output growth was quite impressive during phase I. The adverse terms of trade seem to have affected fanner's income as is shown by marginal increase in income at the rate of 1 per cent per annum.

The crop production increased at the rate of 4.25 per cent per annum, mainly caused by productively increase caused by modern inputs during the second period. This period also experienced favourable terms of trade. This, along with new technology had helped in raising total gross capital formation at the rate of 4.79 per cent per annum and the public investment by 4.49 per cent. The farmer's income also increased at the rate of 1.96 per cent per annum, which is almost double *of* the first phase.

The farmer's income grew at the rate of 3.75 per cent per annum during 1978-79 to 1990-91 as a result of much emphasis on intensification of modern inputs and marketing. The crop production increased at the rate of 3.84 per cent per annum; mostly due to productivity growth. Such

growth performance, despite the declining public investment is quite significant. It seems that so long there is sufficient increase in income whether caused by increase in productivity or price rise reflected in favourable terms of trade will help in raising agricultural production.

It is rather well known that during the period 1952- 53 to 1964-65, traditional technology was the main source of agricultural .growth. Period 1966-67 to 1977-78 was the initial phase of the new technology and 1978-79 to 1990-91 was the modernizing phase. The impact of terms of trade on output and investment differs among stages of production. The stages of production are mainly represented here by the phases of agricultural development. For instance, in the first and second phase of development, the impact of adverse terms of trade on fanners' income would be severe and hence on their investments whereas in the third phase it can be mitigated by productively in cases.

The favourable terms of trade to agriculture are expected to influence the output in two ways: (i) they increase profitability helping thereby the adoption of the new technology and (ii) if the terms of trade continue to be favourable for some time, they induce the farmers to invest in agricultural. The latter is more important for creating a stronger base for further growth in agricultural development.

The long term effects of favourable terms of trade on rural poverty are captured by the index of income changes in agriculture. Higher the income for agricultural sector, more would be demanded for agricultural labour and hence lower the rural poverty.

The technology while raising output influences farmer's decision to invest in agriculture in two ways: (i) it reduces the relative prices for commodities depressing thereby the terms of trade which in turn decreases the profitability and hence lowers investment resulting in the adverse impact on output; and (ii) it decreases unit cost resulting thereby in higher profitability and have more investment and favourable influence on output. With a view to sharing the gains of the new technology which resulted in the form of productivity increase at a lower unit cost between the producer and consumer particularly the rural poor, the terms of trade have also not been allowed by the government to become too favourable to agriculture in. the long run framework.

Terms of Trade, Changes in Income and Investment During the period, 1952,53 to 1990-91

Item		Phases of Development		
		1952-53 to 1964-65 (First Phase)	1967-68 to 1977-78 (Second Phase)	1978-79 to 1991-92 (Third Phase)
Terms of trade	(a) Range	73-94	85-116	82-93
(1970-71 = 100)	(b) Average	85.6	100.00	86.4
(i) Barter	(a) Range	80.-98	91-116	83-96
(ii) Gross	(b) Average	87.8	103.8	88.00
Income changes				
(1970-71 = 100)				
(i) Index	(a) Range	65-93	100-118	99-165
(ii) Annual growth *(%)*	(b) Average	73.2	107.8	128.3
Investment				
(per cent annual change)				
(i) Gross fixed capital	Per. ha.	3.08	4.75	0.62
formation at 80-81 prices	Total	4.36	4.81	1.27
(ii) Gross capital formation	(a) public	-	5.61	-1.43
at 80-81 prices	(b) Pvt	-	4.49	3.08
Growth performance *(%* annual	(c) Total	-	4.79	1.20
charge)				
(i) GDP in agriculture at	(a) perhectare	1.87	3.10	2.61
80-81 prices	(b) Total	3.30	2.81	2.90
(ii) For all crops	(a) Area	1.19	0.98	071
	(b) Productivity	1.71	4.23	3.77
	(c) Production	2.88	4.25	3.84

During the period 1971-72 to 1981-82, terms of trade moved against agriculture. Data covering the period 1982-83 to 2006-07 are presented in table 15.2. As can be seen from the last column of Table 15.1, agricultural price index 95 per cent of manufacturing is greater, than 100 indicating that terms of trade have consistently been in favour of agriculture since early 1980s. Favourable terms of trade are due to, (a) reduction in the protection to the manufacturing sector (b) Higher increase in minimum support prices in recent years and (c) lifting some of the restrictions on agricultural trade.

Table : 15.2
Index numbers of whole sale prices-relative prices of manufactured and agricultural products

Year Weight	General Index of Wholesale Prices[b]	Price index of Manufactured Products	Price index of Agricultural Products[a]	Manufactured Price index as per cent of Agricultural Price index	Agriculture price index as percent of Manufacturing
	100.00	63.75	21.54	(Col 3/Col 4) x 100	
1	2	3	4	5	6
1994-95	112.6	112.3	116.0	96.8	103.4
1995-96	121.6	121.9	126.0	96.8	103.3
1996-97	127.2	124.4	136.4	91.2	109.7
1997-98	132.8	128.0	140.3	91.2	109.6
1998-99	140.7	133.6	157.2	85.0	117.7
1999-00	145.3	137.2	159.1	86.2	116.0
2000-01	155.7	141.7	163.7	86.6	115.5
2001-02	161.3	144.3	169.5	85.1	117.5
2002-03	166.8	148.1	175.3	84.5	118.4
2003-04	175.9	156.5	182.9	85.6	116.8
2004-05	187.3	166.3	186.7	89.1	112.3
2005-06	195.6	171.4	190.7	89.9	113.3
2006-07	206.2	179.0	204.1	87.7	113.96

Source: Economic Survey: 2008-09, New Delhi

15.4.2 Task Force's Calculation of Terms of Trade

Though movements in relative prices between agriculture and industry are taken as indicative of movements in terms of trade between these two sectors, this view is too simplistic. An intense debate has taken place in India on the question of methodology in calculating the above terms of trade, coverage of the items, weights and price indicators etc. The task force presented a suitable methodology to compute the index of terms of trade for India. The recommended index ifs expressed as a percentage of the ratio of index of price received for agriculture products to indeed of price paid by the farm sector for final consumption, farm inputs and capital investment in agriculture. The index as prepared by the government on basis of the methodology recommended by the Task Force is given in Table 15.2

Table 15.3
Index of Terms of Trade between Agricultural and Non-Agricultural sector
1990-91 - 100

Year	Index of Prices Received (IPR)	Index of Prices Paid (IPP) for			Combined Inded (IPP)	Inxed of Terms of Trade = (IPR/IPP) x 100
		Final Consumption	Intermediate Consumption	Capital Formation		
1981-82	54.9	54.4	8.5	56.9	61.9	88.7
1985-86	70.4	89.5	94.3	76.4	75.2	93.6
1990-91	112.3	112.1	104.0	108.5	110.2	101.9
1995-96	182.9	Ï 73.4	174.2	176.1	173.7	105.3
1999-2000	219.8	217.1	203.9	212.6	214.0	102.7
2003-2004	254.9	245.2	259.1	255.7	248.7	102.5

Source : Government of India, Ministry of Agriculture, Agricultural Statistics at a Glance, 2005.

As can be seen from the last column of Table 15.3 the terms of trade were against farm sector throughout the 1980s. A distinct turnaround can be noticed after 1989- 90. During the decade of 1990s and Year 2000-01 terms of trade ranged between a high of 106.6 in 1994-95 to a low of 100.9 in 2001-01, In contrast, the index of terms of trade the 1980s. The rising index of prices received by the farmers has been supported by the public policy of annual hikes in the minimum support prices (MSP) of 22 major crops over the years.

The following observations made in Reserve Bank of India's Report on Currency and finance is important. Improvement in gross terms of trade has been linked with higher output and increased private investment. These gains have been at the cost of impoverishing the rural poor, though farmers with significant surpluses apparently gained.

A paradoxical situation has emerged that despite favourable terms of trade during 1990s, the agricultural growth in the 1990s vis-à-vis 1980s has depicted decelerating trends. One plausible explanation for this kind situation could be the outcome of aggregate supply response being price inelastic because of fixity of land and resource specificity in which agro-climatic conditions, inter-alia, are crucial determinants of cropping pattern. It is also possible that the overall impact of TOT on aggregate supply is small, as the favourable TOT may induce marketed supply through a decline in self-consumption among farmers but is offset by the positive income effect that triggers self-consumption.

A negative association has been found between the deceleration in agricultural output in 1990s and the aggregate measure of support (AMS) Indian agriculture has been net taxed throughout the 1990s (the 15 commodity AMS being -26.64 in 1990s, -45.39 in 1994, -33.76 in 1999 and -25.62 in 2000). Negative AMS for agriculture indicates a negative protection and provides the justification for policy measures aimed to

more TOT in favour of agriculture.

15.4.3 Multi-commodity multi-country model

In the more realistic case of many products exchanged between many countries, terms of trade can be calculated using a Laspyres index. In this case, a nation's terms of trade is the ratio of the Laspeyre price index of exports to the Laspeyre price index of imports. The Laspeyre export index is the current value of the base period exports divided by the base period value of the base period exports. Similarly, the Laspeyres import index is the current value of the base period imports divided by the base period value of the base period imports.

$$\frac{p_x^c q_x^o}{p_x^o q_x^o} \qquad \frac{p_m^c q_m^o}{p_m^o p_m^o}$$

p_x^c = price of exports in the current period
q_x^o = quantity of exports in the base period
p_x^o = price of exports in the base period
p_m^c = price of imports in the current period
q_m^o =quantity of imports in the base period
p_m^o = price of imports in the base period

15.4.4 Other terms- of- Trade Calculations

1. **The net barter terms of trade** is **the** ratio (expressed as a percentage) of relative export and import prices when volume is held constant.
2. **The gross barter terms of trade is** the ratio (expressed as a per cent) of a quantity index of exports to a quantity index of inputs.

3. **The income terms of trade** is the ratio (expressed as a per cent) of the value of exports to the price of imports.
4. **The single factorial terms of trade** is the net barter terms of trade adjusted for changes in the productivity of exports.
5. **The double factorial terms of trade** adjusts for both the productivity of exports and the productivity of imports.

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15.4.5 Limitations

Terms of trade should not be used as synonymous with social welfare, or even Pareto-economic welfare. Terms of trade calculations do not tell us about the Volume of the countries' exports, only relative changes between countries. To understand how a country's social utility changes, it is necessary to consider changes-in the volume of trade, input changes

in productivity, and resource allocation, and changes in capital flows.

Exercise 15.1

Q1. Examine the Impact of change in terms of trade in favour of the agricultural sector?

Q2. Elucidate the Terms of trade between Agriculture and Industry in India since Independence?

15.5 SUMMARY

In this chapter we have dealt with the terms of trade between agriculture and industry good**.** Agricultural and industrial sector depend upon each other for their mutual growth. Agriculture helps the industrial sector by providing capital (domestically as well as through export earnings), and labour (factor contribution), raw material and wage goods (product contribution) and market for the industrial products (market contribution). Industrial sector on the other hand, promotes the development of agricultural sector by providing market for its products and modem inputs to it for production, reducing population pressure on it, and by providing infrastructure for its development.

The two sectors sell their goods and services to each other. The prices for these goods and services supplied to each other are different. By comparing the overall level of prices for the basket of goods and services flowing from one sector to the other sector at a given point of time, one can determine the ratio of exchange between the two baskets. This ratio of exchange between goods and services from each sector to the other is called “terms of trade between two sectors” or more accurately, the “barter terms of trade”.

15.6 GLOSSARY

- **The net barter terms of trade** is **the** ratio (expressed as a percentage) of relative export and import prices when volume is held constant.
- **The gross barter terms of trade is** the ratio (expressed as a per cent) of a quantity index of exports to a quantity index of inputs.
- **The income terms of trade** is the ratio (expressed as a per cent) of the value of exports to the price of imports.
- **The single factorial terms of trade** is the net barter terms of trade adjusted for changes in the productivity of exports.
- **The double factorial terms of trade** adjusts for both the productivity of exports and the productivity of imports.
- **Terms of trade:** The ratio of the average price of a country’s

exports, to the average price of its imports, is its terms of trade. In theory, an improvement in a country's terms of trade raises its real income (since it can "convert" a given amount of its own output into a larger amount of consumable products through trade) – although in practice it depends on how those terms of trade gains are distributed.

15.7 ANSWERS TO SELF-CHECK EXERCISES

Exercise 15.1

Answer 1. Refer to section 15.2.1.

Answer 2. Refer to section 15.4.

15.8 SUGGESTED READINGS

1. V. N. Misra & P.B. R. Hazell (1996): "Turns of Trade, Rural Poverty, Technology and Investment: The Indian Experience" EPW, March 30.
2. S.K. Misra & V.K. Puri (2006): Indian Economy Himalayan publishing House, Delhi.
3. B.M. Desai & Errol D' Souza (1999): "Economic Reforms, Terms of Trade, Aggregate Supply and Private Investment in Agriculture" EPW, May 15-21.
4. Economic Survey various issues.

15.8 TERMINAL QUESTIONS

Q1. What do you mean by "Terms of Trade" between agricultural sectors? How does a movement of inter-sectoral terms of trade against the former affect the overall growth rate of the economy? Explain.

UNIT-16

FUNCTIONS OF AGRICULTURAL MARKETING

STRUCTURE

16.0 OBJECTIVES

Studying this chapter should enable you to understand:

- Define Agricultural Marketing
- List the approaches to study Agricultural Marketing

- Explain Marketing function and Channels
- Structure of Agriculture marketing in India
- Critical Appraisal of Agriculture Marketing

16.1 INTRODUCTION

Agricultural marketing, essentially being a sub-set of the overall marketing system, refers to all the activities, agencies and policies involved in the procurement of farm inputs by the farmers and the movement of agricultural produce from the farms to the consumers/manufacturers/ exporters. An efficient marketing system minimizes costs and maximizes benefits to all the sections of the society. It ought to provide remunerative prices to the farmer, food of the required quality at reasonable prices to the consumers and adequate margins to the middlemen.

16.2 MARKETING DEFINED

Marketing is a vital activity in any organization whose purpose is to provide goods and services. Whether' any organization is designed to be profit making or not- for-profit, its success will ultimately depend on how well it understands and meets the needs of its clients or customers. The centrality of needs, leads economists to define marketing, in its simplest form, as the process of satisfying human needs by bringing products to people in the proper form and at the proper time and place. Marketing has economic value because' it gives form, time, and place utility to products and services.

Marketing, however, has come to have several other meanings. Which of these is appropriate in any instance depends on the point of view are we talking about a product, a business firm, or society as a whole.

16.2.1 The Product Definition

In its earliest form, marketing was defined simply on the basis of the product as the processes associated with the exchange of one product for another. However, marketing can rarely be described as in terms of a single exchange. A farmer sells 1000 kgs of wheat to local grain dealer the grain dealer sells the wheat to a flour mill; flour processed from wheat is sold to bakeries, for making breads; bakery goods may go to wholesales, and then to a retail store, before being sold to consumer. All these transactions involve intermediary activities-which are directly related to marketing.

Therefore, a more comprehensive product definition of marketing is the performance of all the transactions and services associated with the flow of a good from the point of initial production to the final consumer whether it is a production good or a production input.

16.2.2 The Marketing Firm's Definition

Marketing is created not by products but by people and people have discovered real advantages in teaming together as marketing specialists within a firm. From the point of view of business firm, marketing can' be defined as all the activities necessary to sell the firm's product. To be accurate, we must consider marketing as a complete management concept through which the company sells itself as well as its line of products.

16.2.3 Society's Definition

An even broader definition of marketing has emerged within the last few years. Public awareness of increasing pollution and consumption of the earth's limited natural .resources has created a demand for better stewardship. From the viewpoint of society, then, marketing is defined as all the processes necessary to determine consumer's physical and societal needs and to conceptualize and effect their fulfillment.

16.2.4 Agri-marketing Defined

There is some confusion over terms such as agricultural marketing and agribusiness marketing. Agricultural marketing generally means the marketing of agricultural products to the first handler. Agribusiness marketing has come to mean the marketing operations from the first handler to the final consumer, although Davis and Gold berg (who coined the term) intended it-to be all inclusive-beginning with suppliers to famers and covering producing, processing, and marketing to the final consumers.

Marketing When things Change The "marketing concept" the idea that business success requires being customer oriented rather 'than product oriented, that a business ought to view itself not as selling goods or services but rather as buying customers—is by now an old idea. It mean; doing all things so that people will want to do business with you, or prefer to do with you rather than with your competitors. Instead of talking about, what to make or sell business managers should think about what people will buy and why.

It is well known that marketing and selling is not the same thing. Selling tries to get the customers to want what you have. Marketing tries to have what the customer will want- where, when, in what form, and at what prices he wants. Goods and services should be created not because somebody thinks something will be useful, but rather because somebody thinks about the needs, and wants of possible buyers.

The marketing concept urges business people to think not just in terms of their problems at fields, at their processing plants, at their offices, but of customer's needs out there in the market place. When there is a need, there is a problem. People don't buy goods and services, factories or systems. They buy the expectation (or promise) of solving a problem, even the promise of avoiding a problem.

Agri-marketing is defined as all the activities associated with agricultural production and with food, feed and fibre assembly, processing, and distribution to final consumers, including analysis of consumer's needs, motivations, and purchasing and consumption behaviour.

16.3 Approaches to the Study of Marketing

There are three approaches in analyzing the marketing sector of the national economy.

1. The functional approach
2. The institutional approach
3. The individual commodity approach

16.3.4 The functional approach

When we take the functional approach, we look at the basic activities (functions) that have to be performed in marketing agricultural commodities, and at the marketing of inputs into agricultural production.

16.3.5 The institutional approach

The system approach is concerned with the number and kinds of business firms that perform the marketing task. How firms are interrelated is called the structure of the marketing system.

16.3.6 The individual commodity approach

The commodity approach entails an analysis of marketing functions, system, and structure from the view point of an individual, product.

16.4 MARKETING FUNCTIONS

A marketing function is a fundamental or basic physical process or service required to give a product the form, time, place, and possession utility consumer's desire.

For no commodity really is produced until it is in a form which can be used, at a place where and at a time when it is needed and in possession of those who will consume. Production is the process of making a commodity into a form suitable for consumption, putting it into a position where it can be used, making it really for use at the right time, and placing it in the possession of those who need it. This follows that production is the creation or utilities or use fullness. Utilities which may create in the productive process are (i) form utility, (ii) time utility, (iii) place utility, and (iv) possession utility.

1. **Form Utility:** It is added when the processors of agricultural raw materials, such as paddy, milk, wheat and oilseeds, transform the material into products, such as rice, cheese, bread/Hour and edible oil. In doing so he adds "Form Utility."

2. **Time Utility:** It is added when products are stored from harvesting until they are needed for consumption, or from years of surplus production to years of deficit production, or when the retailer stocks the commodities during the early part of the week to the week to be ready for a large volume of selling. Time utility is created not only by the operation of a cold storage, warehouse or go down, but also by the person who owns the goods which are stocked at these places.

3. **Place Utility:** It is added by the rail, road or boat line which transports the goods from one point, where it is not needed and could not be used, to another point, where it can be consumed or where it can have its utility further increased by processing or storing.

4. **Possession Utility:** It is added to the product when its ownership is transferred to the final consumer or to someone in the marketing chain who is in a position to contribute other utilities to the product as it possess from the farm to the ultimate consumer.

The farmer, like the marketing agency, may also add form, place, time and possession utility to his products, when after changing their form; he trucks them to the market, stores them on the farm, or sells them at a roadside market. Each step in the chain is not only just and as essential as the others, but it is productive according to the same principle.

16.5 MARKETING CHANNELS

The ultimate object of all marketing effort is to place goods in the hands of consumers. Many marketing activities must be performed to accomplish this objective, the major ones being designated as “Channels of marketing.” These processes involve four in tin 'channels; those of assembly (concentration), dispersion (distribution), processing (preparation for consumption) and equalization (adjustment of supply and demand). These functions are performed within a framework which has been built around a twofold of product involving three major channels viz. assembly, processing and dispersion.

16.5.1 Channel of Assembly (or concentration):

The collection of small surpluses from individual farms in the first step in the sequence of operations which comprise agricultural marketing. In order that farm products can be processed or transported to consuming markets, the output of a number of producers must be concentrated at one point in sufficient quantity to permit efficient processing, storage, truck load transported, grading etc. This task of concentration generally is referred to as “assembly”, or assembling.

16.5.2 Channel of Dispersion (Distribution)

When assembly is completed and the product has been prepared to the consumer's liking, distribution follows. In agricultural marketing generally, the process of concentration continues from the producer to the major wholesale market, at which point dispersion starts. Dispersion they continue through other agencies to the ultimate consumer.

16.5.3 Channel of Processing :

Very few agricultural products are ready for final consumption when they leave the farm. Changes in form which adopt farm products to the households need and- tastes can be regarded as preparation for consumption. Most farm product undergoes substantial changes before they are ready for the final purchaser. .

16.5.4 Channels of Equalization:

Between the processes of assembly and dispersion occurs the activity which is called "equalizations." Equalization Consists of adjustment of supply and demand on the basis of time, place, quantity and quality. It is the task of the distribution system to match available supplies to the consumers' demand. Equalization occurs throughout fie marketing channels to some degree, but it tends to be localized in the marketing agencies that hold or store a farm product in the wholesale market.

In carrying out each of the major functions of marketing as explained above, certain other functions are needed, they fall into three categories:

A. Exchange functions

(1) Buying (assembling)
(2) Selling

B. Physical functions

(3) Storage
(4) Transportation
(5) Processing

C. Facilitating functions

(6) Standardization
(7) Financing
(8) Risk bearing
(9) Market Intelligence

A Exchange Functions:

The exchange functions are those activities involved in the transfer of title of goods. In the process of transferring of ownership the two important functions of selling and buying can be distinguished. These functions are complementary to each other. One cannot take place without other still for sake of convenience.

Buying function is largely one of seeking out the source of supply, assembling of products and activities which are associated with the purchases of raw material etc." Its immediate purpose is to bring commodity together where they are wanted for use in production or consumption.

The function of buying involves a number of subsidiary functions as follows:

(a) Function of planning and assortment
(b) Coniactual function
(c) Function of assembling
(d) Function of negotiation
(e) Contractual function

Selling function: The function opposite to buying is selling, which is defined as the personal or impersonal process of assisting or persuading a prospective buyer to buy a commodity. It is the process which stimulates demand or desire, finds the buyer, advises the buyer and negotiates with him to bring about a transfer of title. It is lh essential service in bringing the buyers and sellers together and the facilitation of exchange. As in case of buying it also involves the following subsidiary function:

(a) Function of product planning & development
(b) Contactual function
(c) Function of demand & creation
(d) Function of negotiation
(e) Contractual function

B) Physical Functions:

These functions involve physical handling of produce, movement and physical change of the actual commodity itself.

Storage function:

Agriculture is characterized by relatively large and irregular seasonal and year to year fluctuations. Consumption of most, farm products, on the other hand, is relatively stable. Hence there must be some system/ process by which the farm produce may be used throughout the year. It is, therefore, imperative to have facilities of storage. Thus, storage function is primarily concerned with making goods available at proper time. Storing operation may, however, lake place anywhere along the channel of distribution and it may be performed by producer, processor, distributor or even consumer.

Transportation function:

Agricultural produce or any finished product has to be moved from producing centre to consuming areas, because it is not consumed at the place of production. Thus, transportation of produce is one of the most

important functions. This is primarily concerned with making the goods available at the proper place. Adequate performance of this function requires the weighing of alternatives of routes and types of transportation as they might affect transportation cost. It also includes the activities involved in preparation of shipment.

Processing Function:

The processing faction is often not included in a list of marketing functions since it is essentially a form- changing activity. However, in the broad view of agricultural marketing this activity cannot be omitted. The processing function would include all of those essentially manufacturing activities that change the basic form, of product, such as converting live animal into meat, fresh peas into canned or frozen peas,' or wheat into flour and finally ink) bread,

C Facilitation Function:

These functions involve neither transfer of title of goods not handling of the produce but help in smooth discharge of exchange and physical functions.

Standardization

It is the establishment of uniform quality specifications between place and place, between one time and another and between buyers and sellers, as a basis for grading. This function simplifies buying and selling, since it makes the sale by sample and description possible effective standardization is the basis to an efficient pricing process. It also simplifies the concentration process since it permits the grouping of similar lots of commodities early in movements from producing areas.

Financing:

Products cannot pass through the marketing system without financial support. There is always time lag between the assembling of commodities-and their sale in the consuming markets. During the period somebody's money remains tied up in the stock. This creates the problem of financing marketing. Thus the financing function is the advancing of money to carry on the various aspects of marketing and it is an important activity in modem marketing.

Risk Bearing function:

It is the accepting of the possibility of loss in the marketing of a commodity. It is a well-known fact that no business can be done without undertaking the risk inherent which may cause either due to price fluctuation, quality deterioration, quantity losses or by natural hazards. Most of the risk can be classified into two groups (a) physical risks (b) market risk. These risks cost has to be borne by someone in the

marketing channel. Physical risks may be covered by insurance while market risks are handled through the operations.

Market Intelligence:

The growing vastness between the place of production and the place of consumption has made the function market intelligence invaluable. It is the job of collecting, interpreting and dissemination the large variety of information which is necessary to smooth operation of marketing process. This helps the Government in formulating policies and plans of production and marketing of goods.

We can now define a market information system as a set of activities that collects and disseminates a wide array of data relating to the present or prospective outlook for sales of a particular product.

16.6 THE MARKETING SYSTEM

Now that we have examined the important marketing functions, we must consider what kind of firms provides them and how these firms are organized within an industry. The interrelationship of firms is called the marketing system. A marketing system is defined as the sequential set of kinds or types-of business firms through which a product passés during the marketing process.

16.6.1 Factors Affecting the Marketing System

Several facts determine the particular system that evolves for a given industry:

1. The number of marketing functions required for a product and to what extent each can be specialized, or combined with others, and performed at lower cost by a separate business.
2. The degree of concentration of raw materials, and their location.
3. The degree of dispersion of buyers, and their location.
4. Historical development within an industry.
5. Whether or not a product is controlled by one or a few companies under a patented process.
6. The stage of economic development of a country or society.

16.7 STRUCTURE OF AGRICULTURAL MARKETING IN INDIA

At present, the structure of Indian agricultural marketing system consists of: Agricultural Co-operative Marketing Societies; Regulated Markets; Public Trading and Futures Trading.
Besides, there is private trading, which takes place out of these segments. These are discussed as follows:

(i) Agricultural Co-operative Marketing Societies

Under the cooperative marketing society the members of the society

agree to sell their surplus produce to the society. As soon as the members supply the produce to the society, an advance is provided to carry on with their agricultural operations. The society collects the produce of all the members and also of the non-members of the village, often processes the produce and then disposes it. The society decides the timing of sale depending upon market conditions of the commodity. If it is felt that the present price is unfavorable and in future the price would rise then society may decide to stock the output and sell it in the future. Generally, the society covers number of villages and thus tends to be effective and successful. Cooperatives have diversified their activities into other areas such as constructing warehouses, providing credit facilities, processing of agro-products, etc. The agricultural cooperative marketing is generally featured by a four-tiered structure: viz Primary marketing societies at the base level, District/regional federations at the district level, State marketing federations at the State level and National Federation at the apex level. The National Agricultural Co-operative Marketing Federation (NAFED) is the apex co-operative marketing organization in India.

Benefits of Co-operative Marketing Societies

The important advantages of cooperative marketing societies are as follows:

(i) The marketing society allows collective bargaining. The individual small farmers have weak bargaining power and so could not fetch better price for their products.

(ii) Marketing cooperative advances loans to the farmers and enables them to wait for better prices. It lends them to meet their demands.

(iii) Cooperative provides storage and warehousing facilities. The large scale storage allows it to obtain insurance benefits. The loss due to damages of agriculture products can be minimized.

(iv) It encourages the farmers to produce standardized products and discourage them from adulterating their produce.

(v) It helps to eliminate the middlemen and so allow better price to the cultivators.

Progress in Co-operative Marketing

The produce marketed through agricultural co-operative marketing society's accounts for about 8 to 10 per cent of the marketed surplus. The important commodities marketed by these societies are food-grains, sugarcane, cotton, oilseeds, fruits, vegetables and plantation crops. The progress of co-operative marketing societies has varied from State to State and within each State from commodity to commodity. Maharashtra, Uttar Pradesh, Gujarat, Punjab, Haryana, Karnataka and Tamil Nadu together account for more than 80 per cent of the total agricultural produce marketed through co-operatives in the country. In Punjab, Maharashtra, Uttar Pradesh, Andhra Pradesh and Tamil Nadu, 75 per

cent of the food-grains are marketed by co-operative societies. In Maharashtra and Uttar Pradesh, 75 per cent of sugarcane, in Maharashtra and Gujarat, 75 per cent of cotton, and in Karnataka 84 per cent of plantation crops are marketed through the co-operative societies (Rangarajan, 1997).

The network of cooperative marketing structure now comprises over 6,000 primary marketing societies, at the district level there are 160 central marketing societies covering nearly all the important mandis in the country; at the state level there are 29 general purpose state level co-operative marketing federations and the national level there are National cooperative development corporation(NCDC), the National Agricultural Co-operative Marketing Federation(NAFED), National Cooperative Tobacco Growers Federation, and the Tribal Cooperative Marketing Development Federation of India.

The progress of co-operative marketing societies has been far from satisfactory in most of the States in the country because farmer members do not patronize these societies for the sale of their produce. Instead farmers use the services of commission agents in the regulated markets for various reasons such as easy access to commission agents, facility of advance loan, hassle free transactions and personalized services rendered by commission agents. State intervention through its nominated officials (secretaries) and politicization of these societies had also been responsible for their failure.

(ii) Regulated Markets

The regulated markets have been organized in most of the States to facilitate trading in an orderly manner in specified commodities at specified places at the least margin. For this purpose, comprehensive rules have been framed and market committees have been set up to enforce discipline among the participants under the respective State Agricultural Produce Marketing Regulations Acts.

Though the establishment of regulated markets was started during 1930s, the programme got momentum only after independence. The number of regulated markets has risen from 236 in April 1951 to 7,161 in March 2001. Nearly 98 per cent of the wholesale markets are now functioning under this scheme. The country also has 27,294 rural periodical markets as on March 2001, about 15 per cent of which function under the ambit of regulated markets (GOI, 2001a). The progress of regulated markets is not uniform in all the States. There are also variations across States in the development of infrastructural facilities as well as market fees charged in the regulated markets. The number of regulated markets and the infrastructural facilities therein are by and large inadequate to meet the current marketing requirements. While regulated markets have helped in mitigating the market handicaps of the producers/sellers at the wholesale level, the rural periodic markets in general and the tribal markets in particular remained out of its

developmental ambit.

(iii)Public Trading

The objective of Public or State trading is stabilization of prices at levels that are regarded as remunerative to producers and reasonable to consumers. Under the present practice of public trading , the Government purchases specified commodities at notified procurement prices directly from producers and distributes the purchased items among consumers through a network of fair price shops at notified issue prices.

The price stabilization policy of the Government can be described as a well-conceived package, if we take the objectives, the instruments and terms of reference of the price recommending expert body, i.e., Commission for Agricultural Costs and Prices (CACP) into consideration. The price components bear upon production (at minimum support price), securing surpluses (at procurement prices) and distribution or meeting the needs of consumers (at issue prices). The procurement agencies, the fair price shops, buffer stock operations and imports, when necessary, back the implementation of the price stabilisation policy. Thus seen as a whole, these seem to be a well-set design of the price stabilisation policy. However, as for the achievement in terms of price stabilisation is concerned, the success has not been as expected. The short-term prices have been fluctuating because of random impact on supply. Generally, these are at the lowest at the time of harvest and the highest before the next crop is harvested. Quite a substantial part of the crop production consists of distress sale. In certain crops like wheat and rice fluctuations are moderated, partly because the producers being rich have holding power and access to credit/ storage facilities and partly because of the operations of the procurement agencies (Rangarajan, 1997). The increases in the minimum support price of wheat and rice have been pronounced, which led to increasing cultivation of wheat and rice and in turn contributed to the rise in the procurement of food-grains. The increasing procurement, coupled with declining off-take, had raised the level of food stocks as against the buffer stock norms in the recent past years. The cost of operations of the procurement agencies has therefore gone up substantially and the open-ended procurement by these agencies has become unsustainable.

(iv) Futures Trading

Future trading has also been allowed to protect the market participants from the risk arising out of adverse price fluctuations. There is a three-tier regulatory structure for conduct of futures trading. At the base level, there are recognized/ registered commodity associations/ exchanges. At the middle level, there is Forward Markets Commission (FMC), which regulates the functioning of commodity exchanges and approves their constitution and byelaws. The Department of Consumer Affairs, Ministry of Consumer Affairs, Food and Public Distribution,

Government of India is at the top level, which oversees the overall functioning of the forward and futures markets.

Till 1991, futures trading were permitted in only 6 commodities. The process of reform was set in motion with the setting up of Kabra Committee, which submitted its report in 1994. Since then, several measures have been initiated in a phased manner to promote futures markets in the country. But the pace of reforms has so far been slow and cautious. At present, future trading is permitted in 81 commodities fewer than 25 commodity exchanges. Government however has suspended 6 commodities (including wheat and rice) for future trading to curb inflation. The response of the future market has been quite remarkable as seen by the enthusiasm shown in the commodity segments. In some areas farmers are gradually getting aware of futures prices which are disseminated through exchanges. In general, the commodity exchanges are deficient in several aspects such as infrastructure, logistic, organizational structure, management, linkages with spot markets and financial markets, reliability and an efficient market information system. Of late, the number of active members and the volume of trade in most of the commodity exchanges had been shrinking. Setting up of screen-based online trading, warehouse receipt system, guarantee fund, electronic clearinghouse and settlement system, etc. have not found favour with most of the commodity exchanges so far. The resource crunch has, no doubt, been the major constraint facing most of the exchanges in undertaking these reforms. The Budget 2008-09 apart from an incidence of 12 per cent service tax and 2 per cent education cases, slapped Rs. 17 per lakh for commodities trading and 6 per cent as exchange levy. Budget has failed to meet the expectations of participants in the commodity future markets. This is likely to hinder the growth of commodity market in India. In a nutshell, the commodity futures markets in India continue to be underdeveloped .There is an urgent need to educate farming communities on how to use the exchange to hedge their price risks. Moreover to opt for the modern mechanisms, consolidation has to happen in Indian agriculture. Banks, FIIs and other institutions should be permitted to trade in commodity markets to improve trading volumes.

16.7.1 Problems facing Agriculture Marketing in India

The economic reforms are currently underway in India that encompasses the agricultural marketing system as well. The essence of these measures is to improve the efficiency and productivity of all institutions whose working is far from satisfactory. Against this background, it is necessary to see the lacunae that have arisen in the agricultural marketing that are discussed as follows:

1. **Poor Warehousing Facilities:** The Indian farmers lack proper warehousing facilities for storing the agriculture produce. The facilities are so poor that the crops are spoiled in the warehouses.

Cultivators fail to get good price for its product.

2. **Poor Transportation Facilities:** The roads are unusable in many villages. The connectivity of the village roads with the main roads is still missing in many parts of the country. Thus it is difficult to take output to the markets.

3. **Problem of Distress Selling:** The poverty and indebtness reduce the capacity to wait for better prices of crops. The cultivators are forced to sell the output to the moneylenders at the cheap price to clear off the debts.

4. **Infrastructure Bottlenecks and Corruption in Mandis:** The farmers may have to wait before selling its produce in the mandis. In some states mandis are very far from the villages. The warehousing facilities are not well-developed in these mandis. The intermediaries charge their own commission from the farmers. The unnecessary deductions are made on the pretext of low quality of produce.

5. **Lack of awareness of future market:** The volume in the commodity market forms a very small percentage of total agriculture trading in India. There is an urgent need to educate farming communities to use commodity markets.

6. **Lack of agro-Processing at large scale:** Processing of agricultural products especially perishable commodities forms only a small percentage of the total production. The major part of the total production is sold in raw form so farmers get lower prices for their products.

16.7.3 Government Measures to improve Agricultural Marketing in India:

1. **Grading and Standardization:** The grading stations have been established to grade and standardize many agricultural goods. The graded goods are stamped with the seal of the Agricultural Marketing Department-'AGMARK'. The goods bearing the 'AGMARK' command better prices in the market.

2. **Provision of Warehousing Facilities:** The warehousing facilities have been provided in the villages to prevent distress sale by the farmers. Apart from Central and State Government, Food Corporation of India has constructed its godowns and warehouses.

3. **Marketing Surveys:** The market survey of agriculture products are

conducted and published to benefit farmers. The surveys also discuss the problems and measures to tackle the problems associated with the marketing of agro-products. The prices of agriculture products in major markets are published widely. Further, for dissemination of information all sorts of media like radio, television, display board etc are used.

4. **Cooperative Movement in Agriculture Marketing:** Government has helped to establish multi-purpose cooperative societies with emphasis on credit and marketing. NAFED has been established as an apex cooperative marketing society at national level. Funds and credit facilities are provided to these cooperatives. The training facilities are provided for cooperative personnel.

5. **Encouragement of Exports of Agricultural Products:** The export of agricultural products has shown an increasing trend in the recent years. The trade policy of the Government has evolved various schemes to improve agro exports. The Agro Export Zones are established to encourage agriculture exports.

6. **Setting up of Special Boards:** The Government has set up number of special commodities boards like rice, pulses, jute etc to specifically formulate policies for these commodities. The exports councils have been established to suggest measures to improve exports of agricultural commodities.

7. **Setting up of Regulated Markets:** The government has set up markets for agriculture products which are regulated under the Agricultural Produce Market Act. The management of these markets rest with the committees on which different interests are represented so that cultivators get fair price for their produce.

16.7.4 Suggested Measures

(i) Integration of Domestic Markets with International Markets: The barriers in free marketing across different states especially for food-grains should be dismantled. This calls for dismantling of restrictions on pricing, trading, distribution and movement of agricultural products within the country. Further, India, being a signatory to the World Trade Organisation (WTO) Agreement, should do away with physical barriers, both for imports and exports, on various agricultural commodities. Simultaneously, it should reduce tariff barriers within a time frame. These steps could facilitate the integration of domestic markets with international markets in due course.

(ii)Strengthening Co-operative Marketing Societies: The progress

made by co-operative marketing societies so far, though noteworthy, is not wholly satisfactory. Co-operatives have yet to cover a substantial part of the total agricultural produce. It is, therefore, essential that these cooperatives develop at a faster speed and along right lines. Marketing societies need to be more closely intertwined with other societies dealing with farming inputs, credit, etc. The best way to do so is to establish multipurpose societies to look after all the aspects of agricultural marketing. These societies, apart from organizing the sale of agricultural produce, should undertake construction of their own storage capacity, provide for their own transport, arrange for the processing of produce, grade their goods, organize exports, etc. This will reduce their dependence on other sources and provide a total view of marketing services to the members.

(iii)Strengthening of Regulated Market Structure: The management of regulated markets is entrusted to agricultural produce marketing committees (APMC) on which different interests are represented. There is an urgent need to make these market committees viable and managerially competent in keeping with liberalized trade atmosphere. The market committees should be headed by marketing professionals. Further, the present number of regulated markets is not enough to meet the growing requirements of the country. There is also an urgent need to develop rural periodic markets in a phased manner with necessary infrastructural amenities to have a strong grass-root level link in the marketing chain.

(iv) Re-framing Price Stabilization Policy: With a view to provide remunerative price to the farmer, food at affordable price to the consumer and sustained growth of marketable surplus, all undesirable restrictions on agricultural trade has to be removed. Public procurement, storage and distribution of food grains need to be managed efficiently on commercial lines.

(v) Developing Efficient Commodity Futures Markets: In order to strengthen the future market Government should set up more commodity exchanges, improve the regulatory and supervisory systems, modernize clearinghouse operations, upgrade training facilities and establish an enabling legal framework to develop vibrant commodity futures market in India.

(vi) Promoting Direct Marketing: Promotion of direct marketing as one of the alternative marketing structures is beneficial for the farmers as well as the buyers as it enables the former to meet the specific requirements of the latter. Direct marketing enables farmers and buyers to economize on transportation costs, handling charges, market fees, etc., to improve price realization considerably. In direct marketing, the market will operate outside the purview of Agricultural Produce Marketing

Act and will be owned by professional agencies, such as wholesalers, trade associations, NGOs or self-help groups (SHGs).

(vii) Improving Transport Infrastructure: The traditional rural transport system should be improved. The public investments in the road, railway and waterways should be developed.

(viii) Improving Storage Facility: The private sector needs to be encouraged to enter the warehousing and storage in a big way by extending proper incentives to it. Experiment of the creation of decentralized rural godowns also needs to be pursued more vigorously. Village Panchayats, co-operatives, SHGs, farmers organisations, NGOs, etc., should also be encouraged to undertake warehousing activity under the scheme. In case of perishable commodities like fruits, vegetables and flowers, the complete cold chain comprising pre-cooling, grading, packaging, cold storage and refrigerated vans should be developed.

(ix) Providing Processing, Packaging and Grading Facilities: Proper cleaning, grading and packaging of primary products will need greater attention not only in the physical markets, but also in the villages from where produce is brought to the market for sale. Besides, there is a need to educate the farmers for proper grading and packaging before they bring the produce to the market. In the changed context, new technologies of packing like tetra packs, ascetic packing, pouches, etc. need to be introduced.

(**x) Making Available Credit for Marketing:** Provision of credit by the organized financial system to support agricultural marketing has to grow further. Considerable amount of institutional financing for agricultural marketing is directed towards public organizations. The credit facility available to private traders is quite limited.

(xi)Promoting Agricultural Marketing Research: The agricultural marketing research in the areas of agri-business management, post-harvest management, grading, standardization, quality assurance, export promotion and information technology should be promoted. The agriculture research institutes and universities should be further strengthened to undertake applied and operational research in agricultural marketing, impart training to market functionaries and provide consultancy services to the public as well as private organizations engaged in agricultural marketing. Further, conferences, seminars, and workshops should be conducted from time to time on current and relevant issues to facilitate exchange of views among various market functionaries.

Exercise 16.1

Q1. What are the important components of agriculture marketing structure in India?

Q2. Examine the Marketing Channels?

Q3. What are problems facing agriculture cooperatives in India?

16.8 SUMMARY

The agricultural marketing system stands today at a critical stage of its evolution. It needs to meet the growing requirements of farmers, consumers, industry and exports as also of agriculture, which is becoming input-intensive and getting diversified. At the same time, the requirements of the small farmers and poorer sections have also to be met. Efficient marketing can ensure better income for the producers and improved satisfaction to the consumers. This requires the increased public investments to improve infrastructural facilities and proper maintenance and up gradation of the existing facilities through repair, replacements and technological modernization.

16.9 GLOSSARY

- **Agricultural marketing** covers the services involved in moving an agricultural product from the farm to the consumer. Numerous interconnected activities are involved in doing this, such as planning production, growing and harvesting, grading, packing, transport, storage, agro- and food processing, distribution, advertising and sale.

- **Agricultural Co-operative Marketing Societies**: Under the cooperative marketing society the members of the society agree to sell their surplus produce to the society. As soon as the members supply the produce to the society, an advance is provided to carry on with their agricultural operations. The society collects the produce of all the members and also of the non-members of the village, often processes the produce and then disposes it. The society decides the timing of sale depending upon market conditions of the commodity. If it is felt that the present price is unfavorable and in future the price would rise then society may decide to stock the output and sell it in the future. Generally, the society covers number of villages and thus tends to be effective and successful. Cooperatives have diversified their activities into other areas such as constructing warehouses, providing credit facilities, processing of agro-products, etc.

- **A marketing system** is defined as the sequential set of kinds or types-of business firms through which a product passés during the marketing process.

- **Risk Bearing function**: It is the accepting of the possibility of loss in the marketing of a commodity. It is a well known fact that no business can be done without undertaking the risk inherent which may caused either due to price fluctuation, quality deterioration, quantity losses or by natural hazards. Most of the risk can be classified into two groups (a) physical risks (b) market risk. These risks cost has to be borne by someone in the marketing channel. Physical risks may be covered by insurance while market risks are handled through the operations.

- **Form Utility**: It is added when the processors of agricultural raw materials, such as paddy, milk, wheat and oilseeds, transform the material into products, such as rice, cheese, bread/Hour and edible oil. In doing so he adds “Form Utility.”

- **Time Utility**: It is added when products are stored from harvesting until they are needed for consumption, or from years of surplus production to years of deficit production, or when the retailer stocks the commodities during the early part of the week to the week to be ready for a large volume of selling. Time utility is created not only by the operation of a cold storage, warehouse or go down, but also by the person who owns the goods which are stocked at these places.

- **Place Utility**: It is added by the rail, road or boat line which transports the goods from one point, where it is not needed and could not be used, to another point, where it can be consumed or where it can have its utility further increased by processing or storing.

- **Possession Utility**: It is added to the product when its ownership is transferred to the final consumer or to someone in the marketing chain who is in a position to contribute other utilities to the product as it possess from the farm to the ultimate consumer.

16.10 ANSWER TO SELF CHECK EXERCISES

Exercise 16.1

Answer1. Refer to section 16.7.
Answer 2. Refer to section 16.5.
Answer3. Refer to section 16.7.1.

16.11 SUGGESTED READINGS

1. Uma Kapila, (2008) Indian economy: Performance and Policies, Academic Foundation, New Delhi.
2. Prakash, B.A. (2009) Indian Economy since 1991: Economic Reforms and Performance, Sage, New Delhi.
3. Mishra, Srijit and D. Narasimha Reddy (2011): *Persistence of Crisis in Agriculture: Need for Technological and Institutional Alternatives* (in India Development Report, 2011, edited by D.M. Nachane, Oxford University Press, New Delhi).
4. EPW Various Issues
5. Yojana various issues.

16.12 TERMINAL QUESTIONS

Q1. Write a note on future trading in agriculture commodities?

Q2. What are the Government Measures to improve Agricultural Marketing in India?

UNIT-17

MARKETING EFFICIENCY

Structure

17.0 OBJECTIVES

After going through this chapter you will be able to:

- Define Marketing Efficiency
- List Types of Marketing Efficiency
- Utter the indicators of Marketing Efficiency
- State whether the "Efficient" Marketing System Desirable in the developing countries or not

17.1 INTRODUCTION

The concept of marketing efficiency is so broad and dynamic that no single definition at present encompasses all of its theoretical and practical implications. Fred Waugh remarked that "an unsophisticated

student might make two false assumptions, first, that is it easy to define and to measure the efficiency of agricultural marketing and, second and that almost everyone is in favour of efficiency." Well, confessing that he did not know precisely how to measure marketing efficiency, added "and I doubt whether our so-called efficiency experts know how."

17.2 MARKETING EFFICIENCY

A simple textbook definition says ''marketing efficiency is the maximization of input-output ratios': (Kohls, R.L. Marketing of Agricultural Products, the Macmillan Company, New York, 1962, P. 11.) The inputs of marketing- are the various resources of land, labour, capital, and management which are employed in performing the various marketing services. The output or marketing refer to the satisfactions derived from the consumption of those goods and services.

The difficulties of employing an input-output ratio definition as a quantitative measure of marketing efficiency are obvious" because of the in-tangible nature of marketing outputs. Most inputs of marketing are quantifiable in monetary units. A corresponding conversion of outputs is difficult and impracticable due to lack of constancy in the value of money and the subjectivity of utility functions. By its nature this definition requires a standard of comparison, the choice of which is a critical factor indeed.

The input-output definition is also subject to serious limitations due to the arbitrariness of the maximization ratio and the inability to specify the efficiency of any particular situation in the absence of any specified efficiency norms. Moreover, the definition has relevance only for static and micro aspects of marketing efficiency, while completely ignoring its dynamic and macro dimensions.

Another fairly similar approach to the measurement of marketing efficiency has been put forth by shepherd in the following formula:

$$\text{Marketing efficiency} = \frac{\text{Total cost} \times 100}{\text{Total value of products marked}}$$

Apart from its ambiguity in the absence of some standard of comparison, the formula apparently suggests that any increase in the marketing cost or any decreases in the value of products would result in inefficiency. Actually, an increase in marketing cost will sometimes represent services to the consumer of a kind not easily reflected in the form of "increased value of products marketed." Similarly, a decrease in the value of products' marketed may represent a decrease in consumer prices resulting simply from greater intensity of competition, of these situations suggests inefficiency in the marketing system. On the contrary, they usually lead towards greater efficiency.

Therefore, both of the definitions stated above suffer from theoretical ambiguity and lack of practicality. A truly comprehensive view of the concept of marketing efficiency should not only encompass the

micro and the static aspects, but also the macro and the dynamic dimensions.

17.3 THE MEASUREMENT OF MARKETING EFFICIENCY

A third approach relates to the measurement of marketing efficiency through the analysis of the structure, conduct and performance of the market. This approach was developed in the United States as a way to analyze the market organization of the industrial sector, but it was later applied in the agricultural sector.

Market structure as defined by Bain refers to the organizational characteristics of a market and, for practical purposes, to those characteristics which determine the relations of sellers in the market to each other, of buyers in the market to each other, of sellers to buyers, and of sellers established in the market to potential new firms which might enter it.

Whereas market conduct refers to the patterns of behaviour that enterprises follow in adapting or adjusting to the markets in which they sell or buy, market performance implies the composite and results which firms in any market arrive at by pursuing whatever lines of conduct they espouse.

In the developed countries it is easy to translate the structure conduct-performance approach from the industrial to the agricultural sector. The agricultural product markets in these countries approximate those of industry in their levels of complexity, due to the advanced stage of economic development, application of modem technology, sophistication of consumer tastes, organizational and market innovations leading to enlarged size of firms, and sophisticated managerial control.

However, the criteria evolved for analysis of-the structure, conduct and performance of agricultural marketing firms lose much of their relevance in the developing countries, where the farm product markets are in early stages of development, are technologically poor, involve fewer market services and are characterized by quantitatively biased consumer needs which can hardly be subjected to modem sophisticated tools of analysis.

The structure conduct predominance, approach presents a unique set of tools of analysis for the assessment of a market situation. Analysis of structure, conduct, and performance is used as a basis for evaluating a market situation as adequate or inadequate depending upon whether or not it is in conformity with optimum social welfare.

The major weakness of this approach lies in the extent of differences in the' goals of developed and developing countries, due to major differences in their value systems. Similarly, differences in socio-economic, institutional, and technological conditions may give misleading results if there is an effort to apply in developing countries a body of criteria evolved primarily for the analysis of market situations in developed countries.

17.4 Types of Marketing Efficiency

Marketing efficiency is usually segmented into two forms, 'technical efficiency' and 'economic efficiency. As these concepts are frequently confused, it seems necessary to clarify the difference between them.

17.4.1 Technical efficiency concerns the effectiveness or competent with which the physical aspects of marketing are performed.

17.4.2 Economic efficiency requires the realization of maximum output in money terms or of a given output with the minimum resources. In other words, to be technically efficient, a marketing system would have to utilize with maximum effectiveness the best technology available for every marketing job, regardless of cost. For instance, air transport may be technically the most efficient method of transporting commodities, and mechanical grading may be technically a better method of grading agricultural produce than manual grading.

On the other hand, to be economically efficient a marketing system would have to employ the methods of performing marketing jobs that were the most profitable. For example, in view of its high cost per unit *of* produce transported, air transport may be economically less efficient than railway. Due to the availability of cheaper labour, mechanical grading may not be profitable as manual grading.

The aim of overall marketing efficiency is to provide goods to consumer in the required form, at the required time aid place, and. with the lowest possible marketing costs consistent with the interests of the producer. The principal means of ensuring that lower costs and or improved services resulting from efficient marketing are passed on to producer and or to consumer is the pressure of competition.

It is frequently argued that in the less developed economies, the large-scale centralized and monopolistic marketing organization may, owing to its advantages of scale, be particularly conducive to efficient marketing. This argument does not, however, hold water for the following reasons. -

1. **First,** technological progress in most cases is extraneous to the physical scope of marketing. "Most of the innovations applied in agricultural marketing are neither complex nor dependent upon costly research or, when they are, they are usually the work of arms not directly involved in agricultural marketing."

2. **Second**, in the less developed economics there is evidence that large monopolistic marketing organizations often are less economically efficient than their costs of operation might suggest.

3. **Finally,** these countries, need to develop a class of entrepreneurs who will ultimately be capable of handling commercial organization that are technically and financially more complex than are at present managed by the indigenous population. A variety of agricultural marketing firms of differing size and complexity should provide opportunities for more people to get more varied kinds of entrepreneurial experience than would be possible if there were only a few large centralized organizations.

These arguments imply that competitive marketing organizations may be more conductive to marketing efficiency than monopolistic organizations are. Where the economies of large-scale distribution are so great that **monopoly or oligopoly (or similar situations) become the** logical alternative to a large number of competitive units, direct control of the marketing industry might be necessary. But such an intervention should be restricted to this type of case and governments should endeavor to retain the main elements of free competition in agricultural marketing.

17.5 INDICATORS OF MARKETING EFFICIENCY

Due to the non-availability of standard efficiency criteria, the following indicators are sometimes identified with marketing efficiency.

1. Marketing margins
2. Consumer price
3. Availability of physical marketing facilities
4. Market competition

17.5.1 Market Margins

In most cases, high marketing margins are regarded as prima facie evidence of gross inefficiency in marketing; and the middlemen, who are blamed for being either inefficient, too numerous, or too monopolistic, are most often regarded as the major cause of high marketing margins. Whether high marketing margins necessarily imply inefficiency in marketing just be analyzed in light of the following considerations.

Firstly, marketing margins will appear high in relation to production costs of a commodity in any country or region in which those production costs are they quite low. The use of modem technology, which prodigiously lowers costs of production, exhibits a magnifying effect on any given distributive margin.

Secondly, the extreme geographic specialization of production (especially in the developed-countries) has resulted in a considerable increase in the cost of providing the place utility of farm goods. This, in turn, has served to increase transport costs and, therefore, marketing margins. But this may imply that opportunity costs of production are so low in areas far from the market that the low costs of production more than offset the high costs of marketing.

Thirdly, the increased amount of time utility embodied in food products (both perishable and non- perishable) has required extra

storage and processing costs for their orderly marketing.

Fourthly, in all developed countries (and in a good number of developing .countries, too) considerable changes have occurred with respect to form utility of farm products. Consumers today are increasingly demanding that their food and agricultural non-food requirements be met in more and more finished form. This has tended to multiply marketing margins, especially in the developed countries.

Finally, the high labour costs, especially in the retail trades, which-are a special feature of the developed countries also contribute to high marketing margins. Self- Service shopping, which has gained a considerable momentum in recent years, endeavors to minimize the impact of high labour costs, but it is not; magical device to reduce the overall costs to a significant extent. It merely eliminates the small fraction of the costs due to those retail services that come to be performed mainly by the consumer.

'The major marketing costs are those which result due to enhanced and improved utilities of form, time and place. They represent the costs of the services which the consumer demands and far which he is willing to pay.

In view of the above consideration, it could be safely concluded that distributive margins which form a longer and larger share of food expenditure have not been inconsistent with efficient marketing in the developed countries. In fact, these high marketing margins has been a sine qua non for an efficient marketing system in developed countries.

This is not to say that the marketing system in developed countries is entirely efficient, and therefore, incapable of improvements. It merely argues that higher margins in the developed economies have characterized a marketing system which is, in fact, relatively more efficient than its counterpart in developing countries and relatively less in need of improvements.

On the other hand, high marketing margins in the less developed economies have net usually been associated with superior services rendered to the consumer, in spite of relatively cheaper labour, and this clearly indicate the existence of inefficiencies in marketing. In other words, there exists considerable scope for improvement in the marketing system of these countries.

With regard to the share of middlemen, the analysis of the composition of marketing margins in different countries shows that whereas in the developed countries the profit clement accounts for a very insignificant proportion of the total marketing bill, in the developing countries it constitutes a dominant element.

What follows from the *above* illustration is that the size and composition of marketing margins can be used as a useful measure of efficiency, but to use it effectively requires an extremely sensitive weighing balance. 'The size of margin cannot be related to anything else until it is accurately related to the quantum, and type of services yielded

by it. Let us analyze this aspect briefly.

Marketing margin consists of two elements (a) explicit costs paid for the performance of various marketing functions and (b) the profit of the market intermediaries:

(a) The Cost Component

The costs in marketing are incurred in the performance of various marketing functions of assembling, transportation, storage, processing, etc., or in other, words, in the creation of various utilities. In other words to minimize costs, the marketing facilities should operate at the maximum possible capacities with the least possible losses of produce. We can decide whether the costs prevailing in the marketing system have any economic justification only after having analyzed the following factors:

1. The intensity of competition, especially in the light of various state policies.
2. The extent of utilization of capacity of marketing facilities.
3. The quantum and nature of services rendered in creating time, place and form utilities.
4. The quantum of produce losses in distribution.

Efficiency in terms of cost would be positively related with No. 1 - 3 and negatively with No. 4.

(b) The Profit Component

The subject of marketing profit has been rather extensively covered in the marketing literature of the developing countries. There are more abuses than appreciations attached to this subject. It is usually stated that the profit element predominates-in the aggregate margin on agricultural commodities as a result of certain superfluous or inefficient intermediaries in the existing marketing channels.

Most of the studies relating to this topic do not however, endeavor to quantify the cost of various direct and indirect services rendered by the intermediaries. Much of what is called profit in fact reflects middle-men costs.

For instance studies of ‘middlemen profits in the developing countries usually tend to ignore the following cost, items:

a) The cost on the money loaned out by the intermediary to farmers, consumers, or other intermediaries.
b) the cost of risks and uncertainties borne by the middleman in agricultural trade;
c) the cost of social help extended to the farmers ;
d) the cost of entertainment at his business premises;
e) the cost due to spoilage of produce; and
f) The cost for bribes or gifts and for some kinds of levies, taxes, and service charges not in fact related to actual services provided.

In other words to arrive at the real profit figures the cost of these and other indirect services has to be quantified.

In determining the economic justification of various intermediaries the following factors would be carefully analyzed.

I. The intensity of competition at all trade levels.
II. The amount of risks and uncertainties involved.
III. The size of business.
IV. Alternative employment opportunities in the society.
V. Restrictive state policies.

17.5.2 Consumer Prices

Rising consumer prices are usually regarded as a measure of market inefficiency. But the price of any commodity is a function of:

I. Consumer income
II. Available supplies in relation to effective demand
III. Money supply
IV. Prices of substitutes and complements
V. Seasonal factors
VI. Marketing margins and distributional patterns
VII. State price policies
VIII. General Price level

Increase in consumer prices are commonly attributed to manipulation by middlemen artificially restricting the distribution of commodities to their own advantage or creating artificial scarcities in the distribution of commodities. Actually, most marketing costs are relatively sticky and tend to change very slightly as compared to price changes caused by other factors. Even .when deficiencies in the distributional patterns affect die price structure, they are usually caused by state price and procurement policies.

High consumer prices are, therefore, largely due to factors other than marketing inefficiencies, although marketing often becomes the scapegoat for ills it has not directly caused.

17.5.3 Physical Marketing Facilities

The inadequacy of physical marketing facilities like transport, storage, processing, etc., is also a subject of criticism in discussions of the efficiency of the marketing system. This has been common especially since the recent agricultural breakthrough in many of the developing countries.

Although the availability of physical facilities has a direct bearing on marketing efficiency, to treat it as an important indicator of efficiency is questionable.

The paucity of physical facilities may exist because of subsistence farming, the seasonal nature of agricultural production, the structure and wide dispersion of farm producing units, low quantum of marketable

surplus, the stage of economic development, and the huge overhead expenditure involved in the provision of such facilities in the developing countries.

Where physical facilities do exist, they are seldom based on a pre-assessment of the economic potential and requirements of the area. In the developing countries the spatial distribution of physical marketing facilities is so unorganized that at certain places they are underutilized and at other over utilized. There is need to determine the exact demands and patterns of distribution and the reallocation of existing facilities needed for their efficient use.

17.5.4 Market Competition

Intensity of competition has been widely suggested as a major indicator of market inefficiency. Though competition is desirable in itself, the methods of its measurement lack uniformity, precision and objectivity.

It is conventional for researchers to blame the policy makers in a developing country for any lack of competition. On the other hand, where competition is intense the researcher who considers it the key to efficiency is hard to put to indicate areas of possible improvement or to define relative degrees of efficiency.

Excessive focus on quality competition is likely to be found in a market that lacks progressiveness and growth orientation; excessive attention to prime competition leads towards greater concentration among sellers and the development of monopolistic organization with all of its attendant evils.

Reliance on competition as a key indicator of efficiency is thus a static approach which disregards dynamic considerations, lacks a standard of comparison, and pays no attention to economic and social norms based on the value system of an economy. Use of competition as a measure of marketing efficiency would have to be selective and judicious to have any constructive influence on market performance.

Since market performance refers to the end results of market adjustments by buyers and sellers in the market, the intensity of market competition may be considered both is a performance norm and as the net outcome of a reorganization of the market structure and market conduct Thus the effective use of market competition as a measure of marketing efficiency would require an appropriate application of the criteria of workability for market structure, conduct, and performance with all their interaction effects, so as to increase the intensity of competition to the extent socially desirable, while also moving towards such pre-designated social and economic goals.

17.6 AN “EFFICIENT” MARKETING SYSTEM DESIRABLE IN THE DEVELOPING COUNTRIES

Is an “Efficient” Marketing System Desirable in the developing countries? If we are talking about a system of marketing that is efficient

by the usual text book definition, it will be a system that has limited practical use in the developing countries for the following reasons;

First, the traditional definition focuses on efficiency of a market operation and fails to encompass the efficiency of a marketing system as a whole. The sum total of the efficiencies of all market operations does not necessarily measure the efficiency of the entire marketing system, because the objectives at the micro level may (and they usually do) conflict with those at the macro level.

In developing countries, the efficiency of individual market operations or firms tends to have a multiplier inefficacy effect when viewed in the perspective of the total marketing system. For illustration, in a labour surplus economy if 10 firms are working efficiently at the most favourable input-output ratio, and if this requires the use of labour displacing technology by which each firm displaces 10 persons, the system at the next sense that a highly perishable resource, the labour productivity of 100 persons, is unused. In such a situation, systems that are the most efficient at the micro level become undesirable and inefficient at the macro level.

Second, the traditional definition of marketing efficiency almost completely ignores the welfare aspect of the society. Even if we could ignore the first argument, and assume that sum total of efficient individual market operations results in an economically efficient total marketing system, it may still be one that is inconsistent with the maximization of the general welfare of the society. In fact the former will sometimes only be achieved at the cost of the latter. For instance, in the developing countries the general welfare may call for the absorption of more surplus labour in the marketing sector rather than the use of capital intensive technology t6 obtain a favourable input-output ratio.

Thus, the aim of overall marketing efficiency ought to be the supply of the package of goods and services to the consumer at the lowest possible cost consistent with the interests of producers and within the framework of the general welfare of the society.

A progressive marketing system in a labour surplus and capital deficient developing country would require the application of a different set of criteria for the analysis of market structure, conduct and performance. A list of suitable criteria for defining an adequate market situation optimizing social welfare and maximizing the efficiency of agricultural marketing systems in developing countries (some of which may be equally valued for developed countries), is given here under:

17.6.1 Market Structure

a) Size and number of buyers and sellers ensuring an adequate intensity of price and quality competition

b) Freedom of entry and exit.

c) Adequate size of sellers so as to encourage increased investment in business.

17.6.2 Market Conduct

a) Pricing practices which encourage grading and standardization of agricultural commodities.
b) Uniformity of market charges.
c) Pricing practices free of collusion and unfair or exclusionary tactics as well as black marketing.
d) Pricing policies which encourage product quality improvement and greater consumer satisfaction.

17.6.3 Market Performance

a) Technological progressiveness.
b) Growth-orientation of agricultural marketing firms.
c) Efficiency of resource use.
d) Product improvement **and maximum market** services at the least possible costs.

17.6.4 Goals

An appropriate application of the above criteria will help redirect the marketing systems of developing countries towards the following goals:

(i) Greater efficiency of resource use
(ii) Increased labour absorption,
(iii) Lower consumer prices and fair returns to the producers, with increased marketing services to both.
(iv) Development and growth of the marketing sector.
(v) Minimization of product losses.
(vi) Education of the consumer concerning prices and qualities.
(vii) Increase in the intensity of competition but only to the point that it continues to yield desirable consequences.

Exercise 17.1

Q1. What are the indicators of Marketing Efficiency?
Q2. What are the types of Marketing Efficiency?

17.7 SUMMARY

We believe that an appropriate measure of marketing efficiency for these countries must take account of these goals, and that policy proposals should be evaluated in relation to them. Any measure that is directed at the achievement of these goals will almost certainly contribute to greater efficiency in the marketing systems of developing countries. Any measure that seriously conflicts with one or more of these goals deserves careful scrutiny.

Seasonality in market arrivals, prices and the problems of small farmers. One of the off-repeated defects of the marketing system in India

has been that prices are unduly depressed in the immediate post-harvest period and they rise in excessive heights in the off-season. The undue variations in prices, apart from exacerbating the scope of profit margin to traders and rice millers, inflict severe welfare losses on marginal and small farmers and landless workers, who are the net buyers of food grains. The prevailing marketing system which entails the sale of output by marginal and small formers at the time of harvest at depressed rates and by big farmers at a time when prices are favourable worsens the income distribution. Moreover, there is now evidence to suggest variation in coarse cereals prices are greater than those of finer cereals and the marketing system is not operating in the interest of weaker sections of rural society.

Variations in the prices of wheat and rice have slowed down due to second crop following irrigation and improvements in marketing system. However, available studies indicate that primary and terminal markets are not effectively integrated reflecting the infrastructural short comings in the marketing system.

17.8 GLOSSARY

- **Marketing efficiency** is the maximization of input-output ratios. The inputs of marketing- are the various resources of land, labour, capital, and management which are employed in performing the various marketing services. The output or marketing refer to the satisfactions derived from the consumption of those goods and services.
- **Market structure** as defined by Bain refers to the organizational characteristics of a market and, for practical purposes, to those characteristics which determine the relations of sellers in the market to each other, of buyers in the market to each other, of sellers to buyers, and of sellers established in the market to potential new firms which might enter it.
- **Technical efficiency** concerns the effectiveness or competent with which the physical aspects of marketing are performed.
- **Economic efficiency** requires the realization of maximum output in money terms or of a given output with the minimum resources. In other words, to be technically efficient, a marketing system would have to utilize with maximum effectiveness the best technology available for every marketing job, regardless of cost. For instance, air transport may be technically the most efficient method of transporting commodities, and mechanical grading may be technically a better method of grading agricultural produce than manual grading.

17.9 ANSWERS TO CHECK SELF EXERCISES

Exercise 17.1

Answer 1. Refer to section 17.4.

Answer 1. Refer to section 17.5.

17.10 SUGGESTED READINGS

1. Mishra, Srijit and D. Narasimha Reddy (2011): *Persistence of Crisis in Agriculture: Need for Technological and Institutional Alternatives* (in India Development Report, 2011, edited by D.M. Nachane, Oxford University Press, New Delhi).
2. Rao, P. Parthasarathy, P.S. Birthal and P.K. Joshi (2006): Diversification towards High Value Agriculture, *Economic & Political Weekly*, Vol. XLI, No. 26, June 30.
3. Report of the National Commission on Agriculture (1976): Ministry of Agriculture, Government of India, New Delhi.
4. Saggar, Mridul (1992): *Issues and Concerns in Indian Agriculture*, Reserve Bank of India Occasional Papers, Vol. 3, No. 3, September.
5. Bain, J.S., Industrial Organisation, John Wiley & Sons, New York, 1969.
6. Shapherd, G.S., Marketing Farm Products, Ames, Lowa, U.S.A., 1962.
7. Wells, O.V., Proceedings, J. 949 National Marketing Workshop, University of Minnesota, p.18.
8. Waugh, F.V., Reading on Agriculture Marketing, Ames, Lowa State University Press, 1954, p.195.

17.11 TERMINAL QUESTIONS

Q1. Define Marketing Efficiency?

Q2. Is the “Efficient” Marketing System Desirable in the developing countries, Comment?

Q3. What are efficiency criteria for agricultural Marketing? Also discuss the problems of Indian agricultural marketing?

UNIT-18

RURAL INDEBTEDNESS AND AGRICULTURAL CREDIT

STRUCTURE

18.0 OBJECTIVES

After studying this unit you will be able to:

- Explain the Role of Capital and Agricultural Credit
- Illustrate the Causes and Consequences of Rural Indebtedness
- Elucidate Agricultural Credit Policy
- enlighten the initiatives taken by the government for increasing flow of credit

18.1 INTRODUCTION

Before the First Plan began in 1951, almost all the financial needs of rural sector vis-à-vis agriculture were provided by the moneylenders. At that time, the Reserve Bank was very active in pursuing cooperative movements through a variety of initiatives. Despite all those efforts, the provision of credit through cooperatives and commercial banks were to the extent of about 4 per cent of the total outstanding debt as at end-June 1951. This finding of Report of the All India Rural Credit survey (RBI, 1954), AIRCS henceforth, had laid the foundation stone for furthering the role of institutional credit to rural sector through formal channel of cooperatives and commercial banks. The AIRCS stated, Cooperation has failed, but Cooperation must succeed and recommended for credit delivery through institutional channel (throughout this paper, formal and institutional as well as informal and non-institutional are used interchangeably) in the areas of agriculture marketing, processing, storage and warehousing. The subsequent formation of 'Agricultural Refinance Corporation' in 1963, nationalisation of major commercial banks in 1969 and 1980 in second phase, setting up of Regional Rural Banks in 1975, and formation of National Bank for Agriculture and Rural Development (NABARD) in 1982 - all these efforts by the Reserve Bank were to institutionalise the credit channel for rural sector. In the 1990s and 2000s, the concept of micro-credit along with MFI- and SHG-Bank linkage models have evolved with the institutional support of the Reserve Bank and NABARD in order to help the poor in providing credit without collaterals.

In recent years, the excessive reliance of borrowers on some or other forms of moneylender and informal/semi-formal sources and exorbitant interest rate charged by those entities have captured the attention of policy makers to downsize the informal sector finance. The Technical Group Report to review legislations on money lending (RBI, 2006) by the Reserve Bank had examined, inter alia, the functioning of moneylenders, linkages between money lending activities and formal credit channels, international practices in regulating money lending activities, and enforcement machinery for money lending and similar activities in the interest of rural households. The Report of the 'Task Force on Credit Related Issues of Farmers' (GOI, 2010) submitted to the Ministry of Agriculture in June 2010 had looked into the issue of a large number of farmers, who had taken loans from private moneylenders (and not covered under the loan waiver scheme). The report has mentioned: In recent years, policy interventions have led to doubling of agricultural credit, but the limited access of small and marginal farmers to institutional credit continues to be a matter of concern. What is worrying is that the proportion of such farmers is increasing and they form more than four-fifths of the operational holdings".

The inadequate and untimely credit along with procedural hassles from formal institutions has been added to the problem of credit access by rural farmers. At the same time, micro finance institutions (MFIs) have been criticized for seeking higher interest rate and mostly confined to the states with fairly well-developed banking system and also competing for same target group. The performance of some of the public sector banks in rural and agricultural lending is also inadequate while that of the private and foreign banks is even lower, despite considerable expansion of the scope of priority sector lending (Reddy, 2006). These facts have motivated to a large extent to the enquiry about the persistence of informal sector finance in rural sector. To this end, we have covered the period from 1951 to 2002 on the basis of AIDIS Survey data and up to 2011 on the basis of three related reports (RBI, 2006; GOI, 20102; RBI, 20113). The Micro Finance Institutions (Development and Regulation) Bill, 2012 aims at providing a framework for the development and regulation of micro-finance institutions. The Bill has entrusted the Reserve Bank with the power to issue directions to all MFIs.

18.2 ROLE OF CAPITAL AND AGRICULTURAL CREDIT

In modem farming as in other business the key to a satisfactory money income is a proper combination of productive assets such as land, livestock and machinery with available labour and managerial ability. Capital for acquiring productive assets is essential for success. The amount of capital a farm family control for use in the farm business determines to a large extent, its level, of income.

Agricultural finance is an economic study of financing the farm business. It is that part of farm management which pertains to acquisition and use of capital, while many farmers enjoy the privilege of having surplus funds to invest either on permanent basis or for a short period of time. But, in Indian context most of the farmers are poor because of small size of their holdings, lack of irrigation facilities, and other inherent problems. They have very less surplus to invest in agriculture. Because of the financial problems and poor capital base they have to obtain necessary credit from the lending institutions and non-institutional sources. Thus they supplement their resources by using credit.

There have been tremendous improvements in the farm production after the advent of green revolution in India. ‘This was only the impact of new agricultural technology in the form of new machines, new methods and materials which increased production per unit of land and per animal. The increased productivity of land and livestock is the result of improved seeds, feeds and breeding livestock (ii) more and better fertilizers, plant protection material and (ii) increased use of fuel and electricity. The use of all these inputs is associated with higher capital investments. Thus increasing amounts of capital are required per unit of output to meet production expenses. Over a period of time farmers are using more and

more modem inputs and other purchased materials which is creating an increased demand for cash operating funds.

There have also been a sea change in cropping pattern .in Indian agriculture as more and more area is being shifted towards the commercial/cash crops. All these crops are capital intensive and hence require more investments which the farmers are fulfilling in the form of more credit facilities.

Use of capital in agriculture has been an important factor contributing in farm, income and standard of living.

A continuation of this trend is dependent to large extent upon a regular rise in farm investment. But the individual farmer has a number of alternatives such as saving, borrowing, renting, partnership and purchase contract. However all of these except saving and borrowing merely represent a transfer of capital from on fanner to another. Thus, the mw additions to capital in agriculture stem basically from savings and credit. Savings are very important in the process of capital formation. But, most of the farmers lack savings due to the facts mentioned earlier. Thus there is need for use of more credit. In modern farming business credit have to make maximum contribution to capital requirements of the farmers.

18.3 RURAL INDEBTEDNESS

The Indian Farmer borrows year after year but he is not in a position to clear off the loans, either because the loans are larger or because his agricultural output is not large enough to pay off his debt. Therefore, the debt of the farmer goes on increasing and this is what is known as rural indebtedness. There is a well known saying in the country "The Indian Farmer is born in debt, lives in debt and dies in debt." Incurring debt for agricultural production is not bad. In fact it is a necessary element of the proper conduct of agricultural operations. Even in advanced countries, agriculturists take loan to carry on their work. Such a debt can be repaid out of the income generated from production. But India's agriculturists undergo debts also for non-productive purposes. They contract loans to meet such consumption needs as family expenditure on consumption performance of social functions connected with marriage, birth and death, litigation etc. Since these loans contribute nothing to production, it becomes impossible to provide their payment. As a result, such debts go on increasing from generation to generation. Agricultural production in the case of many farmers is so small that they are not able to provide for such productive expenditure. Being backward, agriculture in India for most cultivators is a deficit economy, i.e. their expenditure exceeds their income. During such circumstances they find no escape from the burden of unproductive debts. A serious aspect of this problem is that it is by and large a problem of small farmers. These farmers are people of small means. They cultivate tiny pieces of land.

Their production is small. The surplus with them, if any, is still smaller. But their needs of credit for agricultural operations and household needs are comparatively greater. To meet their requirements they take loans mostly from moneylenders for high rate of interest which then are not able to return. As a result the dead weight of debt sits heavily on their heads.

An evil aspect of India's rural sector is the heavy indebtedness of the rural folk. The burden of the debt has been passed on from one generation to another. This is because of the reason that income from the agriculture is too meager to pay off the debt and the malpractice's of the money lenders and do not allow the farmers to free themselves from the burden of debt.

18.3.1 Nature of the Problem

Taking of debt, for agricultural production is not bad. In order to conduct the agricultural operations properly, it is essential to take loan. Even in developed countries agriculturists incur debt to carry out the farm operations. Such debt can be replayed from the income generated from farm production. But in Indian context, it has been observed that most of the farmers use the money for non-productive purposes. Coupled with low income generation and heavy family consumption expenditure these farmers are not able to repay the debt. As a result such debt goes on increasing year after year.

About 70 per cent of Indian formers are marginal and small with tiny pieces of land resulting into small production. The surplus with them, if any is still smaller. But, their needs for credit are comparatively greater. To fulfill their needs they take loans from money lenders at a very high rate of interest which they are not able to return. Thus the burden of debt falls on the shoulders of those who are least also to bear it.

18.3.2 Extent of Indebtedness

Data of Indebtedness are available in the four All India Debt and Investment Surveys (AIDIS) carried out so far. According to these surveys the percentage of indebted rural household to total rural, households was 62.8, in 1961 and this declined to 41.3 in 1971 and to 19.4 in 1981. The average amount of debt outstanding per household which was Rs. 406 in 1961 increased to Ks. 6.5.3 in 1981. The share of non-productive loans in total debt outstanding declined from 50 per cent in 1951 to 31 per cent in 1981. But, this does not mean that the economic position of all farmers has improved and now they take less loans for un-productive purposes. In fact, ' the increase in percentage of productive loans reflects the growing demand of large and capitalist farmers for advances for agricultural uses. Small and marginal farmers are still seeking huge loans for consumption and nonproductive purpose.

According to the estimates of National Sample Survey the percentage of households under debt to total households was 36 in 1953-54 but it rose to 54 per cent' in 1960-61. According to the first report of the National Income Committee of the total debt as much ‘as’ 83 per cent was used for un-productive purposes. The All Indian Rural Credit Survey estimates unproductive use of debt at 56.3 per cent.

In spite of the differences in the above estimates it can be concluded that the majority of rural household are under debt”, there has been an increase in rural indebtedness (especially small and marginal fanners and landless labourers) and-the major share of rural debt is used for un-productive purposes.

18.3.2.1 Feature of Indebtedness among Social Croups as per report 503 (AIDIS) 2005-06

- About 27 per cent of the rural households were indebted while only 18 per cent of the urban households were indebted. The proportion of indebted households or incidence of indebtedness was highest for OBC households in both rural and urban areas, and was 29 per cent for rural and 21 per cent for urban households. For ST households, the incidence was 18 per cent in the rural areas and 12 per cent in the urban areas. For SC households, this was 27 per cent in the rural areas and 19 per cent in the urban areas.
- About 59 per cent of the debt of rural ST households was incurred for farm related work and 25 per cent for household expenditure. Among the ST households in the urban areas as high as 69 per cent of the debt was taken for household expenditure. Only 26 per cent of the debt of rural SC households was for farm related work, while as high as 51 per cent was for household expenditure. About 76 per cent of the debt of urban SC households was for household expenditure.
- In the rural areas, about 11 to 13 per cent of the ST, SC and OBC households reported institutional agencies as the source of credit. This was 16 per cent for ‘other’ households. In the urban areas, about 7 to 10 per cent of households reported institutional agencies as the source of credit.
- In the rural areas, the share of institutional agencies in total amount of debt for ST, SC and OBC households was about 69 per cent; 45 per cent and 51 per cent respectively. It was 68 per cent for ‘other’ households while the overall institutional share in the amount of debt was 57 per cent. In the urban areas, the share of institutional debt varied from 65 per cent for OBC to 82 per cent for ‘Other’ group. The overall share of institutional debt was 75 per cent.
- For rural areas, the debt to asset ratio, which represents the value

of debt per 100 rupees of owned assets, was between 2.3 for ST households to 3.7 for SC households. In urban areas, the debt to asset ratio was between 2.4 for ' 'Other' households to 4.2 for SC households.

- Among various type of securities against which loans are advanced, personal security was the most prominent one- about 18% of households in the rural areas and 12% of households in the urban areas reporting indebtedness against personal security.
- In rural areas, for outstanding debt, the personal security accounted for as much as 64 per cent for SC households. It was 41 per cent for ST households 51 per cent for OBC households and 38 per cent for 'Other' households. In case of urban areas, the figures 48 per cent for SC households, 35 per cent for ST households, 44 per cent for OBC households and 37 per cent for 'Other' households.

18.3.3 Causes of Rural Indebtedness

There are several Cause' which are responsible, for the heavy rural indebtedness, *an* increase in the amount *of debt* and the *un-productive use of large part of it* The problem of indebtedness in India is related to the illiteracy of fanners, unfavorable climatic conditions, increase in *the pressure of population, wasteful expenditure of* farmers etc. The prevalence of rural indebtedness is also due to the social system or more precisely the production relations existing in agriculture. The major causes *are* discussed in detail m the following text.

I. **Poverty:** Rural poverty is the biggest cause of rural indebtedness. The meager income, the uncertain and primitive small farming makes it nearly impossible for them to make both ends meet: In order to fulfill 'their necessary expenditure they are forced to go in for loans which they cannot repay due to small income earning capacity.

II. **Land Tenure System:** In the pre-independence period, the land tenure systems viz. Zamidari, Mahalwari and Ryotwari were prevalent in India. Under all these systems-the condition of actual tiller of the soil ^as very bad. He had to pay heavy amount of rent to the landowner and hence found it difficult to meet his family expenditure. It was the economic compulsions that led this class of people to seek loans. Thus, the persistence of a semi-feudal structure in land relations is the root cause of continued rural debtedness.

III. **Pressure of Population on Land and Disguised Unemployment:** Due to population explosion in the last four decades, the economic development and especially the industrial development has failed to absorb the rapidly increasing labour force. The pressure of

population on land has been increased and agricultural holdings has become smaller and smaller without an appreciable increa.se in its productivity. This has resulted into large scale disguised unemployment in rural areas. Thus the income levels of resource less poor farmers remained low and they had to insure debt.

IV. **Inherited Debt: A** large proportion of farmer's debt is inherited from his forefathers. Debt passes on from generation to generation and on account of the blackmailing techniques of the money lenders, it is never finally paid up.

V. **Backwardness of Agriculture**: Indian agriculture is generally dependent upon unreliable units for the supply of water which is virtually an uncertain business. On the other hand, farmers are dependent upon the age old methods of cultivation. They are not using the modem technology due to many social and economic factors. Consequently, the productivity of these farmers is very low. Thus the repayment capacity of such farmers is very poor.

VI. **Absence of Alternative Sources of Income:** Due to the decline of cottage and village handicraft after independence the workers find it difficult to get employment in off-from activities. Thus, due to mass poverty and unemployment income levels of these farmers are low resulting into indebtedness.

VII. **Wasteful Expenditure**: The villagers are so' fond of social traditions and religious customers and they consider expenditure of certain ceremonies like marriage, birth, deaths, religious occasions etc, as a sacred binding on them. Sometimes these expenditures are incurred on "show off. To meet these expenditures substantial debts have to be incurred because the level of saving of rural poor is low. Such expenditures are unproductive and these also increase the burden of indebtedness. Another 'kind of a un productive debt is the one taken to meet expenses of litigation.

VIII. **Defective Money Lending System:** The loans contracted by poor farmers from village moneylenders not only perpetuate the evil of indebtedness but also increases it. Money lenders advance money for wasteful expenses, charges very high interest, purchase farmers labour and produce at a very low price etc. lathe event of increasing debts they do not hesitate in seizing farmer's land, jewelers or other valuable assets.

18.3.4 Consequences of Indebtedness

There are many harmful economic and noneconomic consequences of heavy rural indebtedness affecting adversely the interest of the nation.

(i) Economic Consequences: From the economic angle rural indebtedness gives rise to many evil effects. One is that the incentive for efficient farming and development of agriculture is snuffed out of the cultivator. The farmer is exploited by the money lender at every point. This affects adversely the inducement for work and the volume of

agricultural production. In some cases, the farmers lost their land to the moneylenders in lieu of loans and hence he is rendered landless labourer.

(ii) 'Social Consequences: Heavy indebtedness affects adversely the social life of village in many ways. One is the emotional relations between the loan givers and loan receives take on the form of relations of hatred, poisoning die social life. On account of the deprivation of land the cultivator not only suffers economically but also feels pushed down in the social hierarchy.

(iii) Political Consequences; The farmers under debt are treated as mere votes or commodities which the money lenders uses as- their private property. The farmers in their attempts to squeeze the debtors indulge in all sorts of mean and dirty practices which pollutes the political atmosphere.

18.3.5 Measures for Removal of Indebtedness

The problem of rural indebtedness has to be tackled on two forms: (i) the burden of present indebtedness should be reduced

(ii) indebtedness in future should be controlled.

With regard to both these types of measures, the major suggestions are: -

(i) **Reducing the Burden of Present Indebtedness:** Since the main cause of continued indebtedness **of** rural poor is the malpractice's adopted **by the money lenders** it is necessary to control their activities. With this regard, steps were initiated in a number of states to prescribe maximum rate of interest, make registration' and licensing of money lenders compulsory etc. many states also adopted the rule of Dhumdupat according to which the debtor cannot be asked to pay more than twice the loan taken by him But all these measures were not proved to be effective due to inadequate development **of** alternative sources of easy credit. Today, there is comparatively good network of banks and co-operatives but small and marginal farmers are not being benefited from these to the desired extent.

In addition to above measures, debt cancellation board was also set up which helps in scaling down the debt with the consent of both the parties. These boards could review the debt repaying capacity of debater, in the light of his total indebtedness and reduce it if found excessive.

To reduce the burden of present debt it is necessary to invoke the rule of dumdupat effectively and cancel all those debts where twice the amount of principal has already been paid by the farmers. Compulsory scaling down of the inherited debts should be strictly imposed.

(ii) Control of Future Indebtedness: In order to ensure the full control of future indebtedness there should be a network of institutional credit agencies in rural areas which can provide for the credit needs of poor on

reasonable terms. More Co-operative Credit Agencies, Commercial Banks and Regional Rural Banks have to be established. It is necessary' to extend their services furthers, Simplify the loan procedures and abandon the age-old notions of "credit worthiness" of farmers etc. so that the needs of small and marginal farmers and agricultural labourers can be adequately looked after. The rural poor should also be educated to take loans only for productive purpose and use the money in efficient manner.

18.4 AGRICULTURAL FINANCE

Agriculture is a dominant sector of our economy and credit plays an important role in increasing agriculture production. Availability and access to adequate, timely and low cost credit from institutional sources is of great importance especially to small and marginal farmers. Along with other inputs, credit is essential for establishing sustainable and profitable farming systems. Most of the farmers are small producers engaged in agricultural activities in areas of widely varying potential. Experience has shown that easy access to financial services at affordable cost positively affects the productivity, asset formation, and income and food security of the rural poor. The major concern of the Government is therefore; to bring all the farmer households within the banking fold and promote complete financial inclusion.

Finance is an essential requirement for any productive activity and agriculture is no exception. In India, the importance of agricultural finance needs no stressing with agriculture being the most predominant sector. Let, agriculture is an unorganized profession. Its success and failure depends to a large extent on climatic factors. Further, it is not always possible to distinguish between productive and unproductive loans of the farmers. It was because of these reasons banks were hesitant in advancing loans to the farmers for a long time and they were almost-totally dependent upon money lender and mahajans for their credit needs.

Agricultural finance plays an important role in the development of agriculture sector in particular and overall economic development in general. In India as about to 70 per cent of our farmers are small and marginal with very less surplus available with them to invest in this sector. On the other hand with the technological change and mechanization- of agriculture, the inputs such as HYV seed, chemical fertilizers, plant protection materials, irrigation etc. demands large investment. In such a situation it becomes necessary to seek credit and improve the agricultural production and productivity. In case of activities such as land improvement, irrigation development etc., the farmers require a big sum which he cannot afford. Thus they require credit otherwise there cannot do improvement in land productivity which will result in low level of income of the farmers.

Thus, in order to improve the living conditions of rural poor which are mostly small and marginal farmers and landless labourers it is-very essential to provide them credit for productive purposes. Credit for better input use and marketing facilities will improve the income levels of the fanners and hence will improve the over-all development of our country.

18.4.1 Classification of Credit

Credit of the farmers can be classified on the basis of (i) time (ii) purpose (ii) security (iv) lender and (v) borrower

1. **On the Basis of Time:** Agriculture credit on the basis of time can be classified into three categories: — (i) Short-tem (ii) medium-term and (iii) long-term. Short-term loans are required for the purchase of seeds, fertilizers, pesticides, feed and fodder of livestock, marketing of agricultural produce, and payment of wages of hired labour, litigation and a variety-of consumption on unproductive purposes. The period of such loans is less than 15 months. Main sources of such loans are the moneylenders and the co-operative .societies. Medium-term loans are generally obtained for the purchase of cattle, small agricultural implements, repair and construction of well etc. and its period extends from 15 months to 5 years and is provided by the farmers, cooperative societies and commercial banks. The Long-term loans are mostly given by land development banks and is period extends beyond five years (up to 20 years or more). Such loans and required for effective permanent improvements of land, digging tube wells, purchase of large agricultural implements and machinery such as tractors, harvesters etc.

2. **On the Basis of Purpose:** Agriculture credit can be classified into the following categories (i) productive, (ii) consumption needs and (ii) unproductive on the basis of purpose. Under productive credit farmers seek loan to carry on the activities of production such as purchase of seeds, fertilizers, water, agricultural - implements, livestock, payment of wages, land improvement and marketing of agricultural produce etc. Repayment of such loans is not difficult because the process of production generally create the where withal for repayment. Such loans arc economically justified.

Farmers often require loans for consumption too. The farmers need money for current consumption between the interval of marketing of agricultural produce and harvesting of next crop. Therefore, they have to take loans for meeting their consumption needs in the time of droughts or floods the crop is damaged and the farmers who otherwise avoid taking loans for consumption have to also insure such loans. The farmers have to depend upon moneylenders or mahajans for such loans as institutional credit agencies do not provide loans for such purposes in additions to consumption, farmers also require loans for a variety of other un-productive purpose such as litigation, performance of marriage, social,

ceremonies on the births and deaths, religious functions, and festivals etc. Again Farmers seek such loans from non-institutional ' agencies and it is rather difficult to replay such loans because they do not contribute to the productivity of the farmers.

3. **Security Classification:** According to this classification loans are of two types (i) secured and (ii) Unsecured. Short and medium term loans maybe either secured or unsecured, whereas, long-term loans generally are secured by real estate. The amount of security included in a chattel mortgage- varies with the policy of the lending agency making the loan and also with the financial condition of the borrower. Some agencies require a mortgage covering the borrower's entire property other than real estate. Other restricts it to the property purchased with the loan, payment plus proceeds of the loan. Still other agencies follow a middle course. If the borrower is in financial difficulties all his property may be included in the mortgage, but if he is in good financial position he may be asked to give as security only the Property may be included in the mortgage, but is he is in good financial position he may be asked to give as security only the property purchased with loan or property equivalent in value.

4. **Lender Classification:** A segregation of credit according to lender is desirable because the policies of the lenders vary greatly. Loans made by relatives of the borrower and loans made by finance companies have little in common. Similarly, loans by the banks on one hand and by government agencies on the other differ in amount loaned on a given amount of security, in the forms required, and often in interest rates. Again it is possible to follow the general term, grouping of loan classifying lenders under their heads short, medium and long-term loans.

5. **Borrower Classification:** Credit can be classified on the basis of type of borrower. The loan is classified on the basis of major source of income of the borrower; the advantage of such grouping is illustrated by the problem connected with the loans to a particular activity.

18.5 AGRICULTURAL CREDIT POLICY

The Government of India has initiated several policy measures to improve the accessibility of farmers to the institutional sources of credit. The emphasis of these policies has been on progressive institutionalization for providing timely and adequate credit support to all farmers with particular focus on small and marginal farmers and weaker sections of society to enable them to adopt modern technology and improved agricultural practices for increasing agricultural production and productivity. The Policy lays emphasis on augmenting credit flow at the ground level through credit planning, adoption of region-specific strategies and rationalization of lending Policies and Procedures. These policy

measures have resulted in the increase in the share of institutional credit of the rural households. Progress in regard to flow of agricultural credit is given below:

(Rs. in Crore)

Year	Target	Achievement
2004-05	105000	125309
2005-06	141000	180486
2006-07	175000	229400
2007-08	225000	254658
2008-09	280000	287149
2009-10	325000	384514
2010-11	375000	468291
2011-12	475000	511029
2012-13	575000	308025*
2013-14	700000	

*As on 31 October, 2012

18.5.1 Institutional Arrangements

Agricultural credit is disbursed through multi-agency network consisting of Commercial Banks (CBs), Regional Rural Banks (RRBs) and Cooperatives. There are approximately 121225 million village level Primary Agricultural Credit Societies (PACS), 371 District Central Cooperative Banks (DCCBs) with 13327 branches and 31 State Cooperative Banks (SCBs) with 1028 branches providing primarily short-term and medium term agricultural credit in the country. The long term cooperative structure consists of 19 State Cooperative Agriculture and Rural Development Banks (SCARDBs) and 755 Primary Cooperative Agriculture and Rural Development Banks (PCARDBs) with 1219 branches and 689 branches respectively, which are catering to the requirement of investment credit. Besides, there are 45957 rural and semi-urban branches of Commercial Banks, 14462 branches of RRBs and more than 7 million micro finance institutions.

18.5.2 Initiatives Taken By the Government for Increasing Flow of Credit

(i). Farm credit package: Government of India in its Farm Credit Package announced in June 2004, advised banks to double credit to agriculture sector in three years, i.e., by 2006-07. In the subsequent annual budgets, Government of India announced targets for credit to agriculture to ensure adequate credit flow to the sector. The flow of agriculture credit since 2003-04 has consistently exceeded the target. Agriculture credit flow has increased from Rs.86981 crore in 2003-04 to Rs. 468291 crore in 2010-11. The target for the 2011-12 was fixed at Rs.475000 crore and achievement as on 31.03.2012 is Rs. 511029 crore (as per provisional figures given by (NABARD) forming more than 107% of the target. The target of credit flow for the year 2012-13 has been fixed at Rs. 575000 crore and achievement as on October, 2012 is Rs. 308025 crore.

(ii). Interest subvention to farmers: Government of India announced an interest subvention scheme in 2006-07 to enable banks to provide short term credit to agriculture (crop loan) up to Rs.3 lakh at 7% interest to farmers. Further, to incentivise prompt repayment, in the Union Budget for 2009-10, Government of India announced an additional interest subvention of 1% to those farmers who repay their short term crop loans promptly and on or before due date. This was subsequently raised to 2% in 2010-11 and 3% in 2011-12 and 2012-13 also. Thus, farmers, who promptly repay their crop loans, are now extended loans at an effective interest rate of 4% p.a. As proposed in the Union Budget 2013-14, Interest subvention scheme for short-term crop loans to be continued scheme extended for crop loans borrowed from private sector scheduled commercial banks.

(**iii). Extension of interest subvention scheme to post harvest loans:** In order to discourage distress sale by farmers and to encourage them to store their produce in warehousing against warehouse receipts, the benefit of interest subvention scheme has been extended to small and marginal farmers having Kisan Credit Card for a further period of up to six month post harvest on the same rate as available to crop loan against negotiable warehouse receipt for keeping their produce in warehouses.

(iv) Collateral free loans: The limit of collateral free farm loan has been increased from Rs.50,000 to Rs.1,00,000.

(v) Guidelines for providing relief in event of occurrence of natural calamities: Reserve Bank has put in place a mechanism to address situations arising out of natural calamities. The banks have been issued necessary guidelines for undertaking necessary credit relief measures in event of occurrence of natural calamities. The guidelines, inter alia, contain directions to banks to ensure that the meetings of District Consultative Committees or State Level Bankers Committees are

convened at the earliest to evolve a co-ordinated action plan for implementation of the relief programme in collaboration with the State/ district authorities. Banks have been advised to provide conversion/ re-schedulement of loans and consider moratorium period of at least one year in all cases of restructuring. To enhance awareness, the banks are also required to give adequate publicity to their disaster management arrangements, including the helpline numbers. Further, the banks have been advised not to insist for additional collateral security for such restructured loans. Asset classification for restructured loans will remain the same as prevalent at the time of restructuring for a period of one year as per extant guidelines. The relief measures initiated and undertaken are required to be reviewed periodically in the weekly/fortnightly meetings of specially constituted Task Forces or sub Committees of the SLBC till such time as conditions are normalized.

(vi) Interest subvention for loan restructured in the drought affected states in 2012: The standing guidelines of Reserve Bank of India (RBI) provide for rescheduling of short term crop loans upon declaration of natural calamity including drought. Such rescheduling of crop loans converts them into term loans for which normal rate of interest are applicable. Due to deficient rainfall this year in some parts of the country, the matter of providing relief to the farmers of the drought affected areas has been under the consideration of the Government. In order to provide relief to drought affected farmers, it has been decided that in cases where such loan are restructured due to drought, the interest subvention of 2% which is already available for short term crop loans to Public Sector Banks, Cooperative Banks and Regional Rural Banks will continue to be available for the current financial year on the full restructured amount.

(vii). Kisan Credit Card Scheme: In order to ensure that all eligible farmers are provided with hassle free and timely credit for their agricultural operation, Kisan Credit Card Scheme for farmers was introduced in 1998-99 to enable the farmers to purchase agricultural inputs such as seeds, fertilisers, pesticides, etc. The Kisan Credit Card

Scheme is in operation throughout the country and is implemented by Commercial Banks, Coop. Banks and RRBs. The scheme has facilitated in augmenting credit flow for agricultural activities. The scope of the KCC has been broad-based to include term credit and consumption needs. All farmers including Small farmers, Marginal farmers, Share croppers, oral lessee and tenant farmers are eligible to be covered under the Scheme. The card holders are covered under Personal Accident Insurance Scheme (PAIS) against accidental death/permanent disability. Further, GOI has recently accepted suggestions made by a Working Group (Bhasin Working Group) on Kisan Credit Card Scheme to convert it into a Smart Card cum Debit Card and revised guidelines have been issued by NABARD. Some of the major features are as under:

- Assessment of crop loan component based on the scale of finance for the crop plus insurance premium x Extent of area cultivated + 10% of the limit towards postharvest/ household/consumption requirements + 20% of limit towards maintenance expenses of farm assets.
- Flexi KCC with simple assessment prescribed for marginal farmers. Validity of KCC for 5 years.
- For crop loans, no separate margin need to be insisted as the margin is in-built in scale of finance.
- No withdrawal in the account to remain outstanding for more than 12 months; no need to bring the debit balance in the account to zero at any point of time.
- Interest subvention /incentive for prompt repayment to be available as per the Government of India and / or State Government norms.
- No processing fee up to a limit of Rs. 3.00 lakh.
- One time documentation at the time of first availment and thereafter simple declaration (about crops raised/ proposed) by farmer.
- KCC cum SB account instead of farmers having two separate accounts. The credit balances in KCC cum SB account to be allowed to fetch interest at saving bank rate.
- Disbursement through various delivery channels, including ICT driven channels like ATM/ POS/ Mobile handsets.

The State Governments have been advised to launch an intensive branch/village level campaign to provide Kisan Credit Card to all the eligible and willing farmers in a time bound manner. Up-to June, 2012, 11.39 crore KCC have been issued.

(viii) Agriculture Debt Waiver and Debt Relief Scheme, (ADWDRS) 2008: To mitigate the distress of farming community in general and small and marginal farmers in particular and to declog the institutional credit channels and make farmers eligible for fresh credit, the Debt Waiver and Debt Relief Scheme, 2008 was announced in the Union Budget for 2008-09. The scheme covered direct agricultural loans disbursed (i) between 31 March 1997 and 31 March 2007 (ii) overdue as on 31 December 2007 and (iii) remaining unpaid until 29 February 2008. In the case of small and marginal farmers, short term production loans (subject to a ceiling in respect of plantation and horticulture) and installments of investment loans overdue were covered, while in the case of the other farmers, one time settlement was extended under which a rebate of 25% of the eligible amount was given on the condition that the farmer repays the balance 75% in three installments. The debt waiver exercise was completed by 30th June 2008, whereas the debt relief exercise was closed in June 2010 after granting a few extensions. The Government of India has so far

sanctioned Rs.52, 516.86 crore in 5 instalments as reimbursement to the banks under the scheme. Out of this Rs.29,275.81 crore was passed on to NABARD for reimbursement to RRBs and Co-operative banks and an amount of Rs.23,159.76 crore has been reimbursed to scheduled commercial banks, Local Area banks and Urban Co-operative banks.

(ix) Bringing Green Revolution in Eastern India (BGREI): Financing Agricultural Investments in the Eastern Region ¡V Concessional Refinance Support: In order to support the banking system finance such key investments, NABARAD has introduced a concessional refinance scheme in the year 2011-12, with an objective to accelerate investments in agriculture to enhance production and productivity of crops in the Eastern region (Assam, Bihar, Jharkhand, Chhattisgarh, Odisha, West Bengal and Eastern Uttar Pradesh) by incentivising the banks. Under the scheme, NABARD provides 100% refinance to banks at a concessional rate of 7.5% p.a. Provided certain minimum targets are achieved by the bank in financing these key investments. The operative period of scheme is for financial years, 2011-12 and 2012-13. Four activities viz, Water Resources development, Land development, Farm Equipments (including tractor financing on group mode basis) and Seed Production is covered. Concessional refinance is provided subject to condition of minimum 70% lending against credit potential for the identified activities assessed on the basis of projections made in the Potential Linked Plans. The commercial banks are required to achieve the minimum lending level of 70% while the RRBs and Co-operative Banks are required to achieve the minimum lending level of 50% of the Overall lending Target / Potential assessed. The norms were revised during 2011-12 being the first year of the scheme, to 50% in case of Commercial Banks and 25% in case of RRBs and Cooperative Banks. Support to the banks for (a) Forming and linking of Joint Liability Groups (JLGs) (b) Awareness programmes for promoting the scheme (c) Organizing sensitization meets for the branch officials of implementing banks and (d) Training and capacity building of identified entrepreneurs is also offered under the scheme. In partial modification of the Scheme, Tractor Financing under group mode to Self Help Groups (SHGs) / Joint Liability Groups (JLGs) were also considered for concessional refinance by the banks, provided tractors are financed to;

a) An existing Self Help Group (SHG) which is at least two years old b) A new Joint Liability Group (JLG), provided the number of land owning farmers in the group is not less than five and every member is a Small Farmer (SF) or a Marginal Farmer (MF).

(x) Revival Package for Short Term Cooperative Credit Structure: The Government is implementing a package for revival of Short-term Rural Cooperative Credit Structure in the country. The Revival Package is aimed at reviving/strengthening the Short-term Rural Cooperative Credit Structure (CCS) and makes it a well-managed and vibrant medium to serve

the credit needs of rural India, especially the small and marginal farmers. It seeks to (a) provide financial assistance to bring the system to an acceptable level of health; (b) introduce legal and institutional reforms necessary for their democratic, self-reliant and Efficient functioning; and (c) take measures to improve the quality of management. Those states choosing to participate in the Revival Package will be entitled for financial assistance under the package through the mechanism of a formal MOU or Exchange of Letters with the Central Government and NABARD to implement (in a phased manner & within a period of 3 Years), the legal and institutional reforms envisaged. Financial assistance for STCCS under the package which has been estimated at Rs 13596 crore will be available for cleansing of Balance Sheet and increasing the capital to a specified minimum level. In order to ensure that the CCS continues on sound financial, managerial and governance norms, technical assistance will also be provided to upgrade institutional and human resources of the CCS, computerization and building up proper internal control and accounting system. The Package seeks to bring down the interference of the State Govts. in the credit cooperatives and suitable amendments to the State Cooperative Societies Act and Banking Regulation Act have been proposed in the package. These form part of the important conditionalities to be complied with under the Package. Twenty-five State Governments, viz. Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Gujarat, Haryana, J&K, Jharkhand, Karnataka, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Rajasthan, Orissa, Punjab, Sikkim, Tamil Nadu, Tripura, Uttarakhand, Uttar Pradesh, and West Bengal have signed the Memorandum of Understanding (MOU) with GOI and NABARD for implementation of the package. This covers more than 96% of the STCCS units in the country. As on September, 2012 a amount of 9002.11 crore has been released by NABARD as GOI share for recapitalization of 53,202 eligible PACS.

18.6 COSTS OF CREDIT

Instead of interest as such, sometimes payment plans involve carrying charges which are added to the balance due. Carrying charges are often called by other names such as “time differential payments and credit or finance charges. In some case, inspection fees and sales commissions’ include some carrying charges. The carrying charges may lake the form of smaller discount or' an addition to the purchase price! If the percentage rate is used, it will be applied to the face amount of the loan rather than to unpaid balance where carrying charges are involved, the cost of credit is almost always greater than where a loan is secured from a commercial bank or other conventional lender.

A carrying charge might well be considered a red flag calling for careful consideration and study of cost involved. This can be illustrated with the help of an example. Suppose a farmer wants to trade old

agricultural machinery ojr thé new one costing Rs. 2250. The allowance ort the old' machinery is Rs. 1000 leaving Rs. 1250. A carrying charge of Rs. 125 is added, making the due balance of Rs. 1375. Principal payments of two equal installments are due at the end of six months and the twelve months. They the actual cost of credit comes out to 13.3 per cent.

Occasionally, interest is charged in addition to the carrying charges. In such cases, interest is usually charged on face amount of the loan plus the carrying charges, with the result that the actual interest rate is very high.

To work out the cost of credit it is essential to add all fees and charges in additional to the interest. Thus, the actual cost of 5 percent loan may be higher than that of 7 percent loan because of heavy fees and charges on the first loan. Application fees, inspection fees, and other loan charges may easily amount to as much as the interest on small loan for a short period.

The cost of credit is still higher in rural areas where banking structure is not well developed and the procedure of getting credit is very lengthy. In such case the farmer has to make many visits which results into loss of time and money and thus adds to the cost of credit.

18.7 EVALUATING THE CREDIT CAPACITY

Considerations involved in credit analysis logically falls into three groups pertaining to returns, repayment capacity .and risk bearing ability and these are commonly known as three R.S The first R, Return, refers to the most profitable amount of credit which can be used in the business, while other two R.S, indicate restriction or limitations which may be necessary in some cases for the loan to be sound. Every loan should pass the three tests:

1. Will it produce sufficient Returns to cover the costs? In other words, *will it* pay to borrow the money.
2. *Will* the borrower have sufficient repayment capacity to repay **his** loan as provided in the note and mortgage? A loan may be profitable but the farmer still may not be able to meet the payment as they come due.
3. Does the farmer have risk bearing ability to carry the risk and uncertainly involved in using the credit.

These entire questions should be considered by the farmers as he makes plans for using credit, and by the lender, and borrower together as the loan application is studied. The loan should not be made unless the borrower and lender can answer all these questions in the affirmative. In

order to maximize the returns from the farm as a whole, the farmer must strike a balance among the various enterprises and production practices in determining the amount of capital to use for each. This, in turn, involves determining how much credit to use along with owned capital, or that acquired from other sources. The following three things should be kept' in hand for the most efficient[1] ' use of credit:—

1. Selecting the crop and livestock enterprises which will give the greatest returns.
2. Determining the production practices which will be most economical.
3. Determining how large each of the enterprises, should be.

Repayment capacity, the second R of credit may limit the use of borrowed funds to less than can be profitably used. Like return, repayment capacity is considered largely in terms of average conditions anticipated at the time when the use of credit is being considered. Usually income or expense items which are expected and known with sufficient certainty should be taken into account in financial plans and should *be* recognized in repayment capacity. If loan is profitable it should be paid without any difficulty. For a loan to be profitable will largely be dependent upon the use made of the capital loaned. In other words, the type of assets purchased with borrowed funds influences the amount of indebtedness and that can be carried. Assets which are paid for from gross income in effect “pay for themselves”. Loans for such purpose may be termed as self-liquidating loans. Other assets must be paid for from net income, and loans made to acquire such assets are not self-liquidating.

A self-liquidating loan is one that is made for an investment which promises to return enough to reply the entire loan plus interest. Assuming normal production and profitable farm operation, funds used for short-term purposes such as operating expenses usually are recouped as part of gross cash income when farm produce is sold. Therefore, loans for operating expenses are considered to be self-liquidating. Thus, it is evident that as long as such business is profitable funds will be available to repay the loan. On the other hand, a loan which is not self-liquidating is one made for a use or an investment which will not produce funds in and of it to repay the loan. Loans for the purchase of consumption goods and services and for investments in resources which do not depreciate such as good land are examples of loans which and not self-liquidating. In such cases the use or investment may contribute indirectly to repayment of loan by helping to produce net income.

Repayment Capacity

The ways by which repayment capacity is strengthened can be summarized into four general groups:

1. Building more owner equity or net worth in business.
2. Adjusting the business so- self-adjusting loans will be used as far as possible.
3. Organizing and operating the business so as to increase net income.
4. Planning the repayment schedule to conform to income.

By Risk-Bearing ability (third R) we mean ability to stand unexpected low income and unpredictable losses and expenses and continue in farming. It is made up of five things viz. (i) ability to *make* and save money (ii) stability and reliability of income (iii) ability to borrow in both good and poor time's and (v) owner equity the backbone of risk-bearing ability. It is also dependent upon personal characteristics of the fanner. Since the future is not known with certainty there is a need for risk-bearing ability to compensate in errors in judgment regarding returns and repayment capacity in use of credit. There can be reduction in income caused by risks and uncertainties involved in farming and family living such as drought, unusual livestock losses falling prices and sickness. Rice bearing ability provides the 'last line of defense' in use of credit If the promising venture proves to be unprofitable, risk bearing ability must shoulder the load. The risk bearing ability is made necessary due to uncertainty in production, prices, technology and uncertainty caused by the action of other people, sickness, injury and death etc. There are five factors which must be strengthened and improved to increase the risk-bearing ability of the fanners. These are increasing income and saving, producing a stable and dependable income, diversification, enterprise selection and production practices, flexibility and contracts.

Exercise 18.1

Q1. What do you mean by Rural Indebtedness?

Q2. What are the causes and consequences of Rural Indebtedness?

Q3. Examine the Agricultural Credit Policy? What is the cost of Credit?

18.8 SUMMARY

In this we studied the nature and extent of farmers' indebtedness in India. On the issue of rural indebtedness, the farming class, no doubt, assumes considerable importance. This is mainly because a large portion of the 60 per cent of the population that depends on cultivation in India fall under the marginal and small farmers categories. These farming households need credit on a continuous basis to meet their working capital needs. The food security of the country, to a large extent also depends on the output generated by these farmers. Therefore, it is necessary to ensure timely and affordable credit to the faming households. In reality however, we observe that most of the poor and

marginal farmers do not have access to the formal credit network. In this context, it is important to note that the farming class is not a homogeneous group. The farmers belong to different economic and social groups and for policy purposes, it is essential to understand the kind of access these different groups of farmers' households have to credit. Regional variations in this context also assume importance because in certain States we observe the burden of indebtedness forcing some farmers to take extreme steps such as suicide. This calls for the identification of specific State level measures to combat credit related problems.

19.9 GLOSSARY

- **Rural indebtedness:** Rural Indebtedness means Inability of Rural people (Farmers) to pay their Debts.
- **Agriculture Credit:** Any of several credit vehicles used to finance agricultural transactions, including loans, notes, bills of exchange and banker's acceptances. These types of financing are adapted to the specific financial needs of farmers, which are determined by planting, harvesting and marketing cycles. Short-term credit finances operating expenses, intermediate-term credit is used for farm machinery, and long-term credit is used for real-estate financing.
- **Repayment Capacity:** Repayment capacity measures provide insight into your ability to generate enough funds to make debt payments on intermediate and long-term loans (loans longer than one year) and to replace capital assets. If used alone, these measures only provide a snapshot of the business's ability to perform. It is better when they are used along with a cash flow analysis to be certain that the business is able to meet its financial obligations over a longer period of time. The two financial measures relevant to repayment capacity are "term debt and lease coverage ratio" and "capital replacement and term debt repayment margin".
- **Cost:** the value of the inputs (i.e. the amount of money) which are used to produce a good or service verb to have a particular monetary value
- **Agricultural Credit Policy:** The Policy lays emphasis on augmenting credit flow at the ground level through credit planning, adoption of region-specific strategies and rationalization of lending Policies and Procedures. These policy measures have resulted in the increase in the share of institutional credit of the rural households.
- **Agricultural Finance:** A credit financing vehicle, such as a loan, banker's acceptance or letter of credit, that is designed specifically for agriculture producers. Typically, this financing is used to fund operations, purchase equipment or acquire real estate.

18.10 ANSWERS TO SELF CHECK EXERCISES

Exercise 18.1

Answer 1. Refer to Section 18.3.

Answer 2. Refer to Section 18.3.3 & 18.3.4.

Answer 3. Refer to Section 18.5 & 18.6.

18.11 SUGGESTED READING

1. Mishra and Puri: Indian Economy, Himalayan Publishing House, New Delhi.
2. Rudder Datt and K.P.M. Sundharam: Indian Economy, S. Chand and Company Ltd., New Delhi, 2006.
3. A.N. Aggrawal: Indian Economy Problems of Development and Planning, Vani Education Books, New Delhi, 2008.
4. J.P. Singh: Role of Institutional Finance in Agriculture, Ashish Publishing House, New Delhi, 1986.

18.12 TERMINAL QUESTIONS

Q1. Examine the causes and extent of rural indebtedness. Review the policy of the Govt. to deal with the problem?

Q2. What do you mean by financial cum consultancy approach agriculture credit?

UNIT-19
SOURCE OF INSTITUTIONAL CREDIT IN INDIAN AGRICULTURE

STRUCTURE

19.0 OBJECTIVES

Studying this chapter should enable you to understand:

- Sources and pattern of agriculture credit in India
- Institutional framework of Indian agriculture credit
- Trends and Appraisal of Institutional agriculture credit
- Suggested measures to improve agriculture credit
- Recent Government's Initiatives

19.1 INTRODUCTION

Agriculture credit is an important prerequisite for agricultural growth. Agricultural policies have been reviewed from time to time to provide adequate and timely availability of finance to this sector. Rural

credit system assumes importance because for most of the Indian rural families, savings are inadequate to finance farming and other economic activities. This coupled with the lack of simultaneity between income realization and expenditure and lumpiness of agricultural capital investments. The institutional credit system is critical for agricultural development and its role has further increased in the liberalized economic environment. In India a multi-agency approach comprising co-operative banks, scheduled commercial banks and regional rural banks (RRBs) has been followed to allow credit to agricultural sector.

19.2 TYPES OF AGRICULTURE CREDIT

The agriculture credit can be classified on the basis of:

(1) According to Tenure of Agricultural Credit i.e. the credit requirement based on the time period of loans. It can of three types:

(a) Short-Term: It refers to the loans required for meeting the short-term requirements of the cultivators. These loans are generally for a period not exceeding and repaid after the harvest. For example loans required for the purchase of fertilizers, HYV seed, for meeting expense on religious or social ceremonies etc.

(b) Medium-Term: These loans are for a period up to 5 years. These are the financial requirements to make improvements on land, buying cattle or agricultural equipments, digging up of canals etc.

(c) Long-Term: These loans are for a period of more than 5 years and are generally required to buy additional land or tractor or making permanent improvements on land.

(2) According to Purpose of Agriculture Credit: The agriculture credit on the basis of purpose for which the credit is used can be of two types:

1. **Productive:** Productive loans are the loans that are related to agricultural production and economically justified. For example purchase of tractor, land, seeds etc.
2. **Unproductive:** Unproductive credit are used for personal consumption and unrelated to productive activity for example loans for expenditure on marriages, religious ceremonies etc.

19.3 SOURCE OF AGRICULTURAL CREDIT IN INDIA

Sources of agricultural finance can broadly be divided into two categories

(1) Non-institutional sources

(2) Institutional sources.

The non-institutional sources are Moneylenders, relatives, traders,

Commission agents and Landlords.

The institutional sources comprise of the co-operatives, Scheduled commercial Banks, and Regional Rural Banks (RRBs). The state Governments also provide 'Taccavi' loans to farmers. Primary Agricultural credit Societies (PACSs) provide mainly short and medium term loans and Land Development Bank long-term loans to agriculture, Commercial banks including RRBs provide both short and medium term loans for agriculture and allied activities. The National Bank for Agriculture and rural Development NABARD) is the apex institution at the national level for agricultural credit and provides finance assistance .to agencies mentioned above.

All India Debt and Investment Survey (AIDIS) provided a detailed break up of rural credit source-wise and the information obtained from the source conducted so far is presented in Table-19.1

Table -19.1

Debt Owed to different credit Agencies by Rural Households (per cent)

	1951	**1961**	**1971**	**1981**
1. Institution	**7.2**	**17.3**	**29.2**	**61.2**
Government	3.7	6.6 ,	6.7	4.0
Co-operate Society/Banks	3.5	10.4	20.1	28.6
Commercial Banks	0.3	2.2	28.0	
Insurance	0.1	0.3		
Provident Fund	0.1	0.3		
2. Non-institutional	**92.8**	**82.7**	**70.8**	**38.8**
Landlords	3.5	1.1	8.6	4.0
Agricultural moneylenders	25.2	47.0	23.1	8.6
Professional money lenders	46.4	13.8	13.8	8.3
Traders	5.1	7.5	8.7	3.4
Relatives/Friends	11.5	5.8	13.8	9.0
Others	1.1	7.5	2.8	5.5
3. Total	**100.0**	**100.0**	**100.0**	**100.0**

Source—Mishra and Puri, Indian Economy, Himalaya Publishing House, New Delhi, 1992, p.-532

It is clear from this from this table that the share of credit from non-institutional sources was 92.8 percent in 1951. While, the institutional

sources of credit provided a meager 7.2 per cent rural credit. Among the non- institutional sources, the share of moneylender was as high as 7.16 per cent. 'The farmers (particularly small and marginal) were exploited by the money lenders in number of ways. Over the period 1951-81, the share of money lenders has declined considerable from 71.6 per cent to in 1951 to mere 17.5 per cent in 1991 (though it rose to 26.8 per cent in 2002). It other source of non-institutional credit are also considered along with money lenders, the total share of non-institutional sources of rural credit declined from 92.8 percent of 28.8 per cent over the period 1951-1981. The institutional sources increased their participation considerable from 7.2 per cent to 64.2 per cent during 1951-1981. This has helped the farmers to a great extent in protecting themselves against the exploitation of the moneylenders. The two main source; of credit viz. Cooperative societies and Commercial banks increased their share from a very law level of 3.5 percent in 1951 to 56.6 per cent in 1981. The share of these two institutions in

The banks increase their participation in rural credit considerably during the last thirty five years. This was the direct result of .nationalization of major banks in 1969. Institutional credit to agriculture rose from Rs. 744 crore in 1970-71 to Rs. 9.830 crore in 1990-91 and Rs. 62,045 crore in 2001-2002 (the last year of the IXth plan). The Tenth plan (2002-07) has projected the total credit flow to agriculture and allied activities at Rs. 7,36,570 crore.

To fulfill the Tenth Plan target, major initiatives were, therefore, required to increase agricultural credit. As a result of steps taken by Reserve Bank of India following the recommendations of Vyas committee and the various steps initiated by the government of India

Table 19.2

Agency	2002-03	2003-04	2004-05	2006-07	2007-08*
Cooperatives	237Î6	26959	: 39404	42480	33070
RRBs	6070	7581	15223	20435	15925
Commercial Banks	39774	52411	'125859	140382	88765
Total	69560	86981	180486	203297	137760

Table 19.2 shows that institutional credit to rose significantly from Rs. 86,981 crore in to as high as Rs. 203297 crore in 2006-07 a rise of

133 percent the government laid down the target for agricultural credit in 2005-06 at Rs. 1,41,500 crore. In agriculture the Union Budget for 2006-07, a target of Rs. 1,75,000 2003-04 crore for agricultural credit was proposed.

Table 19.3
Institutional credit flow to agriculture Relative share of different Institutions

Institutions/ Years	**1970-71**	**1980-81**	**1990-91**	**2000-01**	**2004-05**	**2006-07**
Co-operative Banks	'100	6106	49.0	39.4	25	20.90
Commercial	.--	3804	47.6	52.6	65,0	69.00
Regional Rural Banks		-	3.4	8.0	10.0	10.05
Total Credit to Agriculture	744	3,292	9,830	52,827	1,25,309	2,303,297

Source (1) Rakesh Mohan, "Agriculture Crédit in India" EPW, March 18, 2006, & Economie Survey 2007-08.

The "farm credit package" announced in June 2004 stipulated, among other things, doubling the flow of institutional credit for agriculture in the ensuring three years. The credit flow to the farm sector got doubled during two years as against the stipulated time period of three years. The details about the percentage share of agency wise credit flow to agriculture and allied sectors is given in Table 18.1. Share of commercial banks in total institutional credit is 69 per cent followed by co-operative banks with a share of 21 per cent. Regional Rural Banks account for just about 10.05 per cent of total credit disbursement. It is important to highlight the continued importance of short terms credit which accounts for two third of the total institutional lending to agriculture.

To provide adequate and timely support from the banking system to the farmers for their cultivation needs, a kisan credit card (KCC) Scheme is in operation since August 1988 for short term and medium terms loans. About 705.55 lakh KCC have been issued up to November 2007. The scheme has been extended to all type of loan requirements of borrowers of State-co-operative Agriculture Rural Development-Bank (SCARDBs). It covers short-term/medium term credit and long term credit and a reasonable component of consumption credit within the overall limit sanctioned to the borrowers.

19.3.1 Institutional credit

The Institutional credit system for agriculture comprises the following agencies:

1. Co-operative Credit Societies
2. Commercial Banks
3. Regional Rural Bank
4. National Bank for Agriculture and Rural Development (NBARD
5. Reserve Bank of India (RBI)

The first three are field level agencies which are refinanced to the extent necessary by NABARD as the apex institution of the national level. RBI is the Central Bank of the country and have therefore, a crucial role in monitoring the supply of agricultural credit as a part of overall monetary and credit policy.

Co-operative Banking Structure

The co-operative credit structure consists of two wings viz, short term and long-term Short-term credit structure in federal ‘in character, based on 3 tier pattern with the apex banks at the state level. Central Cooperative: Bank at the district level and Co-operative Societies at the village level. The state Co-Operative Banks are at the middle level (district level). The latter in turn finance the Co-operative Credit Societies at the base level. The long term Co-operative credit is either unitary or federal in character with State. Land Development Banks (SLDBs) are the apex institutional at the state level and Primary Land Development Bank (PLDBs) or branches of SLDBs at the taluka/block level. The field level Cooperative institutions which provide credit to individual borrowers consist of (i) Primary Agricultural Credit Societies providing both short and medium-term to their members and PLDBs or branches of SLDBs dispensing long-term credit to their members.

19.3.2.1 Co-operative Credit Societies

History of co-operative credit is- very old in India. The co-operative movement was initiated in 1904 through the establishment of co-operative credit societies. These societies were organized to relieve the indebtedness of rural people and promote thrift. But, during pre-independence era progress of co-operatives was very-very slow. It can be judged from the fact and during 1951-52 co-operative provided only 3.1 per cent of total, rural credit. But, after independence co-operative credit system was strengthened in order, to take care of the needs of the weaker sections of our society. As a result co-operative provided 15.5, 22.7 and 47 per cent of total agricultural credit in 1961-62, 1970-71 and 1991-92 respectively. The amount of short term and medium-term credit advanced by these societies increased from Ks. 23 crores in 1951- 52 to Rs. 203 crores in 1961-62, to Rs. 1425 crores in 1979-80 and to Rs. 4230 crores during 1991-92. For the year 1992-93, the target of short and medium-

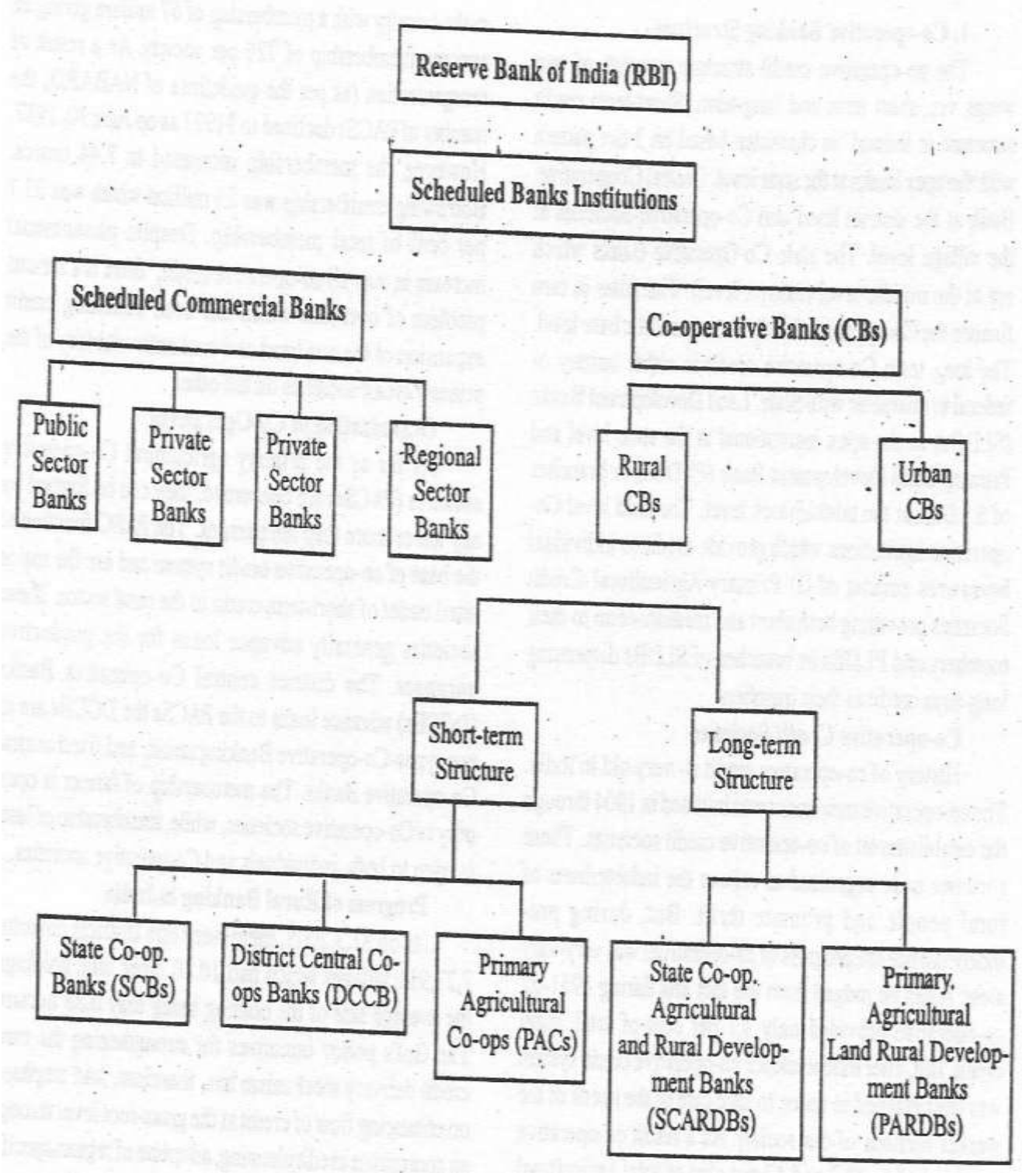
term loans in Rs. 5537 crores. These figures show the performance of co-operative societies during the past forty years. At the end of June, 1984 there were about 92,000 societies in the country with a membership of 67 million giving an average membership of 720 per society. As a result of reorganization (as per the guidelines of NABARD; the number of PACSs declined to 91927 as on June 30,1987. However, the membership increased to 7.44 crores. Borrowing membership was 23 million which 33.7 per cent of total membership was. Despite phenomenal increase in overall co-operative credit,' there is a serious problem of overdue which has been 'inhibiting credit expansion of the one hand and economic viability of the primary credit societies on the other.

Organization of Co-Operatives

As for as the primary agricultural Co-operative societies (PACSs) are concerned, they can be formed by any ten or more than ten persons. The PASC function at the base of co-operative credit system and are the major retail outlet of short-term credit to the rural sector. These societies generally advance loans for the productive purposes. The district central Co-operative Banks (DCCBs) advance loans to the PACSs the DCCBs are of two types-Co-operative Banking union, and fixed central Co-operative Banks. The membership of farmer is open only to Co-operative societies, while, membership of later is open to both, individuals and Cooperative societies.

Progress of Rural Banking in India

As on 31.3.2005, there were 606 districts covering 7,27,911 villages which had 10.60 crore land holdings; the average size of the holding being only 0.88 hectare. The Gol's policy initiatives for strengthening the rural credit delivery mechanism has, therefore, laid emphasis on enhancing flow of credit at the grass-root level through an appropriate credit planning, adoption of region-specific strategies, rationalization of lending policies and procedures and reduction of cost of rural borrowings. Keeping, in view the constraints in the accessibility of rural finance by the farmers of the country the credit policy emphasized on the disbursement of rural credit through a multi-agency network consisting of Commercial Banks (CBs), Regional Rural Banks (RRBs) and Co-operatives. The organization of rural credit is explained


Reserve Bank of India (RBI)
Scheduled Banks Institutions
Scheduled Commercial Banks
Co-operative Banks (CBs)
Public Sector Banks
Private Sector Banks
Private Sector Banks
Regional Sector Banks
Rural CBs
Urban CBs
Short-term Structure
Long-term Structure
State Co-op. Banks (SCBs)
District Central Co-ops Banks (DCCB)
Primary Agricultural Co-ops (PACs)
State Co-op. Agricultural and Rural Development Banks (SCARDBs)
Primary. Agricultural Land Rural Development Banks (PARDBs)

Organization of Rural Credit

As at end March 2006, there were approximately 1,08,779 village level Primary Agricultural Credit Societies (PACs). 367 District Central Co-operative Banks (DCCBs) with 12,858 branches and 31 State Co-op. Banks (SCBs) with 953 branches providing primarily short term agricultural credit in the country. The long term cooperative structure consists of 20 State Co-operative Agricultural and Rural Development Ranks (SCARDBs) with 2609 operational units, comprising 788 branches and 727 Primary Agricultural and Rural Development Banks (PCARDBs) with 1049 branches (RBI, 2006). As at end- June 2006 there were 30,754 rural Commercial Bank branches out of which *21,713* were Public Sector Bank Branches. The inadequacy of credit flow to rural areas during mid-1960s continued to draw attention of the RBI and compelled the Government to constitute a Rural Credit Committee to have a comprehensive review of flow of agricultural credit. The Committee and the subsequent Committees on Rural Credit felt the need of a vibrant rural banking system with active and complementary role of Commercial Banks along with Co-operatives in extending rural credit. The opening up of rural bank branches was not only due to the supply-side push through government's social control over rural banking but also due to the increase in demand because of population increase and diversification of agro-products in the post-green revolution era.

The aggregate institutional credit (Short Term and Long Term) issued for agriculture and allied activities in India by co-operatives constituted as high as 70.9 per cent during 1975-76. This marked a sharp decline trend and was as paltry as 21.8 per cent of total credit disbursed during 2005-06. While the loans issued by State Governments and Regional Rural Banks (RRBS) were 4.9 and 0.1 per cent during 1975-76, the same was 0.2 and 8.4 respectively during 2005-06. The loans issued by Commercial Banks to total disbursement in 1975-76 and 2005-06 were 24.2 and 69.5 respectively.

As rural credit deals with millions of small borrowers, it requires not only a constant attention of the policy-makers and grass-root implementers but also the active base-level participation of the client farmers for appropriate utilization of their loaned amount.

Considering the importance of flow of credit to rural areas in the alleviation of multi-dimensional poverty in the respective regions, the RBI in 1996 included financing to small informal groups of poor called Self-Help Groups (SHGs) as a mainstream activity of banks under their priority sector lending through various models of micro- finance. Subsequently the GOI bestowed national priority to the micro-finance initiatives through its recognition in the Union Budget 1999. In addition to the introduction of innovative credit schemes like Kissan Credit Card (KCC) and Crop Insurance Schemes, the government felt the emerging need of developing micro-finance sector in the country. While the RBI was in charge of formulating regulation guidelines for the Micro-Finance Institutions, the

Government allocated budgetary support through setting up of Micro-credit Development Fund.

Long-Term Co-operative Credit Land Development Banks

In addition to short-term and medium-term credit farmers need long term credit for permanent improvement of and, purchase of agricultural implements and replaying of old debts etc. To cater these needs a separate Cooperative organization known as Land Development bank (LDB) has been set up. Starting with the pure land mortgage banking in 1919, the LDB have new become Agricultural and Rural development bunks and their role and participation in providing credit has increased. In addition to the fields mentioned above LDB now also grant credit for non-farm activities such as rural cottage industries and small enterprises in rural areas.

At the end of June 1986, there were SLDBs in 19 states and Union territories with 2447 PLDBs. The loan issued by LDB in 1991-92 was Rs. 1008 crores and target for the year 1992-93 was Rs. 1133 crores. Although the performance of LDBs in reaching the plan targets has been satisfactory and their progress in lending steady, But after the adoption-of multi-agency approach in agricultural credit the performance of LDBs with respect to their share in agricultural lending has shown a declining trend.

Co-operative Credit: An Evaluation

The'e has been an extensive expansion both in coverage and operations of Co-operative credit societies in the post independence period. Each and every Committee working Group which as reported on the rural credit system in India since the Royal Commission on Agriculture (1928) has favoured from the point of view of structural appropriateness that their is not an alternative to Co-operatives at the village level for the provision of rural Credit. 'The Rural credit survey Committee (1954) and the All India Rural Credit review Committee (1969) strongly suggested for the success of the Co-operative Credit structure. However there are important snags and short comings in the Working of PACSs and they have failed to acquire .and dynamism needed to discharge the responsibilities reposed in them. 'The major deficiencies in the working of PACSs are as follows:

1. Most of the PACSs at present are almost entirely dependent upon DCCBs and have failed miserably in mobilizing rural saving. This is contrary to the basic features, of Cooperative banking system. This has made the Co-operatives an inefficient and static system
2. The basic problem of PACSs is the high level of overdue. The percentage of overdue to demand at the level of DCCBs was reported to be 30 per cent in 1995 and 31 per cent in 1996. More than 50 per cent of overdues of PACSs are more than three years old indicating the seriousness of the problem. This practice has clogged the process of

credit recycling.

3. At the end of 1984-85 only 56.5 per cent of PACSs worked at profit. Rests of the societies are almost non- viable units.
4. Large farmers/landowners because of their strong socio-economic position have cornered greater benefits from Co-operatives. This is just opposite to what the planners intended. For example, in 1994-95 farmers having holding more than 2 hectares received only 32 per cent of provided by the PACSs. The Kerala received 1/4 of the loans provided by PACSs in 1994-95. Total loan advanced while the share of tenants, sharecroppers and landless labourers was only 4.3 per cent,
5. There is a considerable regions disparity in the distribution of credit by Co-operative societies among different states.

For instance, during 1994-95 six states (A.P, Gujarat, Maharashtra, Kerala, and Punjab, TN) received as much as 78.8 per cent of loans. In addition to above problems, there are other problems such as the IDBs face the problem of restricted lending eligibility, high cost of raising ordinary debentures, very less powers under the Cooperative law and poor management and lack of enthusiasm and dedication among members.

The Khusro Committee (ACRC) has suggested a number of recommendations for revitalizing the Cooperative credit system. There include revitalize PACSs, steps to improve the working of weak DCCBs and SCBs, steps to coordinate the activities of the differentials of the Co-operative structure etc. The committee has also suggested setting up the national Cooperative Bank of Indian which will function as a bank owned and operated by Co-operative credit system. It will function as a consortium of the Co-operative Banking system.

19.3.1.2 Commercial Banks and Rural Credit

For a long period of time, commercial banks in India confined their operations to urban areas. One of the long standing complaints against them was their failure to help the agricultural sector with their funds. This can be explained by the subsistence nature of agriculture and its un-organized, individualistic functioning. Its heavy dependence on rains makes it an uncertain and risky venture. After the Rationalization of 14 major commercial banks in 1969 and 6 more banks in 1980 banks opened a large number of branches in rural areas and have increased their advances to agriculture considerably. In June; 1969 about 22 per cent of total commercial bank branches weré in rural areas while June 1998 this figure increased to 51.0 per cent. During the period mentioned above, total number of bank branches increased-by 8 times, while the number of rural branches increased by eighteen times.

With the substantial expansion of rural branches of commercial banks there was a large scale-deposit mobilization and increased participation in rural credit. As at the end-March 1996 this had risen to

Rs. 22,846 crore accounting for 12.4 per cent of total bank credit. During 1995-96 of the total institutional, credit of Rs. 24,889 crore, the share of commercial bank was Rs. 10,583 crore (42.6 per cent). As for as short term credit is concerned the commercial banks accounted for 35 per cent of total disbursement of institutional credit in 1995- 96 (Rs. 5.975 crore out of Rs: 16,886 crore). While their share in medium/long term credit- stood at 58 per cent that year.

Commercial bank advances to agriculture has also increased appreciably. The direct finance to agriculture which was Rs. 40 crores during 1969 had risen to Rs. 15082 crores at the end of March 1990. During 2006-07 of the total institutional credit of Rs. 203297 crore, the share of commercial banks was Rs. 140382 crore (69.0) per cent. The commercial banks are mandated to achieve certain targets and sub-targets under priority sector lending. Forty per cent of total credit is required thus to be channeled to identified priority sector such as agricultural, small scale industry, small business etc. Directs finance to agriculture and allied activities is to reach a level of 18 per cent of net bank credit and credit for weaker sectors 10 per cent. As against tins, total priority sector advances stood 41.7 per cent in March 1977 while the share of agriculture in total bank credit stood at 16.4 per cent.

One of the objectives of nationalization of commercial banks was to increase flow of credit to weaker sections of our society. Today Commercial banks are involved in various poverty alleviation programs such as IRDP, Differential Rate, of Interest Scheme, SSEUY, etc.-' Under IRDP about 40 percent of total assistance is being provided to primary sector.

The above discussion shows that the commercial banks have played an important role in providing rural/ agricultural credit after nationalization. After the fulfillment of branch expansion objective there has been shift in policy from further expansion to Consolidation and from quantitative to qualitative improvement. In order to encourage the banks for financing agricultural, credit the bank Operational base has been widened in the rural areas and there are a distinct-bias for rural centers in branch licensing policy of the Reserve Bank, liberal refinancing facilities have been provided to the banks and under the lead bank scheme area specific credit plans were prepared and banks took to systematic lending.

Operations of Commercial Banks, a Critical Review

Despite, the good performance of commercial banks in the field of rural credit discussed above their operations have initiated a lot of criticisms. The main points of criticism are the following:

1. Although banks have channeled substantial flow of credit to weaker sections and rural areas which has created some strain in the system due to rapid expansion and diversification. This has resulted into the deterioration in the quality of scheme preparation particularly under the anti-poverty programs.
2. Monitoring of a large number of small advances in rural areas in

time consuming and manpower intensive and hence costly proportions. Thus the supervision of rural advances come to be neglected.

3. Due to opening of large number of branches in rural areas with inadequate business potential, increase in non-performing advances have adversely affected the profitability of bank.
4. The recovery position of Commercial banks is bad. The waiver of agriculture loans in 1990 had seriously accentuated the problem of recovery. During the year 1992-96 recovery has varied between 54 to 62 per cent indicating, in turn, that overdue have been as high as 38 to 46 per cent. For instance, in 1995, as against the demand ofRs. 11,073 crore by the scheduled commercial banks, the recovery was Rs. 6,629 crore indicating over dues worth Rs. 4,444 crore. .. '
5. There has been unhealthy competition among various credit institutions as new branches of banks has been established in the areas already well served by Cooperatives etc. Also there is lack of Co-ordination between various Commercial banks and Cooperatives.

As noted by ACFC, if Commercial banks are to operate effectively in rural areas in future, they must tackle certain issues like reduced staff productivity increase in over dues lower staff motivation etc.

19.3.1.3 Regional Rural Banks

The Working Group of Regional Rural Batiks set up by the Government of India in 1975, recommended the formation of RBBs to supplement the efforts of the commercial banks and co-operatives in extension credit to weaker sections of the rural community. The Intention, in having these new banks was that there should, in the Indian context, be an institutional divided which combined the local feel and familiarity with the rural problems which the co-operatives possessed and the degree of business organization and modernized outlook which the commercial banks had, with a view to reaching the rural poor more extensively.

Partners by GOI, Government and sponsor bank in the equity in the ratio 50, 15 and 35, these new banks were conceived as low cost district banks exclusively to meet the credit needs of the target group, i.e. small and marginal farmers, agricultural labourers, artisans and other rural residents to small means.

RRBs were initially set up in 1975. Between 1975 and 1996 the RRBs increased their number from 6 to 196 their branches from 17 to 14516 and districts covered from 12 to 425. Admittedly, the RRBs have achieved considerable degree of success in taking the banking services to the very remote areas which had hitherto remained un banked, and making available institutional credit to the weaker sections in these areas.

These indices of fast progress, however, do not reveal the whole story. The various Working Groups on RRBs had brought out the deficiencies in their working and in particular their inability to operate on a viable basis. A closer look, on their performance to evaluate their impact on the rural credit structure reveals that RRBs have developed

some serious organizational problems. Multiagency control of RRBs has contributed to a lack of uniformity. Second, is the constraint of restricted area of operation and restricted clientele? Third, there has been lack of proper systems and procedures within the institutions of RRBs. Fourth, the process of recruitment and training of RRB staff has not received adequate attention.

Recovery position of RRBs is bad, the overall dues as a percentage of demand stood at 60 per cent in 1992, 54 per cent in 1994 and 39 per cent in 1996. The high incidence of over dues is attributable to a number of internal and external factors. Out of 196 RRBs, a many as 150 had shown losses in each of the previous Five Years many had completely wiped out their equally and reserves and in some the losses were eating into their deposits.

Although weaknesses such as poor recovery, bad management and proliferation of unsound loans are common to the other institutional structure in the credit system, what really places RRBs on a different footing is their built-in non-viability. Experience has shown that the objective of serving the weaker sections effectively could be achieved only by self-sustaining credit institutions. RRBs, structured as they are, are not institutions which could fulfill this role.

An analysis of these factors shows that weaknesses of RRBs' are endemic to the system and non-viability is built into it. The RRBs would not be able to serve the interests of the target group in the manner expected of them. Hence, there, can be no place they should be merged with the sponsor banks.

The possibilities of letting the RRBs continue with certain improvements such as enlargement of their share capital, provision of bad debt reserve providing somewhat large access to more resilient customers and even giving them a subsidiary status to the commercial banks have been examined.

Under the circumstances, the only feasible alternative .to achieve this and would be to merge the RRBs and their branches with the concerned sponsor banks by making necessary amendments to the existing law. No major hurdles are seen in such merger arrangeraient. The share of RRBs (which account for 32 per cent of the total number of rural and semi-urban branches of the banking system) in rural lending is barely nine per cent and in total business 6.4 per cent, whereas the commercial banks (which accounted for the balance of 68 per cent of the branches) have as much as 91 per cent of the share of rural lending and 94 per cent of the total business.

Thus, a merger would not only leave no void but on the other hand the commercial banks which are stronger institutions may be in a position to step up their share in rural lending so far catered to by the branches of be able to strengthen their delivery system but also enhance their deposit raising capability. The 'service area concept' could be implemented more effectively with such a merger. More important than all this, the scope for

internal cross- subsidization would be widened and losses on account of having (o serve the weaker, sections could be offset by earnings from the higher interest yielding loan portfolio of sponsor banks. The merger of RRBs with commercial banks will offer a solution to the problem of insolvency and the in-'built rod-viability of the majority of RRBs. The merger would also solve the problem of accumulated losses of the RRBs. Further, by providing the structural arrangement, it will have a built-in self-strengthening and internal cross-subsidization capability and would remove the innate weaknesses of RRBs. The emerging system will be able to achieve the goal of creation a strong viable credit system in which the interests of the small man would be better served.

Consequent upon the recommendation of the working group, 5 RRBs were initially set up in 1975. Their number later rose to 196. In 2006-07, RRB's provided Rs 20,435 crore as credit to the agriculture sector this was 10.0 per cent of institutional credit to agriculture.

19.3.1.4 National Bank for Agriculture and Rural Development (NABARD):

In pursuance to the recommendations of CRAFICARD NABARD was established in July 1982 for giving undivided attention and purposeful direction to integrated rural development. The NABARD was visualized as a center piece for the entire rural credit system at the national level and as a provided of supplemental funding to rural credit institutions. The institution operates within the policy framework of RBI and GOI. part from providing financial' assistance to NABARD, RBI has continued to maintain close links with it.

Several deficiencies in -the organization structure have been examined by the Consultants and they have made several recommendations. These may be adopted with such modifications as NABARD may consider appropriate. Similarly, Consultants have made-several recommendations on recruitment, promotions and transfer policies, etc. NABARD may tackle these issues taking into account the need for a change in its image and identity which can be brought about only through better employee motivation and performance. Suggestions of Consultants regarding delegation of authority, preparation of operation manuals, induction of change in the organizational culture and manpower development, etc., may be considered in this light.

Functions of NABARD:

The main functions of NABARD are as follows:

1. It works as an apex body to look after credit requirements of rural sector.
2. It has authority to oversee the functioning of cooperative sector through its Agricultural Credit Department,
3. It provides short term credit (up to 18 months) to state Co-operative Banks for seasonal agricultural operations, marketing of crops,

purchase and distribution of fertilizers etc.

4. It provides medium term credit (18 months to ^7 years) to state Co-operative Banks and RRBs for approved agricultural purposes, purchase of shares of processing societies and conversion of short term crop loans into medium term loans in areas affected by natural calamities.
5. It provides medium and long term credit (not exceeding 25 years) for investment in agriculture under systematic lending of State-Cooperative Banks, Land Development Banks, RRBs and Commercial Banks.
6. It provides long term assistance in the form of loans to State Governments (not exceeding 20 years) for contribution to share capital of Co-operative credit institution.
7. It has been entrusted with the responsibility of inspecting District, and State-Cooperative banks and RRBs.
8. It maintains a research and development fund to be used to enhance research in agriculture and rural development.

Performance of NABARD:

NABARD being an apex institution does not deal directly with farmers and other rural people. It grants assistance to them through the Co-operative banks, commercial banks and RRBs. On the date of its establishment loans and advances issued by RBI and outstanding against State Co-operative Banks and RRBs aggregating Rs. 759 crores were transferred to NABARD. An idea of NABARD's assistance to agriculture can be had from the following details:

1. The credit limits sanctioned by NABARD to the state Co-operative Bank for financings SAD aggregated to Rs. 5165 croie in 1996-97,8.7 per cent more than Rs. 4750 crore sanctioned in 1995-96. The short term credit limits for SAD sanctioned to the RRBs during 1996-97. stood al Rs. 967 crore.
2. NABARD sanctioned medium term credit limits amounting to Rs. 1 crore daring in the calendar year 1996. for agricultural purposes. During 1996-97 a sum of Rs. 105 crore was issued to enable SCBs and DCCBs to convert short term agricultural loans granted to drought affected farmers, floods etc. into medium term loans.
3. As for as long term refinance assistance under various schemes is concerned, NABARD sanctioned long term credit limits amounting to Rs. 101 crore in 1996-97 to the state governments for enabling them to contribute to the share capital of Co-operative Credit societies.
4. For the development and promotion of agricultural investment in less developed and for under banked states a
5. Sum of Rs. 3-523 crore was disabused during 1996-97.
6. NABARD has set up a R & D fund for granting assistance to SLDBs, SCBs, RRBs, and various other institutions.
7. NABARD provides refinance assistance under IRDP for schemes like

irrigation development, dairy development, liver stock land development and other services.

Apart from providing credit to agriculture NABARD is also providing assistance to small scale industries, cottage and village industries industrial cooperative societies etc. According to Khusro Committee on the working of NABARD, the bank has performed well as far as refinance its function is concerned. If the bank has to fulfill its leadership role, it has necessarily to enlarge its activities much beyond those of refinance. It should emerge as the primary source of inspiration, of conceptual guidance of information and research in all matters relating to rural credit.

19.3.1.5 Reserve Bank of India (RBI)

RBI has been occupying a unique position in the development of credit delivery system in the field of agriculture and rural credit. Since its inception in 1935, RBI has maintained a specialized agricultural credit deportment with expert staff of study the problems of agricultural credit and rural development RBI provided refinance assistance to the co-operative banking structure and RRBs, by way of short and medium term loans. Also RBI had established in 1963 the agricultural Refinance and Development Corporation as its subsidiary for providing refinance assistance and guidance to the different financing agencies in the field of term credit for investment in agriculture. A major part of the role of RBI in relation *of* rural credit has been passed on to NABARD in July, 1982 and RBI extends a credit line to NABARD.

19.3.2 Non-Institutional Sources

19.3.2.1 Money-Lenders

There are two types of money-lenders in rural areas. There are agriculturist money-lenders who combine farming but they carry on money tender as side business. The village shopkeeper also acts as a money-lender. Besides, there are professional moneylenders whose only occupation or profession is moneylenders.

The cultivators depend upon the money-lender for their requirements of cash. Over the last few years, the importance o. the money-lenders as suppliers of cash to the farmers is declining rapidly. For instance, according to the All-India Rural Credit Survey undertaken in 1951, the money-lenders accounted for nearly 70 per cent of all rural credit. According to the Reserve Bank for the year 1991 they accounted for 6.6 per cent of rural credit. This fact shows clearly that 'the money-lenders are being ground to institutional agencies. However, there are many reasons for the preponderance of the village money-lenders in rural areas:

a. The money-lender freely supplies credit for productive and non-productive purpose, and also for short-term and long-term requirements of the farmers.

b. He is easily accessible and maintains a close and personal contact with the borrower, often having relations with family extending over generations.
c. His methods of business are simple and elastic.
d. He has local knowledge and experience and therefore can land against land as well as against promissory notes. He knows how to protect himself of default.

Malpractice's of the Money Lender: There are various malpractices's which are associated with the village money-lenders. They obtain bonds and promissory notes from their debtors on false practices, and enter in them sums larger than actually lent. They deduct exorbitant premiums. They give no receipts for repayments and often they den such repayments. They charge high rates of interest-often 24 per cent and over. The money-lenders have been responsible for many of the ills of Indian agriculture because their main interest has been to exploit the farmers for their benefit and grab their lands. As the Report of the All-India Rural Credit Survey admirably summed up "Private credit generally unsuitable is wholly unsuitable in the context of planning for larger production".

19.3.2.2 Traders and Commission Agents

Traders and commission agents supply funds to farmers for productive purpose much before the crops mature. They force the farmers to sell their produce at low prices and they charge a heavy commission for themselves.

This source of finance is, particularly important in the case of cash crops like cotton, groundnut, tobacco, etc., or in the case Of fruit orchards like apples and mangoes The share of traders and commission agents in agricultural finance has declined from 5.1 per cent in 1951-52 to 2.4 per cent of rural credit in 1991. Traders and commission agents may be bracketed with money-lenders as their lending to fanners is also at exorbitant rates and has other undesirable effects too.

19.3.2.3 Relatives

Farmers generally borrow from their own relatives cash or kind in order to tide over temporary difficulties, These loans are generally contracted in an informal manner, they carry low or no interest and they are returned soon after the harvest. But, this source of finance is uncertain and, with increasing needs of modem agriculture, the farmer cannot depend upon tins source to any large extent Actually the importance of this source of rural credit is declining. In 1951-52 borrowing from relatives accounted for 11 per cent but in 1991 it accounted for 6 per cent only.

19.3.2.4 Landlords and Others

Farmers, particularly, small farmers and tenants, depend upon landlords and others to meet their financial requirements. This source of finance has all the defects associated with money-lenders, traders and commission agents. Interest rates are exorbitant. Often the small farmers are cheated out of their land. The landless laborers are forced to become bonded slaves. The share of landlords in total credit was 4 per cent during 1991. Serious defects of private sources of agricultural finance are: use of credit for un productive consumption purpose, nigh rates of interest and hence inability of farmers to return the principal and meet the interest charges, difficulty of small farmers to raise credits etc.

19.4 MICRO-FINANCE AN ALTERNATIVE RURAL CREDIT DELIVERY MECHANISM

Concentrations of monopolistic power, higher interest rates on loans, insistence on collaterals and exploitation through undervaluation of collaterals have been the trademarks of the informal financial sector. The inherent limitations of the formal and informal financial sectors in providing financial sector to the needy and poor have led to the emergence and extension of micro-credit programmes in the developing world. The micro-credit programme was initiated with the objective of providing poor people with credit removed collaterals. Thus, micro credit has been defined as the extension of small loans to be given in multiple doses based on the absorption capacity of the needy beneficiaries, who are too poor to qualify for formal bank loans, as they have no assets to offer as collateral security against loans.

19.4.1 SHG and Micro-credit

Micro-credit has worked largely through SHGs in general and women groups in particular. Since the SHG is a small group of 10 to 20 persons drawn from relatively homogenous backgrounds, the members, who join the group, know what benefit they would attain from the group through micro-credit. Micro-credit has to be utilized in such a way that it benefits the SHGs to improve the quality of life of their members and their productivity to earn a sustainable income. The SHGs need to firm up their financial and economic norms meant for selection of appropriate beneficiaries' and subsequent disbursement of credit to the needy. The borrowing member chooses economic activities for income-generation purposes and knows clearly the goals or objectives he has to attain for his own sustenance and stability of the group which he/she belongs to. Here, the members through participative decision-making process priorities their goals in terms of their urgency. All the members are aware of their individual needs so as to converge their needs with the group objective. They can utilize team effort in addressing their problems and issues while approaching their target. Unity, group effort and team-work help them in achieving their goals.

19.4.2 Models of Micro-Finance

There are several models of micro-finance prevalent in India. Out of these, the most important ones are - Model I where SHGs are financed directly without the intervention/ facilitation of any Non-Government Organization (NGO); Model II, wherein SHGs are financed directly with the facilitation extended by formal or informal agencies Self- Help Promoting Institutions (SHPIs) viz., Government, Commercial Banks and Micro Finance Institutions (MFIs) like NGOs, Non Bank Financial Intermediaries (NBFIs) and Co-operative Societies; in Model III financing takes place through NGOs and MFIs as facilitators and financing agencies and Model IV is the Grameen Bank Model, similar to the model followed in Bangladesh.

In India, Model II of micro-finance constitutes as much as three-fourths of the total micro-financing where SHGs are formed and nurtured by facilitating agencies like the Government and NGOs and are linked directly with banks for the purpose of receiving credit.

The key problem of those dependent on agriculture, specially the poor, small and marginal fanners and weaker sections of the society, is finance. Therefore, in each Plan period, there has been a continued emphasis on. rapid and progressive institutionalization for supply of timely and adequate credit-support to enable 'those engaged in agriculture to adopt modem agricultural technology and improved agricultural practices for enhanced growth, production and productivity. The traditional concern about accessibility of agricultural credit to the needy rural inhabitants is still alive even after increasing bank branch network, improving Co-operative Banking structure, evolving specialized rural banking institutions (i.e., Regional Rural Banks) and the setting up of various financial agencies like the National Bank for Agriculture and Rural Development (NABARD) in 1982. The impressive quantitative expansion of bank branches and other rural formal financial intermediaries has not really helped in developing an atmosphere of hassle-tree qualitative credit flow in the rural economy. We have been focusing on co-operative movements, priority sector lending, operation, supervision and monitoring of rural credit by *designated rural* financial agencies for the smooth, adequate and timely flow of credit to the rural people. With the disappointing result of these formal agencies, we have now started depending on an innovative model of credit delivery mechanism, popularly known as micro-finance. This micro-finance (MF), after the so-called Grameen Bank revolution in Bangladesh, is the buzz-word these days and is treated as a suitable alternative to formal banking in rural India keeping in view its cost-effectiveness, easy and hassle- free accessibility and in-built process for loan allocation and its recover Micro-finance which includes, inter alia, micro credit and micro savings, is increasingly, advocated by country planners to ensure timely and adequate credit to small and marginal farmers and to alleviate poverty. It is treated as an effective employment generator in rural areas having capability to sustain

the income of the households by ensuring their opportunities to work.

19.5 RURAL CREDIT IN POST-REFORM ERA

In the post- financial reform period, rural credit got less than the desired level of attention from the CBs and RRBs. To augment credit flow to the agriculture and allied sectors the RBI had introduced the target of 18 per cent of the net bank credit for lending to agriculture in 1989 which the banks were required to meet by March 1990. Unfortunately only 19 per cent of total public sector commercial banks and 7 per cent of total private sector commercial banks could achieve it by 2003 There are also other alarming trends like the rural borrowers' accounts and the credit deposit ratio in rural areas in addition to the decline in the number of rural offices in post-1992 period (RBI, 2006).

19.6 REVIVAL OF AGRICULTURAL CREDIT IN THE 2000S

In the 1990s, there was (a) large scale closure of commercial bank branches in rural areas; a widening of inter-state in equalities in credit provision; a sharp fall in the growth of credit flow to agriculture and increased sidelining of small and marginal farmers in the supply of agricultural credit.

A "comprehensive credit policy" was announced in June 2004, which included the commitment to raise agricultural credit flow by 30 per cent every year. From 2004 onwards, it is claimed that the flow of credit to agriculture has been increasing at a rapid rate. Between 2000 and 2006, agricultural credit grew by 20.5 per cent per annum, which was, significantly higher than the growth rate recorded for the 1990s. About one third of the increase in credit flow to agriculture between 2000 and 2006 was on account of the increase in indirect finance. The entire growth of indirect finance to agriculture in the 2000s originated from a major expansion of loans with a credit limit of more than Rs. 10 crore, and particularly, more than Rs. 25 crore. Direct finance to agriculture also grew rapidly in the 2000s. There was a major rise in the share of direct advances with a credit limit of more than Rs. one crore between 2000 and 2006. The share of direct advances with credit limits "between Rs. 10 crore and Rs. 25 crore" as well as above Rs. 25 crore doubled during 2000 and 2006.

Exercise 19.1

Q1. What are the credit and supervisory functions of NABARD?
Q2. What do you understand by Micro-financial institutions?
Q3. Which one dominates the agriculture credit – Short-term or Long-term?

19.7 SUMMARY

The rural credit systems have under gone several changes during the last decade. There has been an increasing trend towards institutional rural financing. The financial institutions are under stress, particularly since the financial sector reforms of 1992-93. The credit policy should continue to emphasize small borrowers. The commercial banks have started feeling shy of lending to agricultural sector and rural poor. The provisions of mandatory lending for priority sector and the agricultural activities should continue. The banks should take the help of NGOs and local formal institutions in their lending programmes to reduce the transaction costs and improve recoveries. The financial cum consultancy approach needs to be followed. For meeting the credit needs of the poor, the programmes like linking of self-help groups (SHGs) with lending agencies are to be further strengthened.

19.8 GLOSSARY

- **Productive:** Productive loans are the loans that are related to agricultural production and economically justified. For example purchase of tractor, land, seeds etc.
- **Unproductive:** Unproductive credit are used for personal consumption and unrelated to productive activity for example loans for expenditure on marriages, religious ceremonies etc.
- **Short-Term:** It refers to the loans required for meeting the short-term requirements of the cultivators. These loans are generally for a period not exceeding and repaid after the harvest. For example loans required for the purchase of fertilizers, HYV seed, for meeting expense on religious or social ceremonies etc.
- **Medium-Term:** These loans are for a period up to 5 years. These are the financial requirements to make improvements on land, buying cattle or agricultural equipments, digging up of canals etc.
- **Long-Term:** These loans are for a period of more than 5 years and are generally required to buy additional land or tractor or making permanent improvements on land.

19.9 ANSWERS TO SELF CHECK EXERCISES

Exercise 19.1

Answer 1. Refer to Section 19.3.1.4.
Answer 2. Refer to Section 19.4.
Answer 3. Refer to Section 19.3.

19.10 SUGGESTED READINGS

1. R.N. Soni: *Issues in Agricultural Economics*, Shoban Lal Nagin Chand & Co., New Delhi, 1992.
2. Mishra and Puri: Indian Economy, Himalaya Publishing House New Delhi, 2006.
3. H. B. Shivamaggi: Credit for agriculture and Rural Development and Articles in a book Indian Agriculture Development since Independence; oxford and IBH Publishing Co. Pvt. Ltd. Delhi, 1986.
4. A. Ramkumar, Pallavi Chavan: Revival of Agriculture Credit in 2000s: A Explanation EPW, Vol. XLII, No. 52, (2007).

19.11 TERMINAL QUESTIONS

Q1. “There is an increasing trend towards institutionalization of agriculture credit in India”. Do you agree with the statement?

Q2. Which institutional source accounts for major proportion of agriculture credit in India?

UNIT-20
INTEGRATED RURAL DEVELOPMENT PROGRAMME

STRUCTURE

20.0 OBJECTIVES

After going through this lesson you will be able to:

- Explain the Integrated Rural Development Programme (IRDP) Scheme
- State the Objectives of IRDP
- Elucidate the impact of IRDP
- Present the Critical Evaluation of IRDP

20.1 INTRODUCTION

At the time of independence, India inherited an economy which was characterized by high pressure of population, low level of productivity and income, extreme institutional rigidities and woefully inadequate infrastructure. From the very beginning of planning in 1951 the policy makers in India have continued to accord a high priority to agricultural development in successive plans. The policies and strategies of rural development in Independent India were influenced by the objective conditions obtaining in the country at the time of independence mentioned above.

20.2 THE FIRST DECADE OF PLANNING

The first decade of planning constituted an important period of rural development policies in India. The, emphasis was on growth by focusing on factors promoting savings and capital formation. There was reliance on the trickle down and poverty reducing, potential of the growth process. The policies for promotion of equity were oriented largely to general socio-economic development dimension rather than targeted on poverty, per se. Community Development Programme, Extension

Service, Panchayati Raj, Cottage and Village Industries, - etc. were all aimed at bringing about all round development of the community including weaker sections Attempts were also made to-emancipate economically weaker sections through land reforms and setting of minimum wages but in substance these policy measures although possessing strong economic rationale were largely socio-political in character.

Food shortage and drought conditions in mid-sixties forced a shift in the country's rural development policies from a broad based community development approach to sharper focus on intensive agriculture' development. The thrust of agricultural growth policy saw a decisive shift of emphasis from institutional reform to technological improvement and introduction of green revolution technology in agriculture. The technology intensive green revolution, however, remained confined to about one third of the country due to infrastructural and institutional constraints. It therefore brought in its trail 'widespread' disenchantment caused by widening disparities in production and income level.

It was against this backdrop that target group oriented policies were introduced during the fourth Five Year Plan (1969-74). Which were the pace-setter for poverty alleviation policies of seventies and eighties. In the preface to the Fourth Plan, the then Prime Minister observed "increases in agricultural production have brought us near self-sufficiency in food-grains. But inevitably there are other problems and fresh challenge", to face, rural disparities have increased. The basic aim (of the Plan) is to raise standard of living of the people especially of the less privileged section of society. The over ' riding inspiration must be a burning sense of social justice" (GOI, 1970).

This thrust in policies led to the initiation of various programmes directly targeting the poor sections of the society, and disadvantaged areas of the country during Fourth and Fifth Plan periods. Prominent among, the measures were: Small Farmer's Development Programme, Marginal 'Farmers and Agricultural Labourer's Development Programme. Crash scheme for Rural Employment Drought Prone Area Programme, Desert Development Programme, Hill Area Development Agencies and Tribal Development Programme etc. Besides a National Minimum Needs Programme (MNP) was adopted to widen the Canvas of distributive justice Rural Development during Sixth and Seventh Five Year Plan became synonymous with poverty alleviation. Poverty alleviation was no longer considered as something which could be left to the process of growth alone. Removal of poverty was therefore sought to be achieved through institutional changes and other forms of direct attack approached in addition to higher aggregate growth. As a corollary of this policy shift, rural development and agriculture got separated course but ultimately merging in the same common pool of end objectives.

None of the above mentioned programmes comprehensively covered the whole country, though in certain parts of the country some of these

programmes operated simultaneously for the same targeted groups. Apart from this territorial overlap, the main drawback of these programmes was that they were reduced to mere subsidy giving programmes, not enabling rural poor to achieve a higher level of **income**. The **element of ap**horism reduced their effectiveness. .

20.3 THE INTEGRATED RURAL DEVELOPMENT PROGRAMME (IRDP) AND THE RURAL LANDLESS EMPLOYMENT GUARANTEE PROGRAMME (RLEGP)

The Integrated Rural Development Programme (IRDP) and the Rural Landless Employment Guarantee Programme (RLEGP) was conceived keeping the objective of poverty alleviation in view. The basic objectives of the IRDP are to enable identified rural poor families to augment their, incomes and cross the poverty line through acquisition of credit based 'productive assets. Assistance is given in the form of subsidy by the government and term credit by the financial institutions *for* income generating activities. The IRDP was initially started in 1978-79 in 2,300 development blocks as a programme of total development. In the Sixth Plan, the IRDP was extended to the entire country.

The IRDP conceived as anti-poverty programme aimed at helping die small Land marginal farmers, 'landless' labourers and artisans. It was thought by planners that these people were poor because they possessed neither any productive assets nor any special skill. Therefore IRDP was designed to help the poor by creating new assets for them These assets would include sources of irrigation, bullocks and implements besides inputs like seeds and fertilizers for farming animals for dairy and others animal husbandry activities and tools and training for cottage industries and handicrafts. The basic strategy was self employment of the poor with the help of these assets so that they manage to earn enough to rise above the poverty line.

The subsidy component of the unit cost varies according to the category of the target group family and according to the financial size of the scheme. 'Admissible subsidy is 25 per cent for Small Farmers and 33 per cent for Marginal Fanners, Agricultural Labourers and Rural Artisans.

This is a centrally sponsored scheme funded on 50:50 basis be the centre and the states. It is stipulated that at least 50 per cent of the assisted' families should belong to scheduled Caste and scheduled Tribe Categories. It is also required that at least 40 per cent of those assisted should be women under this programme. About 535 lakh families have been covered up to November 1998 since 1980-81 under the programme out of which coverage of Sc/ST families had been 45 per cent.

The ceiling on subsidy for other categories of households is Rs. 4000 in normal areas and Rs. 5000 in drought prone and desert areas. In the case of irrigation schemes there is no monetary ceiling on subsidy but it

is limited to the percentage **of** subsidy prescribed for different category of beneficiaries above. Though the poverty line in the 'Eight Plan is drawn at Rs. 11000 annual income level of the family, the assistance is targeted primarily at families with annual income below Rs. 8500 to ensure the coverage of poorest of the poor.

Targets of families to be helped every year are distributed in proportion to the distribution of households below poverty line across states During last Six years, annually 2 to 2-5 million 'families arc covered involving an expenditure of Rs. 7 to 8 billion in subsidy and Rs. 11 to 12 billion in the form of term credit. The investment per family varied from Rs. 1642 in 1980-81 to Rs. 6400 in 1990-91. The level of per family investment is currently more than Rs. 17441 compared to Rs. 7100 in 1991-92.

Average investment per family during 7th Plan period was around 5500. A sum of Rs. 800 crore (including Rs. 80 crore for Rural Artisans) has been provided in 1998-99 (BE), an increase of about 45 per cent over 1997-98 (RE).

20.4 IMPACT OF IRDP

IRDP needs to be viewed as a credit based self employment programme with an element of subsidy, rather than as a programme based on supplemented by bank credit. The employments generated from growth as well as from the officially sponsored poverty alleviation programmes apart from their direct and immediate impact by way of increasing the incomes of the poor have important indirect and long-term effects in terms of improving the socio-economic status of the poor. Employment generation has the potential of freeing labour from the dependency Syndrome.

Many, studies across the states in India show that from the early 1980s onwards there was a sizeable expansion in the employment programmes and in the number of beneficiaries covered by them According to Parthasarthy, the proportion of people below poverty line in Andhra Pradesh went down during 1980s despite the slowdown in Agricultural growth. Studies in hardcore poverty areas like Uttar Pradesh and Bihar also show that employment programmes in these slates, their benefits do reach the poorer groups among the poor.

A study conducted in Kannur district of Kerala revealed that only 66.2 per cent of the RDP beneficiaries has positive income generation. The average net income before and after repayment of loan was highest in fisheries followed by tailoring and milk cattle schemes. The poorest income generator was forest based industries, which was significantly inferior to all other\schemes. The programme participation turned out to be the variable having highest positive and significant correlation with net income from IRDP schemes followed by entrepreneurial ability.

The financial impact of the integrated rural development programme in India is assessed in 3 blocks of Tamil Nadu. India, where financial

assistance was provided, to enable the people in the block to purchase dairy cattle and sheep as income-generating assets. One hundred families were selected for the study 50 an landless agricultural labourers, 25 marginal farmers, and 25 small fanners. The results are presented in terms of animal productivity, cash flow, and sustainability of the activities. In the case of dairy cattle, the finding suggests a need to provide credit and subsidy at periodical intervals to ensure the sustainability of the benefits to the target groups.

20.5 CRITICAL EVALUATION OF IRDP

The Programme Evaluation Organization of the Planning Commission (PEO) the RBI, the NABARD and the, Institute for Financial Management evaluated the performance of the IRDP during the first half of 1980s. These studies having an all India coverage had noted that although additional incomes had accrued in the case of 50 to 90 per cent beneficiaries, not more than forty per cent of those assisted had crossed the poverty line. Individual studies give figure's ranging from 17 per cent in the case of RBI study to 49.4 per cent in the case of (PHO) study. The main findings of these studies reveal that the IRDP has not been, very successful as a poverty alleviation measure and there is- a need and scope for improvement.

The major drawbacks of the programme have been identified as following:

1.The benefits did not wholly reach the-Vulnerable sections of rural society for whom these programmes were meant. Rather it reached people living on the fringe of the poverty line and thus to a large extent diluted the purpose.

2.IRDP remained concentrated to the distribution of milch cattle and sewing machine without considering the actual need of the beneficiaries. Rampant corruption, malpractices and bribery prevented proper implementation of the programme.

3. The financial allocations and physical targets under the programme were determined on a uniform basis per block without any consideration being given to the size of population and the incidence of poverty. This resulted in the selection of ineligible families. Fifteen to twenty per cent identification was faulty.

4.The selection of schemes was often done without any consideration to ability of beneficiaries, differences in infrastructural support, backward and forward linkages etc.

These were some of the findings of a country wise survey carried out during the period October, 1985 to September 1986. Rajiv Gandhi in one of his public addresses lamented that out of a rupee spent on various antipoverty programmes, fifteen- paisa reached the beneficiaries, the rest 85 paisa being eaten up in the process. Nevertheless, these programmes have helped in reducing rural poverty.

It has been reported in some case studies undertaken during mid-

nineties that the IRDP did fairly well in very special circumstances where the asset and employment base of the poor was secure. Indira Hiraway has noted in her study “selective development and widening Disparities in Gujarat” that IRDP has performed well mostly in developed and prosperous area and performed badly in backward and remote areas. Further the benefit did not reach the vulnerable sections of the society for whom these programmes were meant.

Though, a good number of beneficiaries under IRDP from Andhra Pradesh managed to keep their assets intact and showed some increase in their earnings yet they could net cross the poverty line. In Kamatka and Rajasthan the IRDP has benefited the poor who have land, but not so much the landless poor.

20.6 LIMITATIONS OF THE TARGET GROUP ORIENTED PROGRAMME

The strategy of the IRDP has often been questioned “on the ground that it is isolated from the main growth process in terms of resource allocation, technology as well as sectoral development strategy. It is not planned along with other programmes of area or sectoral development. It is a household based programme, and the schemes are not integrated with the development needs or resource base of the area.”

The effectiveness, of IRDP in generating additional income to target group on a sustained basis is also doubted. The experience shows that though these programmes may be able to make dent in the endemic poverty in rural areas, they cannot influence the structural nature of the problem. A serious problem noticed in some studies is that the initial increase in income is often not sustained over a longer period.

The next issue ‘relates to whether these programmes which involve a substantial subsidy element can be successfully targeted. The experience in (his regard is not very encouraging. Proper targeting of the programme benefits has been found to be difficult under the given socio-economic and political framework.

A careful examination of the poverty alleviation programmes reveals that poor have been assumed as” a homogeneous group by the planners. No attempt was made to separate the group in terms of common characteristic and their requirements. A distinction has to be made between the two categories of poor, namely those who have some skill and thus can .take up self employment and others who are to be provided with wage employment. Each category should be treated separately by appropriate policy measures.

Yet another limitation in implementing these programmes arises from the impression that is often created among beneficiaries that bank loan received at the cheaper rate need not be repaid. This has created the problem of mounting overtimes of the bank loans. A study of IRDP shows that whereas 72 percent of the beneficiary household had their assets intact, only 28 per cent had no credit overdue.

No systematic inventory is made of the assets created by the programmes which are expected to contribute sustained growth in employment beyond the employment generated in the course of construction of these assets. It would be a fair assessment to say that the perspective associated with charity based strategy towards the poor still lingers in our employment programme. There is a genuine desire to provide relief to people in distress but there is no serious intention to take a long term view of the problem faced by the poor in becoming productive members of the society.

While the rural infrastructures remain in a shocking state of neglect, the employment programmes in India seem to confirm to the Keynesian dictum, presented for a totally different economic setting, of employment generation through public funds even if it can "digging" holes and filling them up. The reason is that these programmes are hastily planned as ad hoc measures instead of being a part of an area development plan.

Exercise 20.1

Q1.State two objectives of the integrated rural development programme?

Q2. What was the Impact of IRDP programme?

20.7 SUMMARY

Integrated Rural Development Programme (IRDP) constitutes the forefront of India's assault on poverty. The objective of IRDP is to identify households below the poverty line and provide them with productive assets through a subsidized loan so that they can rise above the poverty line. The IRDP, being one of the largest anti-poverty programmes currently underway in India, there is an obvious need to find out whether the huge investments made on it can be justified in terms of its success. Keeping in view, a study was undertaken to assess the impact of IRDP on income generation and to explore the relationship between income generation and the selected personal, familial, situational and programme-related variables of IRDP beneficiaries.

20.8 GLOSSARY

- **IRDP:** is a rural development program of the Government of India launched in financial year 1978 and extended throughout India by 1980. It is a self-employment program intended to raise the income-generation capacity of target groups among the poor. The target group consists largely of small and marginal farmers, agricultural labourers and rural artisans living below the poverty line. The pattern of subsidy is 25 per cent for small farmers, 33-1/3 per cent for marginal farmers, agricultural labourers

and rural artisans and 50 per cent for Scheduled Castes and Scheduled Tribes families and physically handicapped persons. IRDP is a major self-employment programme for poverty alleviation. The objective of IRDP is to provide suitable income-generating assets through a mix of subsidy and credit to below-poverty-line families with a view to bring them above the poverty line. A family with an annual income of Rs. 20,000/- and below per annum is considered to be below the poverty line based on the 1998 below Poverty Line Census. The list of individual and family activities which are eligible for assistance with the unit cost of each is placed in Annexure.

- **NABARD: National Bank for Agriculture and Rural Development** (**NABARD**) is an apex development bank in India having headquarters based in Mumbai and other branches are all over the country. The Committee to Review Arrangements for Institutional Credit for Agriculture and Rural Development (CRAFICARD), set up by the Reserve Bank of India (RBI) under the Chairmanship of Shri B. Sivaraman, conceived and recommended the establishment of the National Bank for Agriculture and Rural Development (NABARD). It was established on 12 July 1982 by a special act by the parliament and its main focus was to uplift rural India by increasing the credit flow for elevation of agriculture & rural non farm sector. It has been accredited with "matters concerning policy, planning and operations in the field of credit for agriculture and other economic activities in rural areas in India".

- **RLEGP:** was introduced on August 15, 1983, with the objective of (a) improving and expanding employment opportunities for the rural landless with a view to providing guarantee of employment to at least one member of every landless household up to 100 days in a year and (b) creating durable assets for strengthening the infrastructure so as to meet the growing requirements of the rural economy. An outlay of Rs. 500 crores to be fully financed by the Central Government was provided under this programme in the sixth Plan. The implementation of the programme was entrusted to the states and union territories, but they were required to prepare specific projects for approval by a central committee.

20.9 ANSWERS TO SELF CHECK EXERCISES

Exercise 20.1

Answer 1. Refer to Section 20.3.

Answer 2. Refer to Section 20.4.

20.10 SUGGESTED READINGS

1. V.S. Mahajan, (1996): Agriculture, Rural Development and Panchayati Raj.
2. Indira Hiraway, (1995): “Selective Development and widening Disparities in Gujrat” EPW, Oct 14-21.
3. G. Parthasathy, (1995): “Punjab Investment and Rural Poverty” EPW, Oct 14-21.
4. S.K. Misra & V.K. Puri (2006): Indian Economy Himalayan Publishing House.

20.11 TERMINAL QUESTIONS

Q1. Write in detail the aims and Objectives of IRDP? What is the impact of IRDP on general conditions of rural poor?

Q2. Write short notes on:

1. Critical Evaluation of IRDP
2. Limitations of the Target Group Oriented Programme

UNIT-21
RESOURCE MOBILISATION FROM AGRICULTURAL SECTOR

STRUCTURE

21.0 OBJECTIVES

After going through this lesson you will be able to:

- Explain the mobilization of capital from agricultural to industrial sector
- List the methods used to mobilize the surplus income from farm sector
- Elucidate Mobilisation of Marketable Surplus

21.1 INTRODUCTION

In our earlier lesson, we have studied that development of agricultural sector is necessary for the development of non agricultural sector. We

have also studies that' factor contribution of farm, sector when agriculture moves out of the traditional phase. This however, does not mean that factor contributions will take place automatically at the desired rate. State has to play an important role to encourage the flow of these resources to the non-agricultural sector. We shall describe the role played by the state in mobilizing these resources for industrial development.

21.2 MOBILIZATION OF CAPITAL FOR THE INDUSTRIAL SECTOR

We have already pointed out that expansion of the non- agricultural sector is strongly reliant on domestic agriculture, not only for sustained increase in the supply of food, but also for raw materials used in manufacturing products. Because the relative importance of agriculture in the economy inevitably declines with economic growth and development, agriculture is seen as a principal source of capital for investment elsewhere in the economy. Thus the development process involves the transfer of surplus capital from agriculture to non agricultural, sector. Similarly, development also entails the transfer of surplus labour from agriculture to non-agricultural occupations, especially over the long term.

Before proceeding to discuss alternative means of transferring capital from agriculture to other sector and criteria for use in judging the most appropriate amount or rate of transfer, let us briefly consider why the net transfer of capital from agriculture is a credible means of development. The main arguments in favour of transferring capital out of agriculture, compulsorily if necessary are four fold. First, even assuming that capital output ratios in agriculture and non- agriculture are same, the incremental demand for capital in the industrial sector may be higher in; a developing economy because of the demand for industrial products and services is comparatively more' income elastic than that of the demand for food and other agricultural products'. Second, incremental capital output, ratio in LDC agriculture may, in-fact, tend to be Lower than in LDC industries. Certainly, scope apparently exists for rising productively in agriculture by adopting biological and mechanical '**innovations.** Third, in initial stages of development, agriculture sector is the sole domestic source of savings and investment Fourth, agriculture sector is likely to benefit indirectly from non-agriculture type investment such as the improvement of communications and provision of public Utilities.

Having argued a case for some transfer of capital from agriculture to other sector, we proceed to a brief discussion of alternative means of transfer. The broad choice for government lies between relying on the voluntary decisions of private investors in a free market to affect the transfer and resorting to compulsion.

Having adopted the device of national economic planning, the governments of LDCs generally prefer to intervene in the inter-sectoral allocating of capital and .other resources, rather than relying on the

voluntary decisions of private investors. The broad choice for government lies between indirect and direct methods of control. Indirect methods, such as price control, indirect taxes and exchange, rate manipulations, have the common objective of changing terms of trade between' agriculture and non-agriculture sector. ‘

Direct methods of control include the direct taxation of farmers and landowners (usually based on income or property values); compulsory deliveries of agricultural products to the state (usually at less than the prevailing market price) ; product input barter exchange schemes with government acting as the monopoly supplier of inputs, such as seeds and fertilizers. Direct and indirect methods are not mutually exclusive. "

21.3 METHODS USED TO MOBILIZE THE SURPLUS INCOME FROM FARM SECTOR

In general, the following methods are used to mobilize the surplus income from farm sector:

(i) Agricultural Taxation.
(ii) Changes in the inter-sectoral terms of trade ratio.
(iii) Use of disguisedly unemployed labour.
(iv) Development of rural markets for the industrial sector.
(v) Voluntary decision by private investors

21.3.1 Agricultural Taxation

Prof. Kaldor has rightly remarked, “The taxation of agriculture has critical role to play in the acceleration of economic development since it the only imposition of compulsory levies in the agricultural sector itself which enlarges the supply of savings for economic development.” Broadly speaking, agricultural taxation includes not only taxes paid b)rthe farmers directly but also those borne by them indirectly. As producer of goods, the agriculturists pay directly land revenue and agricultural income tax. As consumers, they may be paying indirectly, the excise duty, the sales tax, the import duty, the motor vehicle tax etc. Below we shall describe these taxes.

21.3.1.1 Land Tax

A land tax is a feasible and a very effective method of forcibly extracting wealth from agriculture to fund sectoral diversification. A land tax is thought to possess several advantages It is relatively easy to collect and difficult to evade. It discourages the speculative holding of idle land; Farmers are induced to market more of their output as they need higher cash payments to pay the tax. But the main problem remains of getting the land-owing class to vote for legislation increasing their own tax burden. An empirical study by South Worth and Johnston revealed that agriculture sector was ‘under taxed’ in India. Though, the study did not take into account the indirect tax paid by agricultural sector but the fact remains that in India tax evasion is rifle in the rural sector.

Land revenue in India is the oldest of all agricultural taxes and at present it is the most important tax on agricultural land. This tax is imposed and collected by the ‘state governments, have followed different bases. For example, the land revenue may be on net assets or in the value of net produce. Thé importance of the land revenue has greatly fallen in recent years as a result of inflation and also due to thé introduction of a good many taxes. Over 80 per cent of central government taxation in Japan dining the last two decades the nineteenth century came from, this tax.

21.3.1.2 Agricultural Income Tax

This lax is imposed and collected by the State Governments. Bihar was the first one to impose this tax. The rates of tax have generally been lower than those applications in urban income tax. There is a feeling that in India much of the income tax is evaded as the people in non agricultural sector can show a major portion of their income as having been derived from the farm sector.

Since agricultural income tax is an important resource mobilization, and since contributions have not come up to the mark, it is essential that ways and means are looked for improving upon it. In this connection, it needs however; to be recognized that increase in resource mobilization through this method has its limitations. One basic limitation arises from the fact that agricultural income tax cannot go beyond the capacity of die farmers to pay. Otherwise it will adversely affect the willingness of the people to work, to save and to invest. In addition to this limitation one has to take into account a country’s administrative capabilities which also set limit to the vise of this instrument.

21.3.1.3 Other direct Taxes

Besides said taxes, the farmers are also subject to such direct taxes as expenditure tax, gift tax, estate duty and wealth tax. As the exemption limit of these taxes are very high, the amount collected from the farmers is not adequate.

21.3.1.4 Indirect Taxes

Among the indirect taxes which fall on fanners, stamp duties and registration fee account for a substantial amount of state revenue from the agricultural sector. ^Direct taxes in agricultural at present account for about 10 per cent of total revenue of all states put together, whereas the same accounted for 47 per cent in 1951-52. This clearly speaks of regressive tax structure of Indian agriculture. Agriculture which has benefited a lot from the development expenditure is not adequately taxed. It is therefore necessary to take part of the additional incomes of agriculturists as also to introduce an element of progression in agricultural taxation.

This can be done through a combination of measures like withdrawal of

concession in land revenue, imposition of surcharge *on* land revenue at graduated rates, greater use of cess on commercial crops and the imposition of a betterment levy on agricultural incomes.

21.3.2 Changes in the inter-sectoral terms of trade ratio

Agricultural sector can provide capital for the industrial sector by way of keeping prices of agricultural products arbitrarily low. Most of the economists, therefore, hold the view that in earlier stages of economic development, the state should deliberately change the inter-sectoral terms of trade ratio against agriculture. The shifting of inter sectoral terms of trade against agriculture has its own problems, and limitations.

(1) Depressing the terms of trade by arbitrarily lowering the relative prices of farm products will decreases the profitability and hence lowers investments having adverse impact on output.

(2) The creation or, more likely, aggravation of rural urban income inequality goes against the broader objective of income distribution.

(3) Stagnation or even a decline in the amount of the agricultural marketable surplus could 'eventually hamper the growth of industrial sector.

21.3.3 Use of disguised Unemployed Labour

Another source of resource mobilization has been found concealed in under developed countries in the form of “disguised unemployment”. This method can be used even when agriculture is still traditional in character. Suggestion in this regard was put forth by Nurkse. According to him, there is huge amount of labour in the agricultural sector in most of the overpopulated under developed countries whose marginal productivity is zero. The transfer of ‘surplus’ labour from subsistence to modem sector improves land: labour ratio in the farm sector and provides extra labourers the industrial sector which help in increasing die output. The part of the surplus labour can be used in creating social overheads like building roads and digging canals. Through this reallocation of labour in favour of capital construction, and without any reduction in the consumption of those left behind and those transferred, the economy gets savings which prove useful for capital construction purposes.

21.3.4 Development of rural markets for the industrial Goods

We have already suggested that more capital formation or in the industrial sector can take place by keeping low the relative prices of agricultural products. These objectives can be achieved if farmers are encouraged to buy more of the industrial products. Prices of the industrial products would, thereby, experience a relative rise. In fact, according to some economists this encouragement is necessary if the non-agricultural sector' has to have a sufficiently wide home market for its' expansion.

21.3.5 Voluntary decision by private investors

Voluntary decision by private investors is another way of mobilization resources and this will be more successful if the industrial projects are located in rural area and are somehow or the other, connected with some aspects of rural development.

21.3.5.1 Raj Committee's Recommendations regarding additional taxation of agriculture

The imposition of additional taxation on agriculture has always been a source of conflict between the centre and the states. According, the Central Government appointed the committee on Taxation of Agricultural Wealth and Income under the chairmanship of Dr. K. N. Raj in February 1972 to examine the question of taxation of agricultural wealth and income from all aspects. The Raj committee submitted its report in October 1972. The major recommendation of the Raj committee were —

(i) A progressive Agricultural Holding Tax (AHT) should be imposed on agriculturists.

(ii) In the case of assesses having non-agricultural taxable income, income from agriculture should be taken into account for the purpose of income tax calculations.

(iii)An integrated taxation of agricultural property through wealth tax should be introduced.

(iv)Capital gains tax on transfer **of** agricultural lands should be levied.

21.3.5.2 Agricultural Holding Tax (AHT)

Two basic draw backs-of land revenue system were pointed out by the committee. First, there is variability in land revenue settlements. Second, land revenue is assessed 'at a flat rate per hectare and hence is not progressive. The committee has recommended the imposition of AHT to overcome these two shortcomings. These new tax proposals consider the variations in the productivity of land and reflect broadly the degree of progression applicable to other sector of the economy. The committee further recommended in case agricultural output of crops in a district falls short of the fifty per cent of average output of the ten earlier years, the AHT, for that year should be cancelled. The AHT should be levied on the operational holding and not on the ownership holding.

The basic criticism against AHT was that it would be difficult to take note of productivity difference in such a vast country. Preparation of records for the estimation of the value of various relevant enables was another problem. The procedure laid down in this regard was very cumbersome. Holders of officials will have to be engaged on a permanent basis for doing all these jobs. So it was felt that its administration would be too costly. Non availability of proper records was another problem. C.H. Hanumantha Rao pointed out that the calculation of norms of productivity on the basis of output of previous ten years is faulty as this would definitely under state the incomes of

large fanners who had been constantly benefiting from the rapid technological progress?

A second criticism against AHT is that it is based on operational holdings and, therefore leases out the rental income from agricultural taxation. It is generally felt that Raj Committee's estimate of additional revenue from AHT between Rs. 5O crore to Rs: 200 crore was purely imaginary.

Another main recommendation of the Raj Committee was the integration of both agricultural and non-agricultural incomes for the purpose income tax. The committee recommended that AHT should be. supplemented with a lax on agricultural property and a 'tax on' capital gains arising out of transactions in such property. Two radical suggestions have been made by the committees which go against the recommendations of the Wanchoo Committee on the same subject. (1) The Raj Committee proposed to do away with all exemptions (2) Wealth tax should be imposed on family basis.

The committee had also recommended that the definition of capital asset be so broadened as to allow taxation of capital gains from transfer of all agricultural land irrespective of their location.

21.4 MOBILISATION OF MARKETABLE SURPLUS

'Marketable surplus' of agricultural goods refers to the amount which a fanner can dispose of in the market and 'marketed surplus refers to the amount of output which is sold in the market net of farmer's own consumption. So, in simplest terms, it is the difference between production and on farm consumption.

Marketable surplus is a must for economic growth. The surplus is used by the non-farm and urban population to meet its requirements for food and raw materials. By increasing agricultural output and also by increasing the marketable surplus, the farmer can make a positive contribution to economic growth.

More marketable surplus will also result in additional income for the farmers which, in turn, will increase the demand for non- agricultural products. A part of marketable surplus can be exported for earning foreign exchange. The increased earning of foreign exchange will help to finance import of capital, goods which are so essential for the process of economic development of predominant agrarian economies.

21.4.1 Measures to Mobilize the Marketable Surplus

The real problem of growth in agricultural economies is to increase 'the rate of investment and siphoning surplus labour dependent on agriculture to investment projects. The doctrine of marketable surplus implies that increased productivity in agriculture is not enough to support industrialization, for it may not be accompanied by the growth in marketable surplus. Two reasons may be given to explain this doctrine.

(1) Increased farm productivity will lead to increased consumption.

(2) Increased farm productivity may induce the farmer to prefer leisure and work less.

Analytically thé measures for mobilizing the marketable surplus can be broadly divided into three categories. These categories are:-

(a) Measures which increase the production of food grains.

(b) Measures that restrict the consumption of food grains.

(c) Measures that facilitate the flow of food grains to the market.

21.4.1.1 Measures that increase the production of food grains:

The first set of measures include, the need for increasing, irrigational facilities, provision of finance and better equipment in the farm of improved seeds, chemical fertilizers, farm implements, etc., and effective enforcement of land reforms. The other way to increase the output of food grains is to divert the land from other crops to food grains.

21.4.1.2 Reduction in Consumption of Food grains by Agriculturists:

Measures should be devised in. such a way that the peasant may be induced to consume less and sell more of their food-grains. This can best be achieved by creating wants among the formers for industrial products. This will induce farmers to sell more of their food grains to manage catch for the purchase of manufactured goods. It is also suggested that if land revenue is collected in kind, this will respect domestic consumption. In the same way, it has been suggested that loans advanced to the agriculturists should be recovered in kind. .Changes in terms of trade against agriculture may also increase marketable surplus. Monetization of the rural economy and encouragement of saving have been suggested as another measure to increase the marketable surplus. Direct cash incentives for increasing marketable surplus have been suggested as another step. A proper price policy will help in bringing increasing quantities of food grains to the market.

21.4.1.3 Measures that Facilitate Smooth Flow from the Rural Areas to the Market:

Just restricting the consumption of food grains by agriculturists will not serve the purpose unless the marketable surplus finds its way to the market Markets should be regulated so as to encourage the flow of surplus from rural areas to the assembling markets. Besides grading and standardization, the regulated markets promote fair market practices and save die cultivator seller from arbitrary and other malpractices. An efficient marketing system will be the other important requirement.

Exercise 21.1

Q1. How can the Agricultural Taxation be used for mobilizing the surplus income?

Q2. How will the Mobilisation of Marketable Surplus take place?

21.5 SUMMARY

Expansion of the non- agricultural sector is strongly reliant on domestic agriculture, not only for sustained increase in the supply of food, but also for raw materials used in manufacturing products. Because the relative importance of agriculture in the economy inevitably declines with economic growth and development, agriculture is seen as a principal source of capital for investment elsewhere in the economy. Thus the development process involves the transfer of surplus capital from agriculture to non agricultural, sector. Similarly, development also entails the transfer of surplus labour from agriculture to non-agricultural occupations, especially over the long term. The main arguments in favour of transferring capital out of agriculture, compulsorily if necessary are four fold. First, even assuming that capital output ratios in agriculture and non- agriculture are same, the incremental demand for capital in the industrial sector may be higher in; a developing economy because of the demand for industrial products and services is comparatively more' income elastic than that of the demand for food and other agricultural products'. Second, incremental capital output, ratio in LDC agriculture may, in-fact, tend to be Lower than in LDC industries. Certainly, scope apparently exists for rising productively in agriculture by adopting biological and mechanical '**innovations.** Third, in initial stages of development, agriculture sector is the sole domestic source of savings and investment Fourth, agriculture sector is likely to benefit indirectly from non-agriculture type investment such as the improvement of communications and provision of public Utilities. This however, does not mean that factor contributions will take place automatically at the desired rate. State has to play an important role to encourage the flow of these resources to the non-agricultural sector. The broad choice for government lies between relying on the voluntary decisions of private investors in a free market to affect the transfer and resorting to compulsion.

Having adopted the device of national economic planning, the governments of LDCs generally prefer to intervene in the inter-sectoral allocating of capital and .other resources, rather than relying on the voluntary decisions of private investors. The broad choice for government lies between indirect and direct methods of control. Indirect methods, such as price control, indirect taxes and exchange, rate manipulations, have the common objective of changing terms of trade between' agriculture and non-agriculture sector. '

Direct methods of control include the direct taxation of farmers and landowners (usually based on income or property values); compulsory deliveries of agricultural products to the state (usually at less than the prevailing market price) ; product input barter exchange schemes with government acting as the monopoly supplier of inputs, such as seeds and fertilizers. Direct and indirect methods are not mutually exclusive. "

21.6 GLOSSARY

- **Direct tax:** a tax (such as income tax) paid directly to the government.
- **Indirect tax**: a tax (such as sales tax) which is not deducted from income directly, but is paid to someone who then pays it to the government. VAT is an indirect tax.
- **Agricultural sector**: the sector of an economy formed by agriculture, forestry and fishing.
- **Disguised unemployment:** a situation in which the official unemployment statistics hide the fact that some people are not registered as unemployed when they could be. This applies to people such as those who have taken early retirement or women who have stopped work temporarily to have families also called hidden unemployment.
- **Terms of Trade:** the ratio of the average price of a country's exports, to the average price of its imports, is its terms of trade. In theory, an improvement in a country's terms of trade raises its real income (since it can "convert" a given amount of its own output into a larger amount of consumable products through trade) – although in practice it depends on how those terms of trade gains are distributed.
- **Capital Mobilization**: Ability of the private funds to move across national boundaries in pursuit of higher returns. This mobility depends on the absence of currency restriction on the inflows and outflows of capital**.**

21.7 ANSWERS TO SELF CHECK EXERCISES

Exercise 21.1

Answer 1. Refer to section 21.3.1.

Answer 2 Refer to section 21.4.

21.8 SUGGESTED READINGS

1. Soni R.N. (2006): Leading Issues in Agricultural Economics, Jallandhar, Shoban Lal Nagin Chand & Co.
2. A.N. Aggrawal: Indian Economy Problems of Development and Planning, Vani Education Books, New Delhi, 2008.

21.9 TERMINAL QUESTIONS

Q1. How can the surplus income of the farm sector be mobilized to industrial sector?
Q2. What are the measures taken to mobilize marketable surplus?