M.A. Part – I
Economics Paper - I
Agricultural Economics

1. **Demand for Farm Products**
   Characteristics of demand for farm products-Concept and measurement of own-price cross-Price and income elasticities of demand and their interrelationship-Quantity and components of demand for food-Growth in demand for food in developing and developed countries-Forecasting of demand for food products-Rationale for and types of government intervention for food and nutrition security in developing countries.

2. **Supply of Farm Products**
   Characteristics of supply of farm products-Issues relating to specification of supply response function (Distributed laps, acreage vs. production response etc.)- Rigidities in farm supply response-Supply response of individual crops and aggregate production-Market supply a subsistence crop-Supply response in Indian agriculture-Price vs. non-price factors in induction aggregate supply growth-Characteristics of farm product markets in India-Role of farmers' marketingco-operatives-Futures trading-Towards free trade in agricultural commodities.

3. **Economics of Production and Resource Use and Instability in Agriculture**
   Resource and input use-Public/private capital formation-Important production relationships-Economics of input and product substitution-Imperfections in product and input markets in developing agriculture-Decision making under risk and uncertainty-Sources of price variability and income instability-Rationale for and types of government intervention for price support and reduction in instability-Alternative concepts of cost of cultivation and determination of minimum support prices in India-Role and optimum size of buffer stocks.

4. **Rural Money Markets**
   Credit fragmentation – Organized and unorganized sectors-Credit rationing-Moral hazards - Evolution of credit systems in India-Imperfections in rural credit markets in India.

5. Labour Markets

Concepts of work, skill and productivity-Methods of measurement of employment and unemployment-Free and unfree labour -Types of employer-Employee relationships-Determinants of wage rates – Labour market segmentation-Gender based discrimination – Biases in data sources – time disposition studies.

6. Land and Lease Markets

Types of farming-Historical evolution – Segmented property rights-Characteristics and functioning – Economic, extra-economic and legal restrictions-Lease market-Formal and informal leases-Economics of share tenancy-Crop-sharing practices in India-Inequity in distribution of holdings-Market interlocking and inter linkages-Analysis of rural classes-Agraian structure and agrarian relations in India.

REFERENCES :

1. Agarwal, Bina (1996), Women and Land rights in South Asia (Module 6).

2. American Economic Association (   ), Readings in Agricultural Economies (Module 1,2)

3. Bardhan, Pranab and Christopher Udry (1999), Development Microeconomics, Oxford Publication, (Modules 4, 5, 6)

4. Basu, Kaushik (1990), Agrarian Structure and Underdevelopment, Harwood (Modules 5, 6)

5. Cheung S.N.S. (1969), The Theory of Share enancy.

6. Dantwala M.L. (ed.)(1991), Indian Auricular Development since Independence, Second Revised Edition, Oxford & IBH Publishing Co. (General Reference)

7. Ghatak S. (1976), Rural Money Marketing Macmillan Co (Modul 4)

8. Heady E.O. (1961), Economics of Agriculture Production and Resource Usa, New Yark Englewood Cliffs Prentice-Hall (Module 3)

9. K. Subbarao (1989), Agricultural Marketing Credit, ICSSR (Modules 2,4)

3

10. Mellor J. W. (1969), The Economics of Auricular Development, Vhora & Co. Cernell University Press (Modules 1, 2)

11. Mies Maria (1986), *Indian Women in Sub??????nce and Agricultural Labour* ???? Publication (Module 5)

12. Penson J.B., Capps Orai. Rosson C.P. (1991) Introduction to Agricultural Economies prentice-Hall, Inc. (Module3)

13. Rudra, Ashok, (1982), Indian Agricultural Economics : Myth and Realities, Allied Publishers (Modules 5,6).

14. Sen Bhowani (1962), Evolution of Agricultural ????aions in India. People's Public House, New Delhi, (Module-6)

15. Thorner, D. and Thorner A. (1962),Land and Labour in India*,* Asia Publishing House (Modules 5,6)

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1

Module 1

DEMAND FOR FARM PRODUCTS

Unit Structure

1.0 Objectives

1.1 Quality and Quantity Components of Demand for Food

1.2 Concept of & Measurement of Price and Income Elasticities of Demand & Their Relationship

1.3 Contract Farming

1.4 Measures taken by the Government to deal with uncertainty

1.5 Questions

1.0 OBJECTIVES

- To study quality and quantity components of demand for food
- To study the of Concept of & measurement of price and income elasticities of demand & their relationship
- To study the measures undertaken by the government for food and nutrition security

1.1 QUALITY AND QUANTITY COMPONENTS OF DEMAND FOR FOOD

Consumer's preferences affect his demand for goods. Farmer is not interested has one individual behaves, he is interested in the market demand for the products which he produces & input which he uses. Market demand of a commodity is the sum of all individual's demand & shows the aggregate relationship between the supplies of goods for the sale & the price paid for various quantities. Thus, "the amount of a commodity that households wish to purchase is called the quantity demanded of that commodity".

There are four hypotheses about what determine the quantity of a commodity demanded by households :

a) Quantity demanded is influenced by the price of that commodity.
b) Quantity demanded is influenced by the size of income.
c) Quantity demanded is influenced by the price of other commodities; &
d) Quantity demanded is influenced by the households tastes.

Thus, the amount of commodity a household is prepared to purchase is "a function of the price of goods in question, the price of all other goods, the household's income & its tastes".

Demand function can be symbolically expressed as follows :

$$q_n^d = D\,(P_n, P_1, \ldots\ldots P_n, Y, T)\ \text{where :}$$

q_n^d : The quantity that household demands of some commodity say 'n'

P_n : the price of this commodity,

$P_1 \ldots P_{n-1}$: The prices of all commodities,

Y : The household's income &

T : The tastes of the members of the family.

Quality & Quality components of demand for food

Changes in product demands are influenced by the following:

1. Population
2. Income
3. Taste
4. Techniques applicable within consuming units.
5. Other institutional & organizational arrangements

Population increase :

With increase in population the effects depend upon the behaviour the families. This particular change in demand is referred to as population effect. The population effect arises from an

increase in the size of the family with other conditions remaining unchanged.

Increase in income :

To explain the demand effect of change in income, we must know find of all the income & price elasticities. If the income elasticities of farm products of all families were zero & if food in no way a substitute for other products, all the increase in demands would go for the products of the rest of the economy.

The new income situation postulated requires some contraction of agricultural production before a new long run equilibrium can be established. Relative pries of products will change in the process, depending in the short run on the price & income elasticities of the demand modified in the long run by basic costs conditions.

New technique Employed by consuming units :

Let us assume, this new better technique increases the want satisfying capacity of one class of product (food) & all families adopt this technique. This can introduced at the demand for food or supply of food at the point of consumption.

The price of food will fall as not many farm products are required to give consumers as large an intake of food nutrients as they were accustomed to prior to the advance in the knowledge about nutrition. The demand effect of fall in price an be divided into an income effect & substitution effect.

The income effective can go either way since some products are negative while other positive in terms of consumer response to changes in income. The two effects together will increase the quantity taken.

1.2 CONCEPT OF & MEASUREMENT OF PRICE AND INCOME ELASTICITIES OF DEMAND & THEIR RELATIONSHIP

There exists at any one time a definite relationship between quantity demanded & price. The relationship is usually an inverse relationship. The Law of demand states, other things remaining constant, that more will be demanded at a lower price & less when price is higher.

Following is the demand schedule for an agricultural commodity (vegetable)

Price of a vegetable per K.G.	Quantity Demanded
Rs. 25	½ kg.
Rs. 20	1.0 kg.
Rs. 12	1.5 kg.
Rs. 08	2.5 kg.
Rs. 05	3 kg.

We can plot the data on a graph with price on vertical axis & quantity on horizontal one. This curve is called demand curve. Its downward slope shows that the quantity demanded increases as the price falls.
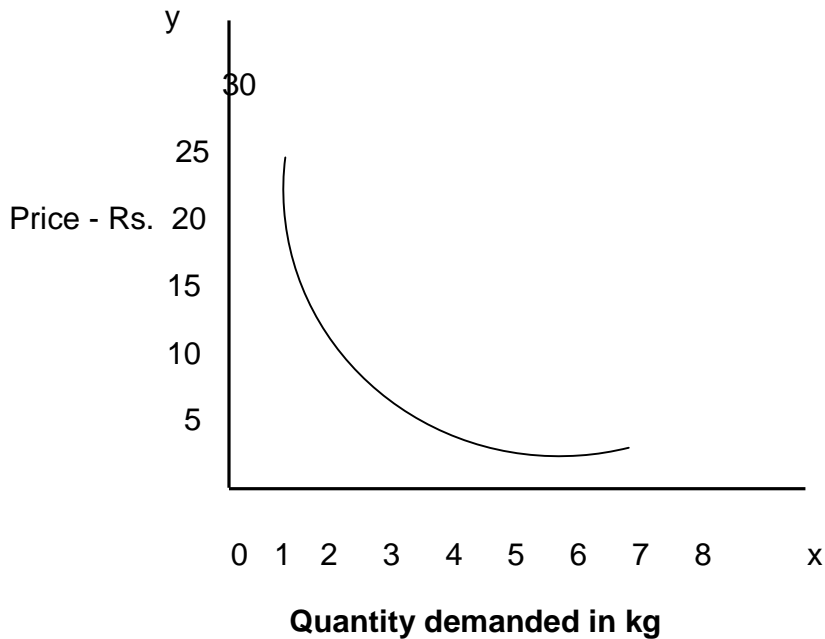

Quantity demanded in kg

Figure 1.1

The demand curve that an individual farmer faces for his product is perfectly elastic. He is among the large number of producers, he is unable to influence the market price. In the market is simply a price taker. At the prevailing market price he can sell whatever quantity of produce he has produced.

A rise in income shifts the demand curve to the right, while a fall in price, shifts it to the left. In case of an inferior goods, a rise in income will cause a reduction in the quantity demanded at each market price & the whole demanded curves moves to the left. The effect on the demand curve of a change in price depends upon whether the good, whose process changes, is a complement or substitute. A rise in price of a commodity complementary to X will shift the demand curve for X to left, indicating that less X is demanded at each price. A rise in the price of commodity that is substitute for X will shift the demand curve for X to the right indicating that more X will be demanded at each price.

The effect on the demand curve of a change in tastes of households indicates that each price, more will be demanded if the taste is in favour of that commodity & less is demanded if the taste goes against it. Thus the whole curve either will move towards the right or towards the left.

Elasticity of Demand :

The Law of Demand simply shows the direction in which demand will move when the price changes. But it does not show by how much as to what exact a change in price will affect the quantities demanded. It is important for the farmers to know the responsiveness of consumers to price changes. The degree of responsiveness determine the changes in total revenue resulting from changes in price. The responsiveness of consumers to change in price is known as 'elasticity of demand".

Price elasticity of demand is the relative change in the quantity bought resulting from a given relative change in price. Let 'E' stand for elasticity then :

$$EP = \frac{\text{relative change in quantity}}{\text{relative change in price}}$$

$$EP = \frac{\dfrac{\Delta Q}{Q}}{\dfrac{\Delta P}{P}}$$

Where Q is quantity

P is price

$\dfrac{\Delta Q}{Q}$ is relative change in quantity & $\dfrac{\Delta P}{P}$ is relative change in price.

The numerical value of E may vary from zero to infinity. The range of elasticity of demand from zero to infinity can be classified into five categories.

Numerical measure of Elasticity	Description	Terminology
1. Zero (0)	Quantity demanded does not change as price changes.	Completely inelastic
2. Greater than zero less than one $(>0<1)$	Quantity demanded changes by a smaller percentage change than does price	Inelastic
3. One (E = 1)	Quantity demanded changes by exactly the same percentage as does price	Unitelastic
4. Greater than but less than infinity $(>1<\infty)$	Quantity demanded changes by a large percentage than does price	Elastic
5. Infinity $(E=\infty)$	Purchasers are prepared to buy all at some price & none at all of an even slightly higher price.	Perfectly elastic

1.3 CONTRACT FARMING

It involves contractual agreements in money terms between the farmer, manufacturing firms and input suppliers. Such

agreements guarantee the farmer a certain price for a given grade of a product at a given time. This agreement helps the farmer not only to mitigate the inherent price and income uncertainties of the traditional marketing system, but also establish useful links with manufacturing firms and input suppliers.

Other Methods :

1) Choice of Reliable Enterprise farmer knows yield from certain enterprises is more stable than from others.

2) Uncertainty can be avoided by farmer by continuing to stick to the traditional crops rather than the involving new innovations even if these may be more remunerative. Innovations in activities / involving biological element have more uncertainty around them and consequently slow to be adopted. In fact, one will not be wrong if one says that keenness to avoid uncertainty is one reason for the slow rate of technological progress in agriculture as compared with that in industry.

3) Discounting for Risk implies that the farmer uses insufficient inputs and produces less than the optimum level of output in order to reduce loses under unfavourable circumstances. Smaller production will reduce the losses if the situation turns out to be unfavourable.

4) Maintaining reserves is another form of flexibility. Maintenance of extra multipurpose equipment and labour force larger than what is normally necessary, to meet some types of uncertainty for e.g. Floods etc. may be helpful. Maintenance of food reserves may be also be helpful at times.

1.4 MEASURES TAKEN BY THE GOVERNMENT TO DEAL WITH UNCERTAINTY

These measures can be of three types :
1) Guaranteed Agricultural Prices
2) Buffer Stock Schemes
3) Crop Insurance

Guaranteed Agricultural Prices :

It involves enactment of legislation giving the farmer more or less precise guarantee of the price level or the minimum price he may expect some time ahead. These prices generally lie within certain fixed percentages of the parity prices.

India has a system of guaranteed prices under which minimum support prices are announced by Government for major food grains well in advance of the saving season with the clear objective of mitigating price uncertainty. According to Agricultural Prices Commission, "one of the major uncertainties which afflicts farming activity emerges from the not infrequent phenomenon of sudden and precipitous fall in prices of agricultural commodities. The objective of guaranteed minimum prices as universally understood is to remove this uncertainty.

Buffer Stock Scheme : It also aims at removing price uncertainty. In this method, the buffer stock authority, ordinarily or Government agency, purchases stocks of agricultural commodities in years of bumper crops & unloads them into the market in years of crops shortages with a view to raising price in times of glut and lowering them in times of scarcity. Thus by neutralizing year to year fluctuations in output, buffer stock operations can bring about greater regularity in the year to year availability of crops and at the same time promote rational economic decision on the part of farmers by reducing price uncertainty.

An essential condition for smooth and efficient functioning of the buffer stock scheme is that the buffer stock authority must be able to maintain a balance between its purchases and sales over a period. Continuous purchase, by buffer stock operating agency of a commodity due to its glut in the market for a very low period will put a great strain on the resources of the concerned agency. Its continuous sale for a very long period will lead to a complete exhaustion of its stock lying with the agency. Both ways, the operations of buffer stock scheme will suffer. This implies that buffer stock schemes will be more successful if the price changes, needed to be controlled are not unidirectional only.

Buffer stock operating agency must fix judiciously, the ceiling and floor prices which it wants to maintain. If the ceiling price is fixed at quite a high level and the floor price at rather a low level, then the scheme would be very easy to implement but it may not achieve any meaningful stabilization because a high ceiling price and a low floor price of the concerned commodity can fluctuate without any interference. If the ceiling price it relatively low and the floor price high, the degree of price stabilization achieved would be high but this may jeopardize the scheme itself because the buffer stock authority would be required to purchase stocks even in case of wild glut and to sell stocks even when there is only a little fall production.

Crop Insurance :

It deals with yield uncertainty. By means of crop insurance, the farmer can insure himself against certain chance occurrences such as loss due to poor weather, insect infestations and diseases. The farmer incurs a small known cost, the insurance premium, and thereby transfers the risk of much larger losses to the crop insurance agency.

Crop insurances can be of several types. It can be :

1) Insurance for Specific Crops
2) Insurance for all crops taken together
3) Voluntary Crop Insurance
4) Compulsory Crop Insurance

Crop insurance can be based on the individual approach in which the assessment of the indemnity payable by the insurance agency is done separately for each individual farmer and is based on the actual crop output of the concerned farmer each year or compared with his normal output.

It can also be based on the area approach in which the assessment of indemnity is not done separately for each insured farmer, but is done together for all. The farmers in a given area on the basis of the actual average crop production over the whole area as compared with the normal crop output of the area of these different type of insurance, an insurance scheme for all crops taken

together, preferably of the compulsory type would be more feasible than crop wise insurance for the obvious reason that the variability of all crops taken together is generally much lower than yield variability of individual crops. The area approach is more practicable than the individual approach as it does not require ascertaining the crop outputs of the individual farmers for determining their classes. All that is needed is the estimate of average annual yield of the crops over the whole area which is agro-climatically homogeneous.

1.5   QUESTIONS

1. Discuss the quantity and quality components of demand for food
2. Explain in detail the measurement of price and income elasticities of demand.
3. Describe the types of government intervention for food and nutrition security in developing countries.

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Module 2

SUPPLY OF FARM PRODUCTS

Unit Structure

2.0   OBJECTIVES

- To study the components of supply of farm products.

- To know the importance of supply of farm produce in the agricultural economy of India.

- To understand the importance of agricultural marketing under global perspective.

- To observe the conditions of free trade in agricultural commodities under globalization.

2.1 INTRODUCTION

Agriculture is the occupation of a majority of the human race. The FAO of United States estimate that the world as a whole, over 50 percent of population is engaged in agriculture or dependent on agriculture for a living. Most of the world's, millions of farmers are peasants, who has very small land holding; would be neither insufficient in its use of physical resources nor commercially negligible. In developed countries like Japan whose typical family holding may be one hectare but technically advanced through improved seeds, fertilizers, horticultural tractors and also developed a comprehensive system of agricultural co-operation and marketing and of agricultural education.

Most of the developing countries consist of peasant holding. The major exporters of rice like Siam, (Bramhadesh), Thailand, Malaysia have two-fifth of peasantry holdings. But it leads to uncertain contribution to food supplies.

In United States, less than 10 percent people of total population are engaged in agriculture as their family farm business.

The another type of farming is large scale farming it can be state farming or collective farming which was originated in former USSR in 1930s, United States, Russia and China are known for the grain surpluses in west and also the agricultural conditions in Asia has been improving the food prospects.

But in most of the cases agricultural production is influenced by agricultural demand and supply marketing and government's role.

The geographical and climatic position facilitated most of the Asian countries to accept agricultural sector as an important sector of the economy.

The development would be incomplete without the new possibilities of agricultural production design in this sector. The agricultural sector fall back to achieve desired level of development lies in its lacking in transference and utilization of full-fledged resources into agricultural activities.

The explanation of these activities as an economic behavior in agricultural sector, is the base of the study in Economics of Agriculture, therefore its significance can not be overlooked.

The performance of the agricultural sector influences the growth of the Indian economy. Agriculture accounted for 17.8 percent of the Gross Domestic Product (GDP-at constant prices) in 2007-08 as compared to 21.7 percent in 2003-04. Notwithstanding the fact that the share of this sector in GDP has been declining over the years, its role remains critical as it accounts for about 52 percent of the employment in the country. Apart from being the provider of food and fodder, its importance also stems from the raw materials that it provides to industry. The prosperity of the rural economy is also closely linked to agriculture and allied activities. Agricultural sector contributed 12.2 percent of national exports in 2007-08. The rural sector (including agriculture) is being increasingly seen as a potential source of domestic demand; a recognition, that is shaping the marketing strategies of entrepreneurs wishing to widen the demand for goods and services.

2.2 CHARACTERISTICS OF SUPPLY OF AGRICULTURAL PRODUCTS

1. Raw Material:

Agricultural output, which is mainly sold in the form of raw materials is used subsequently for processing. Sugarcane is to be converted into sugar, oil seeds into oil, jute into carpet, cotton into cloth, wheat into floor and paddy into rice-before all these are used for consumption. Hence the raw materials produced by agriculture are to be processed at one stage or the other before final consumption.

2.   Bulkiness:

Compared to other products, agricultural commodities are bulkier in nature. Bulkiness is more pronounced in products like cotton, chilies, sugarcane, jute, fruits, vegetables etc. and is common to all types of cereals and pulses. Bulkiness affects marketing functions concerned mostly with physical handling. Further, the products that occupy a lot of space in relation to their value, almost automatically raise unit-transportation and storage costs. A railway wagon of cloth is more valuable than a wagonload of wheat or chilies.

3.   Perishability:

In relation to other products, agricultural products by nature are perishable. All products ultimately deteriorate. Fruits and vegetables must move into consumption very quickly, otherwise they would completely lose their value. Cereals and pulses, through these and be stores for a considerably long period without much deterioration, should be sold before the arrival of new crops. Unlike industrial products, however, they cannot be stored for long, for reasons of qualitative deterioration. The more perishable products require speedy handling and often-special refrigeration, which raises the cost of marketing.

4.   Substitutability:

There is always the possibility of substitution of one food grain by another. Wheat can be substituted by barley, maize or jowar, and vice versa. Substitution is more effective in times of shortage of a crop, than at other times. Prices play a vital role in substitution of coarse by superior grains, if the price of substitutes rises too high, the same way, the price of coarse grains drops relatively, to the other high priced products. Usually, when there is cheaper the items, fewer effective substitutes are available.

5.   Varietal Differences:

The production of most farm products is a composite of several varieties. These varietal differences are of relatively little significance in the marketing of others. The characteristics of each of the latter varieties affect the marketing and consumption patterns for the concerned products. The fruits, vegetables are varietal and hence price differences are common on account of consumer's preference. If the marketers are aware of the varietal preferences,

they would store those which would fetch higher price, as compared to those which would not

6.   Colour, Palatability and Nutritive Values:

Colour, palatability and nutritive values are important characteristics of many farm products that are related to consumption Consumers prefer local wheat to Mexican wheat because it is tasty and palatable, nutritious, easy to chew and digest and good for health, white in colour and makes good chapattis. Those who consume red wheat prefer it because it is cheap, easily available, habit has been developed for it can be taken when local is not available.

Eggs are an illustration of the part played by colour. Poultry specialists have indicated that there is no nutritional difference between white and brown eggs and no difference is observed in their palatability. Yet people in one locality prefer white eggs, while those in another, brown eggs.

7.   Size of the Product:

Size of the individual units of the product is yet another major characteristic of farm products. Long stable cotton fetches higher price as compared to short staple cotton. Large-sized eggs are sold more in number as compared to the medium and pullet size. Similarly large-sized potatoes, apples and bananas have more demand than small or medium-sized ones. Consumers, how ever, shift from one size to another depending on the price relationships Thus, size is important in marketing because the uses made of the different sizes vary, as do the possible outlets and prices. With most products, the largest and smallest sizes are quite limited in volume, whereas the medium sizes are quite plentiful. Market agencies take advantage of this and try to secure high price for large-sized products, which by nature are limited in supply. Small-sized products are the poor man's choice as they are available at a lower price.

8.   Quality of the Product:

The degree to which a product will be accepted depends upon its quality. There is direct correlation between the quality of farm products and their consumption. It is the grade and standard attributed to a product that make it possible to market each quality to the groups of consumers representing the best outlet for it. The

use of grades generally limits top quality supplies and makes possible certain monopolists advantages that go with reduced or controlled supplies.

Farm products differ widely in quality. Generally their grades are marked for most of the products while grains and fibers are classified as grade I, II and III or fine, medium and coarse or long, medium and short. All these grades have markets but with different prices. Superior grade products fetch high price as compared to the inferior grade products. Quality is of real importance to market agencies since it is their job to sell products of different qualities in the markets, large or small, where they will have the greatest price advantage or the least disadvantage. Thus, many marketing agencies specialize in handling the finest qualities, while others handle inferior qualities. There are markets for all qualities (at a price), and consumers have the opportunity of buying that grade or quality which they can best afford.

2.3 ISSUES RELATING TO SPECIFICATION OF RESPONSE FUNCTION TO SUPPLY OF FARM PRODUCTS:

A) Distributed Lags
In case of supplying goods the time period plays an importance role. In case of agricultural goods the gestation period is relatively long since it depends on natural and climatic conditions. Thus for agricultural goods the lag is critical. The farmers always take into account those time lags which considering their farm operations till the harvest. They also consider prices in existing year and the supply will take place in the next year Therefore supply of agricultural products as the result by to prices of last year.

It means

$S_t = f(P_t - 1)$

S_t = Supply of time period t

Pt - 1 = Prices of the time period of the last year

B) Area, Production and Yield in India

Growth in the production of agricultural crops depends on acreage and yield. Limitations in the expansion of agricultural land suggest that increase in gross cropped area can come from

multiple cropping. In view of this, the main source of long-term output growth is improvement in yield. The trends in indices of area, production and yield of different crops in 2007-08 (Base 1981-82=100).

Rice

Compound growth rates of index of area under rice show a negative of (-) 0.1 per cent per annum during 2001-08 compared to the 1990s. The area under rice cultivation has remained more or less stagnant in the recent years while growth in yield has shown increase.

Wheat

Area under wheat that was around 25 million hectares in 2002-03 increased to 26.4 million hectares in 2005-06 and further to 28 million hectares in 2007-08. The coverage under irrigation has been about 87 to 89 per cent of area for wheat. The compound growth rates of indices of area production and yield of wheat during 1991-2000 and 2001-08 show a perceptible decline index of yield increased significantly, leading to an increase in the growth in production.

Pulses

Gram and tur are the major contributors to the total pulses production in the country. During the period 2000-01 to 2007-08 there has been an improvement in the growth in the indices of yield and in area resulting in considerable increase in the growth in production.

Sugarcane

The area under sugarcane showed an increase from 3.93 million hectares in 2003-04 to around 5.04 million hectares in 2007-08. Production increases from 233.86 million tones in 2003-04 to 348.2 million tones in 2007-08. Accordingly, yield increased from 59.4 tones per hectare to 69.1 tones per hectare in 2007-08. Despite a decline in growth in index of yield during 2001-08 as compared o the 1090s, the index of production growth was more or less sustained by the growth in index of area during the period.

Cotton

Cotton occupies an important place among the cash crops in India. Cotton is grown in nine major states namely, Punjab Haryana, North Rajasthan, Gujrat, Maharashtra, Madhya Pradesh, Andhra Pradesh, Karnataka and Tamil Nadu.

The area under cotton increased from 7.60 million hectares in 2003-04 to 9.43 million hectares in 2007-08. The yield of cotton went up from 307 kg. per hectare in 2003-04 to 466 kgs per hectare in 2007-08. The compound growth in index of yield has shown an increase from (-) 0.4 per cent during the 1990s to 1508 per cent during 2001-08. However, the growth in index of area moderated, bur remained positive. The combined effect on index of production was an increase in growth from 2.3 per cent during the 1990s to 17.5 cent during 2001-08

Oilseeds

Area covered under nine oilseeds, which stood at 23.66 million hectares in 2003-34 increased to 26.54 million hectares in 2007-08. Production of oilseeds, which stood at 25.19 million tones in 2003.04, increased to 29.76 million tones in2007.08. The growth in indices of yield and area under oilseeds has shown a perceptible improvement during 2001-08 as compared to the 1990s.

C) **Agricultural Acreage in India**

The operational land holding increased from 71 million hectors in 1990-71 to 115.6 million hectors in 1995-96.

The average size of land –holding in India is 1.41 hectares. The small and marginal level holdings account for go percent of total holding

During 2008-09, the area south at all India level under Kharif 2.3 percent of the total cultivable area, means 1039.23 lakh hectares and for Rabbi crops 638.33 lakh hectares of land accounted.

It aims at fixing of acreage for certain basic crops.

It results into controlling crops and prices simultaneously. The government intervens and provides some incentives to the farmer for participating in the acreage program. It also helps to reduce misuse of land and optimum use of land. It helps to utilize better farm practices through the planning. The wastage of land can be controlled by reducing exploitative crops.

Through the acreage the yield can be targeted. The acreage and prospective yield do not have predetermined formula by the demand for casting and prices, it can be established. The total national land can be subdivided into small allotments which helps to build up networking of farm plots, through area-wise, crop-wise, farmer wise, which gives total picture of farming.

2.4 RIGIDITIES IN FARM SUPPLY RESPONSE:

There are various obstacles in increasing supply of farm products. They are natural, manmade and psychological.

1. Farmers as non-maximisers:

Farmer normally at the age fifty are not tend to maximize their produce and prefer leisure according to price rise, hence they are non maximisers. It can be a general tendency. They may be non maximisers when by expanding output the marginal revenue begins to fall below marginal cost due to the operation of law of Diminishing Returns.

2) Perverse Response of Supply to Price:

First supply may increase in response to price rise up to a certain point and thereafter while prices continue to rise, supply may decline. This is because of price of inputs, technology increase more, opportunity cost of labour and capital in other occupations is low than in agriculture.
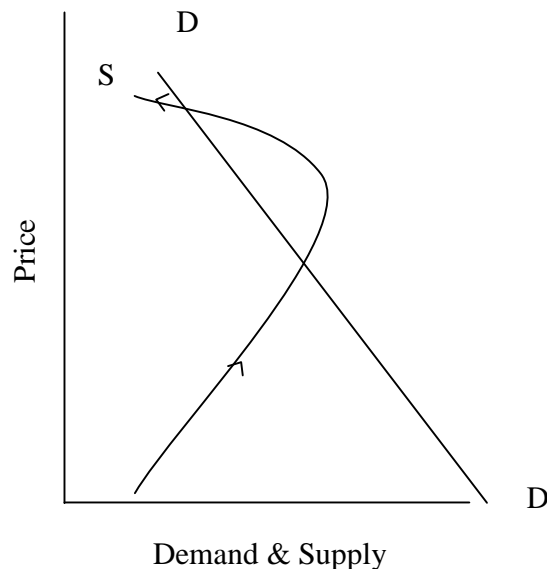

Figure 2.1

Secondly supply may not fall in response to falling price because of perish ability of farm price. Thus the supply becomes backward sloping as shown in the diagram.

3. Changing Technology:

The change in technology, innovations reduce the hard work and complexities which reduces cost of production and the supply curve shifts right hand side. This is shown in the diagram.
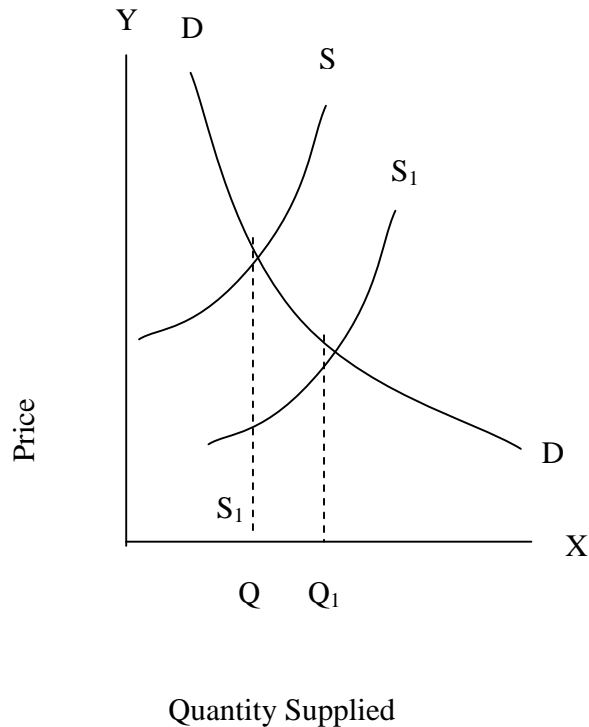

Figure 2.2

With the use of fertilizers high yielding seeds the supply of food grains increased from Q to Q,

3. Joint Products

Many agricultural products are joint so that productivity increases automatically by improving the production of main product. Examples are animals for milk meat and wool, Grain and straw. The farmers can increase or reduce the relative proportions of such joint products. If wool prices fall, farmers have store fleeces in hope of price rise and prices of lamb rise, then sheep rearing becomes more profitable. Thus these are the better option to alter the proportions of joint products by changing the policy.

4) Complementary Products:

Farmers can produce complementary products in a planned rotative crops so as to maintain soil fertility and to avoid the

proliferation of soil borne diseases. This system saves cost and increases yield.

5) Production Period:

The increase in farm produce supply depends upon harvest basically. As soon as harvest is over and farm produce supply increases the sudden price fall may occur and results into less plan for sowing that farm produce in the next year. This probably increases price and production is the next production cycle.

It is also noticed that it is not easy to increase the agriculture supply in short period since the supply and production life is the outcome from natural resources. Such flexibilities may affect adversely the income of producing country.

6. Perishable Products:

The nature of agricultural products are considered to be perishable like dairy products, horticultural products, vegetables which require separate storage system with separate budget.

Their supply can vary according to the facilities. Thus the regidities in supply can be reduced through the several facilities to the farmers. The government provides various facilities to the farmers for stabilizing the conditions of supply of farm products, these are mentioned below.

1) Guaranteeing Agricultural Prices:

Marketing Boards and Agricultural Federations can guarantee the agricultural prices for controlling increase of decrease in prices. It can implement minimum price for imports for importing county and the government can maintain buffer stocks. The guarantee price or administered price is a measure to boost the production and stabilize income of farmers.

2) Physical control on supply:

It is the simplest and oldest method of physical control on supply which brings the method of storing the produce in time of surplus for use in times of scarcity.

The co-operative marketing societies are helpful to boost physical controls on production.

3)   Quotas:

In many countries supply of certain commodities is restricted by imposition of quotas which apply either to the overall production or to the amount of unit for which individuals are allowed to market.

4)   Controlling or Increasing Supply:

Controlling or increasing supply by the means of providing or withdrawing agriculture inputs by the government is also one of the methods of handling agri-supply.

When government wants to increase output it may undertake scheme of land reclamation, allowing use of land through government quota, whereas for controlling supply withdrawing of land, ban on certain production can be undertaken.

In case of labour as an input, the labour in underdeveloped countries tends to be disguised unemployed whereas in developed counties the substitution of capital for labour will allow the agricultural labour force to change without any effect to total supply. Agricultural infrastructure, social benefits to labour indirectly improve agricultural supply. In case of capital, subsidies, mechanization, improving technology, entrepreneurial development, and subsidies may increase the agricultural prices.

Subsidizing the inputs such as fertilizers, fuel will not save labour but it needs more labour and will raise output. Hence the capital investments by the farmers aims at increasing output and also cost effectiveness, since the prices for their output are low after harvest.

2.5   SUPPLY RESPONSE OF INDIVIDUAL CROPS AND AGGREGATE PRODUCTION

Individual supply and market supply of farm products as a whole is the function of price level supply is originated from stock of production. It is marketable surplus at a point of time that farmer is willing and able to sell in the market.

A)   Individual Supply Schedule:

A supply schedule for wheat

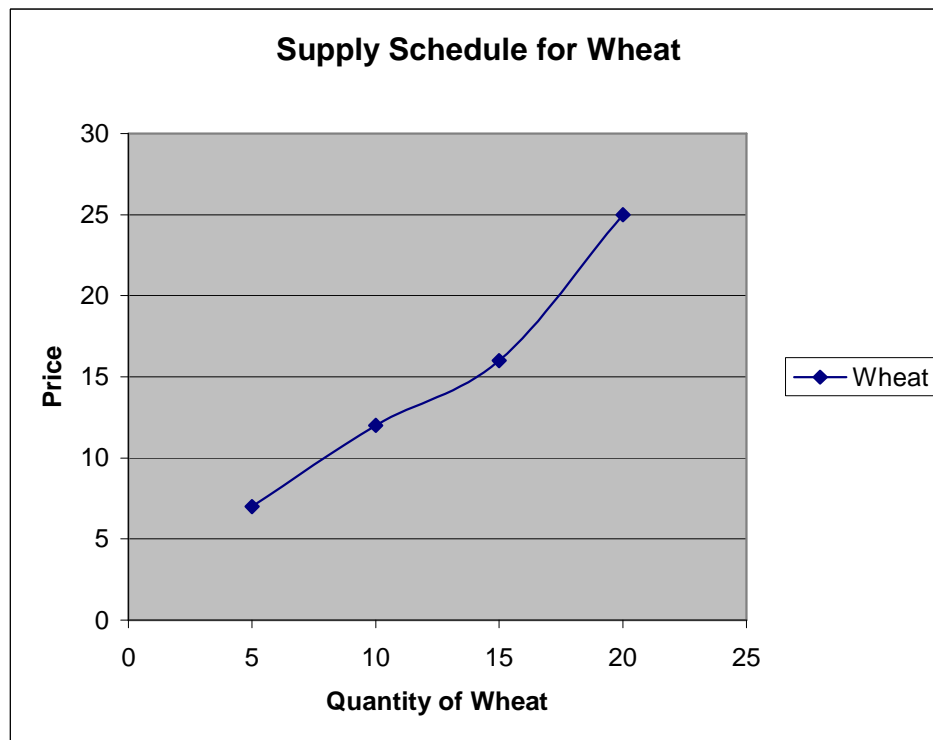| Price (in Rs)	Quantity wheat in (Kgs)
5	7
10	12
15	16
20	25

Figure 2.3

Supply curve is upward sloping which indicates direct relation between price and quantity supplied.

The farm produced is normally supplied under conditions of perfect competitions.

These Conditions are:

1) There are large numbers of independent producer none of whom is able to influence market price by offering or withholding his product.

2) There are large numbers of independent buyers none of whom is able to influence market price by offering or withholding his price.

3) The produce in any market is homogeneous.

4) The buyers and sellers have at one time full information about the ruling price in the market.

Thus there are millions of farmers in the world economy, each of whom produces only a small fraction of total global supplies of the produce. They might be from unorganized sellers and hence the farmer is a price taker.

A)   Factors Influencing Supply:

i)   The supply of agricultural produce depends upon its cost of production, i.e. the prices of factors of production which are involved in the production of the commodity. Land is subject to the law of diminishing returns, land is limited in supply. There is a limit beyond which output does not increase. Additional units of labour and capital may give rise to higher returns for sometime but then returns per unit of input becomes smaller and smaller till a stage is reached when an additional unit of labour and capital does not yield any increase in output. Beyond this point it will be judicious not to spend more on those inputs. The supply of land fixed and limited by nature with compared to other factors of production. Not only world's land resources are limited in nature a larger land area is of no use in agriculture. It also faces the heterogeneity of land quality which leads to increasing cost of production. Because the best lands come under the plough the first and lands of poorer quality are sought thereafter. The soil qualities differ due to ecological conditions and topography which results into variations in production and costs

ii)   Labour is most important human factor of production to increase the agricultural production from physical asset since the olden days. When the land was abundant the increasing volume of production was directly related to the volume of labour and multiplication of labour resulted into the faster manipulation of returns. But since supply of land does not increase considerable beyond certain limits, the man land ratio goes on increasing and automatically productivity per unit of labour declines and hence the remuneration per unit of labour as well; till it becomes constant at

the subsistence level. In India where farming is predominantly dependent upon monsoons, variations in demand for labour also affect supply of labour. The uncertainties in monsoon and non-scheduled agricultural operation lead to variations in labour supplies. It results into sometimes excess supply and fall in wage rates and vice versa. The demand for labour is completely upset and farm labour suddenly becomes redundant.

In underdeveloped countries since farming is not managed scientifically with proper adjustments as and when required for making the agriculture as a full time business for all seasons. Shortage of labour is felt in peak seasons and labour is regarded surplus in slack seasons.

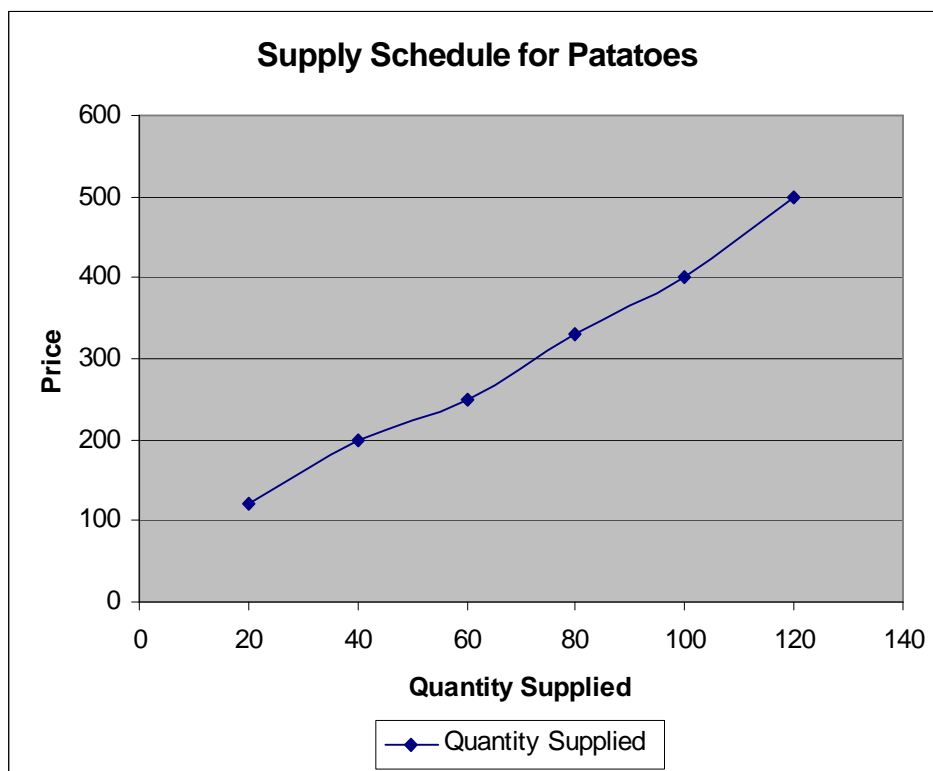## B)   Concept of Market Supply:

Supply means the amounts or quantities that will be offered for sale at different price levels at a given time and place. Like demand, supply is the amount available at one particular time and in one particular place. One may refer to supply at the national level. Time is very important in supply, since it may refer to the present next day, next week, next month next season and so on. Further, it is important to distinguish between supply and stocks. By supply we refer to the amount available at a given price, while by stocks we refer to the total amount of an item, regardless of its price. The total amount of an item on farms, in storage or somewhere else makes up the stocks. At any time only a part, and not the whole of the stocks available can be offered for sale. Supply and stocks are, therefore, no more synonymous than demand and consumption. This supply is simply the quantity that will be sold at a given price, time and place and the law of supply is the logical relationship which exists between quantities offered for sale and prices. Usually the higher the price, the more will be offered for sale, and the lower the price, the less will be offered for sale. The exception is the subsistence economy where incentive is limited to the satisfaction of immediate needs.

Market Supply Schedule:

A supply schedule is defined as quantities of commodities will be offered for sale at different prices i.e. it summaries the seller's quantity to various prices.

(a) SUPPLY SCHEDULE FOR POTATOES

Sr.	Price of Potatoes (Rs. Per Quintal)	Quantity Supplied (Hundred Quintals)
1.	20	120
2.	40	200
3.	60	250
4.	80	330
5.	100	400
6.	120	500

Figure 2.4

The market supply is similar to individual supply curve, which indicates up ward sloping curve to the right side of graph.

Supply curve shows the relationship between the price of the commodity and the maximum quantity that can be produced, given (1) the technology, (2) Prices of other products and (3) the condition of supply of the factors for the firm or group of agricultural firms concerned. In agriculture however, most of the supply curves show the response of producers to changes in the price of a particular commodity, other thing being equal. They show what happens when a short crop, for example, raises the price of potatoes Even though farmers know that the price is likely to be low again, as it is high now, when the new crop is harvested, still they increase their acreage of potatoes in response to the temporary higher price.

Market Supply Curve of Agricultural Products:
The agricultural supply curve indicates intentions. The horizontal bars on the curve represent the range quantity likely to be produced. This likely quantity may be above or below intentions. Factors beyond the farmer's control, mainly weather, cause production of agricultural products to vary widely from that expected with average conditions.
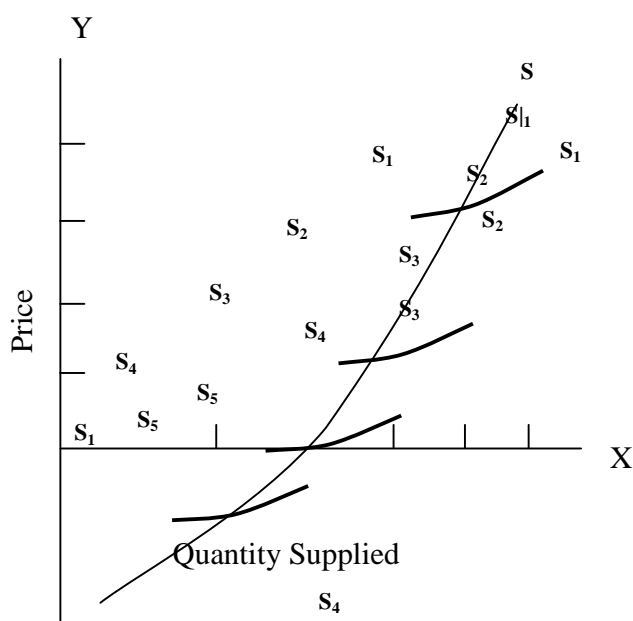

Figure 2.5

2.6   SUPPLY RESPONSE IN INDIAN AGRICULTURE:

Price V/S Non-Price Factors

Though agriculture is the main occupation but being profession it has many differences in developed countries and underdeveloped countries. In underdeveloped countries agricultural activities are not taken as profession rather as a way of life. In developed countries the factors other than price such as rainfall, irrigation, weather conditions, seeds and fertilizers are relative available sufficiently, therefore the producers response positively to the price variations solely. Means if price of agricultural produces increases the farmers can manage to increase the supply through intensive or extensive cultivation, improving technology and increasing use of fertilizers.

Thus there is direct relation between price and agricultural products in true sense. There can be wide scope for increasing agricultural production through the agricultural inputs, unused agricultural land plots due to less population, support from government and financial institutions. The reallocation of resources can bring positive changes in agricultural supply, which helps to bring further changes in the international market.

The agricultural as well as manufacturing goods both are important variables in the international markets for increasing international income in developed countries.

But in undeveloped countries there are many factors along with price of the agricultural product affect the supply of agricultural products. The price and supply are not directly related in pure sense because the price increases but since intermediary factors are not sufficiently available, the supply cannot take place in required amount.

The factors which affect supply response of farmers are as follows:

1)   Size of Holding:
Most of the land holding in underdeveloped countries are small and which devote a larger portion of its produce to the

minimum subsistence requirement. In India average size of holding is 1.57 hectors of land, which proved to be uneconomical for the country itself. The farmers with large size of holding can take different types of risks regarding variety of produce, innovative practices whereas small farmers are vulnerable for such changes. The small farmers use most of their land for producing food grains and hence they are not ready to shift from food grains to the new crop which is demanded in the market or whose price is increased sufficiently for time being.

2) Differential Productivity:
When the productivity differentials are so large that the effect of small price charges is not noticed by the farmers.

3) Price Stability:
An average farmer would prefer to earn a low but stable income rather than take risk of switching over to the more profitable but risky crops. Because farmers have to survive rather than to earn profit.

4) Weather Conditions:
Weather and climatic conditions are natural conditions which are totally uncertain on which the agricultural activities are depended, therefore farmers prefer to grow low-income yielding crops rather than the commercial and more profitable crops which require high regular water doses.

5) Rotational Crops:
Farmers in underdeveloped countries prefer rotational crop pattern to maintain fertility of soil and therefore they can change their pattern of farm products.

Hence due to change in price the farm products do not take place, but apart from it many factors influence the crop pattern and there is controversy between the price and non price factors for determining overall crop pattern of the economy.

2.7 CHARACTERISTICS OF FARM PRODUCT MARKETS IN INDIA

Market Structure
In the case of agricultural industry the farm products are produced by numerous small farmers and it may not be possible for

33

each farmer to sell his produce to the potential consumer himself. The farmer producing on a small-scale has usually neither the time nor the ability to undertake directly the marketing of his produce. His produce is too small for him to undertake economically the direct marketing of his products to the final consumers. In most cases, the farmer's entire output is turned over to one or a small number of agent middlemen for marketing his produce. It is common for the bulk of commodities to change hands three or four times between the producer and the consumer. Usually, farmers sell their produce to small merchants and traveling traders at the village level. This then is taken to the wholesale markets where it is again sold to retailers through which it reaches the final consumer. Farmers with bigger holdings may bypass the village merchant and sell directly in the major wholesale market. Certain commonly encountered and easily recognizable types of markets, which generally exist between the farmer and the final consumer are:

1)   Local Assembling and Processing Markets

Before the supply of any agricultural product can be equated to the demand and distributed to the competing buyers, the available supplies of the product will naturally have to be collected from the innumerable farmers who produce it. Most farm products pass through some small markets located close to the point of their production where produce is sold by the farmer to the local buyer who assembles the products of a number of farmers, and sends them to either the district or central market. These local markets, also known as growers, markets or primary markets, are located in small towns and at other convenient places where agricultural producers can bring their goods and sell to the prospective buyers.

2   District Concentration and Processing Markets:

Some commodities are processed either wholly or in part at local markets where consumers purchase them directly from the farmer. But most the commodities are processed at the large central markets Between these two types of processing markers, in case of some products, we find district processors markets, in case of some products, we find district processors or markets where the produce from a considerable number of local assembly markets are assembled and processed for transporting to central markets or direct to consuming markets.

3   Central Markets:

There are large central markets where goods from many local assembly markets or district processing points are concentrated for processing or for additional processing or for

additional processing, storage, grading, conditioning and distribution to other processing and secondary wholesale markets or to markets abroad. Central markets, thus are the last step in the assembling or concentration and the first step in the dispersion process. The big wholesale markets can be compared to reservoirs in to which flow the fluctuating and seasonal supplies from different producing areas, and from which is met a constantly fluctuating demand. It is in this market where price- making activities take place. It is the these markets where buyers and sellers representing regional, national or even international demand for the agricultural products are seen more clearly in the wholesale market than in producing areas. The adjustment of demand and supply may be said to take place in the central markets. As a matter of fact, a central or terminal market is the meeting point of the marketing of fact, a central or terminal market is the meeting point of the three marketing processes- concentration, equalization and dispersion.

4   Seaboard Markets:

Seaboard market specifically serves the place for ocean shipment to foreign centers. These markets either receive the agricultural goods from the central market or directly from the local and district assembling markets. These markets have facilities for unloading storing, loading ships and rendering incidental services such as grading and price reporting. Corresponding facilities for handling imports of agricultural goods are also available in such markets.

5   Wholesale Distributing Markets:

The agricultural goods which are now assembled in the central market have to be dispatched to consumers through the retailers. Wholesalers operating in the central markets mostly prefer to deal in bulk which cannot be afforded by retailers. Therefore, separate wholesale markers specially for the dispersion of goods to retailers have been developed in between the large central markets and the retailers. These markets are often called "Secondary wholesale markets" to distinguish them from primary or central wholesale markets. Another term sometimes applied to them is "jobbing markets".

These markets operate on a smaller scale then the central markets. They do not major role in the determination of prices. They are concerned only with those operations, which are essential to meet the needs of their retail clients.

6   Retail Markets:

In retail markets, the good are ultimately placed before the individual consumers for acceptance or rejection. Every retail store

in the city, town and village, which sells to the final consumer, is a retail market. "Retailing is, perhaps, the most difficult part of the marketing process to perform, and certainly is the most expensive. For producers of consumer goods, the retail store is the ultimate point of contact with the uses of their products. Here in the retail store, the battle of the market is fought out to a final conclusion".

2.7.1 Agricultural Marketing

Role of Farmers Marketing Co-operatives in India:

Agricultural marketing is the most important in the agricultural economy especially in case of small farmers who have small surpluses for marketing. Since the farm products are relatively perishable therefore the sale of agricultural good should take place at proper place, proper timing as well. In case of absence of marketing facilities the farmers are forced to sale farm produce to money-lenders-cum trader, brokers at the daily or weekly local markets.

To improve the marketing activities in India and to break long chain of middlemen, co-operative marketing societies were established since 1954 with the aim of providing credit and marketing facilities. The marketing society provides various facilities to the people from rural areas. Such as buying and selling the produce, credit supply, weighing and grading the goods; AGMARK facility.

If prices are likely to raise the societies stock the goods and sell them in future with good profit earnings for members. It also arranges quick transportation, standardization, co-operative storages, and agricultural inputs.

The government buys food grains for FCI through marketing societies.

In India there are 160 central marketing societies, 3500 special commodity marketing societies and 6000 primary marketing societies. There are moreover State Level and National Level co-operative Marketing federations like NAFED for cotton growers, tobacco growers and also for the Tribal producers.

The agricultural co-operative processing societies especially for sugar mills, dairy and milk products are the best examples for generating employment through installation of distilleries, paper mills. Co-operative marketing societies also work for establish educational institution and hospitals.

Thus co-operative marketing is the special activity performed by the various marketing societies, Boards and Federations under Governments Co-operative Societies Act 1904. It had helped to improve the export potentials through Agro Export Zones (AEZs) by 15 percent to the total exports.

In 2002 the government appointed Inter-ministerial Task Force on Agricultural Marking Reforms like use of information technology using negotiable warehousing receipt system and expansion of future trading.

When supply and demand are in equilibrium each seller will cover his total cost including normal profit at this point marginal cost and marginal revenue will be equal, that is the amount each farmer receives for the last unit of supply, which he is willing to sell at the prevailing price equals the cost to him and bringing it to market.

If price would be established above point 'A' more farmers would come forward with their supplies till the price fell again.

If price would be established below 'A' farmer would supply less and would to raise price.
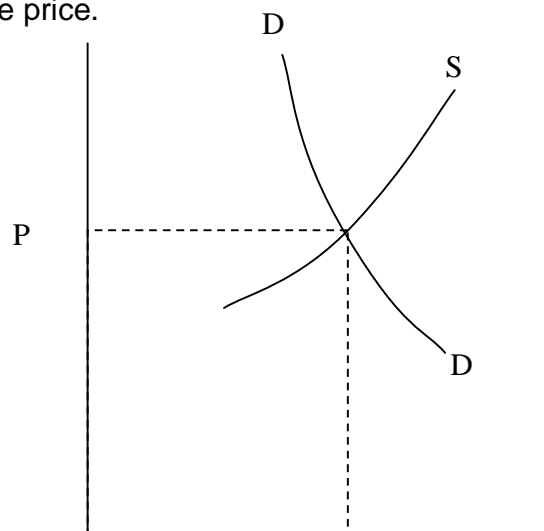

Figure 2.6

If the demand and supply for agri products show normal movements then the pure competition model works over a period of time but as seasonal and natural changes affect supply, the price and other factors (Which are linked) may vary.

Farm Produce and Market Supply:

The family farm operators in India are makers of farm supply. The quantum of farm products sold by majority of farmers is small, however these small farm firms are comparatively less specialized than the business firms. With introduction of new technology during the green revolution say 1960s, farm firms are becoming more specialized. All the firms are interested in production, rather than marketing basically.

The variations in farm produce and prices have made the farmers conscious and increasingly aware of selling arrangements and price patterns.

2.8   FUTURE TRADING:

As per agricultural reforms the Government permitted the resumption future trading in gur, potato caster seed pepper, cotton, coffee etc. Recently in 2003-04 the Government of India established National Level Commodity Exchanges for most of agricultural goods for future trading.

The goods are sold or bought on the basis of warehousing receipts instead of their physical movements. The transaction are backed by judicious protection against price and quality risks. The future trading as the pilot project started in Gujrat, Madhya Pradesh and Andhra Pradesh. It had facilitated to develop marketing activities fast and through modern techniques like computers, which maintains transparency in transactions.

This has also facilitated for price risk management. Its effectiveness depends upon the wider participation of the stakeholders; in 2008-09 the daily average value of trade accounted for Rs. 17042.07 crore.

Group of Commodity	2006-07		2007-08		2008-09	
	VOT	Section 1.02 alue	VOT	Value	VOT	Value
Agri. Commodities	5023.92 (81.96%)	1317125.21 (35.82%)	3139.03 (56.32)	941283.33 (23.15%)	2309.35 (33.655)	627303.14 (11.95%)
Grand Total	6129.29 (100%)	3676926.67 (100%)	5573.41 (100%)	4065989.47 (100%)	6863.49 (100%)	5248956.18 (100%)

Glossary:

1) Agricultural Marketing:
Selling and buying off agricultural produce and inputs by the farmers or marketing society.

2) Future Trading:
Trading of major agricultural commodities through the warehousing receipt or otherwise, on the basis of National Commodity and Derivative Exchange Mumbai.

2.9 QUESTIONS

1. Explain the characteristics of supply of farm products.
2. Bring out the issues relating to specification of supply response function.
3. Discuss the rigidities found in farm supply response.
4. Explain the factors which affect the supply response in Indian agriculture.
5. Explain the role of Farmer's marketing co-operatives in India.

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3

Module 3
ECONOMICS OF PRODUCTION AND RESOURCE USE AND INSTABILITY IN AGRICULTURE

Unit Structure :

3.0 OBJECTIVES

- To determine and outline the conditions which give the optimum use of capital, labour, land and management resources in the production of crops and live stock.

- To determine the extent to which the existing use of resources deviates from the optimum use.

- To analyse the forces which condition existing production pattern and resource use.

- To explain means and methods in getting from the existing use to optimum use of resources.

3.1 INTRODUCTION

Agricultural production economics involves analysis of production relationships and principles of rational decisions in order to optimize the use of farm resources on individual farms and to rationalize the use of inputs from the nation's point of view. The primary interest in applying economic logic to problem that occur in agriculture.

Agriculture production economics concerned with the selection of production patterns and resource use efficiency in order to optimize the objective function of farming community or nation with in a framework of limited resources. The goal of agriculture production economics are –

- Provide guidance to individual farmers in using their resources most efficiently and
- To facilitate most efficient use of resources from the standpoint of economy.

As study of resource productivity agriculture production economics deals with resource use efficiency, resource combination, resource allocation, resource management and resource administration. It involves topics like factor – product relationship, factor – factor relationship, product – production relationship etc. which in turn involves some law's such as law of returns to scale, Law of diminishing returns, concepts such as Iso-quants, production possibility curves, Iso-cost curves etc. It also covers the problems of Agriculture that is instability of prices in agriculture, due to risk and uncertainty.

3.2 THEORY OF PRODUCTION

Production refers to the economic process of converting of inputs into output. Production refers resources to create goods on services that is suitable for use or exchange in market economy.

The inputs or resources used in the production process are called factors of production by economics. Inputs are usually grouped into five categories.

- Raw Materials
- Machinery
- Labour Services
- Capital Goods
- Land

Farm production likewise refers to the production food, fibre and livestock by using several different kinds of inputs. Land is used by farmers as a factory which helps them produce the desired crop. To this manufacturing plant (Land) labour and capital are added to cultivate, plant and harvest the crop. When considered necessary, fertilizer is also added by the farmers. Water may be either provided by either rainfall or by artificial irrigation. Application of all these inputs result in desired crop (output)

Production decision facing the individual farmer are of three types.

⇨ Farmer may wish to produce certain amount of a given product having a certain amount of resource to use. He will have to decide what is the most profitable amount of resource to use in the production of a commodity.

⇨ Having a certain combination of resources, he may have to decide the most profitable combination to use to produce a specific amount of given output.

⇨ Having a certain combination of resources he is also faced with the problem of choosing the most profitable mix of products of produce.

In order to provide answer to these questions, the farmer will take the help of production faction analysis with which this section will be mainly be concerned.

Production Function :

The production function implies the relationship between physical output and physical inputs used by a farm firm. Production function relationship can be expressed algebraically as follows.

$$Q = f\left(X_1, X_2, X_3, \dots X_n \right)$$

Where Q stands for quantity of farm output $x_1, x_2, \dots x_n$ stands for quantities of factors $X_1 \dots x_n$. This equation shows that

total output y depends upon the quantities $x_1, x_2, ... x_n$ of the factors $X_1, X_2, ... X_n$ respectively.

Let us for example the farmer is considering the question of how much nitrogen fertilizer to use in corn production he may consider the other inputs as given or fixed in specific in kind and quantities. In this case we say that

$$Q = f(X_1, X_2, X_3, ... X_n)$$

Where

Q = Output of corn

X_1 = Variable fertilizer input

$X_2, X_3, ... X_n$ = fixed inputs

The above function however, does not state by how much the output y changes as a consequences of change in variable input in order to express the quantitative relationship between inputs and output. The production function has to be expressed in a precise algebraic equation as

$$Q = a + bx$$

Which shows that there is a constant relationship between application of nitrogen. (the only factor input in this case) and the amount of corn is produced.

Production function is thus "Technical relationship between input and output. As long as technology remains constant the production function remains unchanged and indicates greatest output from a given input mix."

Types of Production Function :

Economist in past had formulated numerous algebraic equations forms but algebraic form of the function and the magnitude of its coefficients will vary with soil, climate, type and variety of crop and livestock, resources being varied, resources being varied state of mechanization etc. Hence the problem before the farmer economic is to select that algebraic form of function which appears or known to be consistent with phenomenon under investigation.

There are two types of input output relations or production functions. The first type of production function concern itself short run period when the quantities of some inputs are kept constant and the quantity of one input (or quantities of a few inputs) are varied. Input output relations of this kind forms the subject-matter of law of variable proportions. Secondly input-output relations are studied from a long-run approach when all inputs can be varied. This forms the subject matter of the law of returns to scale.

A] Quadratic Production Function :

General form

$$y = a + bx - cx^2$$

Where

y = yield

x = Input say nitrogen

a = yield due to fixed factors like phosphorous, potash, seeds, irrigation, human labour etc., which have been kept constant.

Simple quadratic equation with minus sign before c denotes diminishing marginal returns.

Suppose estimated quadratic equation is

$$y = 1,146 + 5.22x - 0.003x^2$$

$-.003x^2$ indicates curve is sloping downwards shows diminishing rate of return. Optimum dose of N & y can be obtained as

MP of total product curve is

$$\frac{dy}{dx} = 5.22 - 0.006x$$

if P_x = Rs.20/k.g.

and P_y = Rs.500/k.g. / Qtl or Rs.5/k.g.

Then,

$$5.22 - 0.006x = \frac{P_x}{P_y} = \frac{20}{5} = 4$$

$$5.22 - 0.006x = 4$$

$$x = -\frac{1.22}{0.006}$$

$$x = 203.33 \ \text{k.g.}$$

Optimum dose of nitrogen is 203.33 k.g. Now substituting this value of *x* in the original equation.

$$y = 1146 + 5.22(203.33) - 0.003(203.33)^2$$
$$= 1146 + 1061.38 - 124.03$$
$$= 2083.08 \text{ k.g.}$$

This is the output at most profitable level of nitrogen application. Suppose we want to estimate the response of nitrogen, substitute the value of *X* in equation.

$$y = bx - cx^2$$

Then,

$$y = 5.22(203.33) - 0.003(203.33)^2$$
$$= 1061.38 - 124.03$$
$$= 937.35 \text{ k.g.}$$

Therefore, fore 203.33 k.g. of nitrogen, the yield is 937.35 k.g.

B] Cobb-Douglas Production function

$$Q = BL^a K^b$$

B = It is the intercept term called efficiency parameter it measures the effect of technology on the o / p crop (*Q*)

L = Units of labour for producing a crop

K = Units of capital used in producing a crop.

Q - Output - crop.

MP_L (marginal product of labour)

$$MP_L = \frac{\partial Q}{\partial L} = a \, BL^{a-1} K^b$$
$$= a \left(BL^a K^b \right) L^{-1}$$

Let us solve with an illustration

$$Q = 80L^{0.43} K^{0.54} \qquad (1)$$

With $\overline{Q} = 1800$ units of output of crop.

Let us assume wages per labour unit Rs. 30 = w and price per unit of capital Rs. 40 = w

$$\frac{\partial Q}{\partial L} = 34.4\, K^{0.54} / L^{0.57}. \qquad (2)$$

$$\frac{\partial Q}{\partial L} = 43.2\, L^{0.43} / K^{0.46} \qquad (3)$$

For output maximization we should have

$$\frac{\partial Q / \partial L}{\partial Q / \partial K} = \frac{W}{n}$$

$$\frac{34.4\, K^{0.54} / L^{0.57}}{43.2\, L^{0.43} / K^{0.46}} = \frac{30}{40} \qquad (4)$$

0.53 and 0.46 are the elasticity coefficients i.e. (a & b) of capital and labour respectively. (we are calculating optimum value labour and capital with given output

$$= 40\left(34.4\, K^{0.54} / L^{0.57}\right) = 30\left(43.2\, L^{0.43} / K^{0.46}\right)$$

$$= 1376\, K^{0.54 + 0.46} \qquad = 1296\, L^{0.43 + 0.57}$$

$$1376\, K \quad = \quad 1296\, L$$

K = 0.94 L   (5)

L = 0.06 K   (6)

Equation 5 and 6 are the expansion paths. To solve for optimal value of L, substitute K = 0.94 L in equation (1)

$$Q = 80\, L^{0.43} \left(0.94L\right)^{0.54}$$

$$75.2\, L^{0.43 + 0.54}$$

$$75.2\, L^{0.97} \qquad\qquad (7)$$

Substitute $Q = 1800$ in equation (7)

$$1800 = 75.2\, L^{0.97}$$

$$L^{0.97} = \frac{1800}{75.2} = 23.94$$

$$\frac{1}{0.97}$$

$$L^{*} = 23.94$$

$$= 26.41 \qquad\qquad (8)$$

Substitute $L^{*} = 26.41$ and Q = 1800 in equation (1)

$$1800 = 80\,(26.41)^{0.43}\, k^{0.54}$$
$$1800 = 326.93\, k^{0.54}$$

$$K^{0.54} = 5.51$$

$$K^{*} = 5.51^{\frac{1}{0.54}} = 5.51^{1.85}$$
$$= 23.58$$

We also have two more production function.

C)   Constant elasticity of substitutions production functions.

$$Y = Y\left[\delta K^{-p} + (1-\delta)\, L^{p}\right]^{-\frac{1}{p}}$$

Y = output

K = Capital

L = Labour.

Here Y is called efficiency parameter and it is equal to Cobb Douglas production function δ is a distribution parameter and its values lies between 0 and 1 $(0 \leq \delta \leq 1)$ and p is a substitution parameter and its limits range -1 to $\alpha (-1 \leq p \leq a)$.

Elasticity of substitution $(\sigma) = 1/1 + p$.

The value of elasticity of substitution $(\sigma) = \alpha < \alpha < 0$. If P = 0 and $\sigma = 1$ CESPF becomes Cobb Douglas production function.

If P = -1 and $\sigma = \alpha$, CESPF becomes linear production function.

If $p = \alpha$ and $\sigma = 0$. CESPF takes form of Leontief of input-output production function.

3.3 PRODUCTION RELATIONSHIPS

(A) Factor – Product Relationship

Factor product relationship is a basic production relationship between the input and the output. It is mainly concerned with resource use and its efficiency. It guides the producer regarding how much to produce. Goal of this relationship is to optimization of resources. This relationship is explained by law of diminishing returns.

The law of variable proportion is a new name given to old classical concept of "Law of Diminishing Returns" has played a vital role in history of economic thought Assume that a firms production function consists of fixed quantities of all inputs (land, equipment etc.) except labour, which is a variable input. When farmer expands output by employing more and more labour, it alters the proportion between fixed and variable input.

Law can be stated as follows :

"When output of or production of a commodity is increased by adding units of variable input while the quantities of other inputs are held constant the increase in total production become after some time, smaller and smaller".

Here we need to understand certain concepts such as TPP, APP, MPP, EP

Total Physical Product (TPP) :

It is a total amount of output obtained by using different units of inputs.

Measuring in physical units like, quintals, kgs, etc.

Average physical product (APP)

It is a average amount of output produced by each corresponding units of inputs, it is obtained by dividing the total output at a given level by the number of units of input applied at corresponding level APP reflects efficiency of variable input.

$$APP = \frac{\text{Total Physical Product}}{\text{Input Level}}$$

Marginal Physical Product (MPP)

MPP is additional quantity of output, added by an additional unit of input i.e. the change in output as a result of change in variable input

$$MPP = \frac{\text{Change in Total Physical Product}}{\text{Change in Input Level}}$$

Elasticity of Production (EP)

It is defined as percentage change in output as result of percentage change in input

$$EP = \frac{\text{Percentage change in output}}{\text{Percentage change in input}}$$

To explain the law more clearly let us take example of farmer. Who has got many acres of land, building equipment etc. He has now to make decision regarding the number of workers he is going to hire for coming crop season in real having this decision,

the farmer will keep an eye on physical productivity of labour on the farm O/p of workers productivity in physical units form five – acre land.

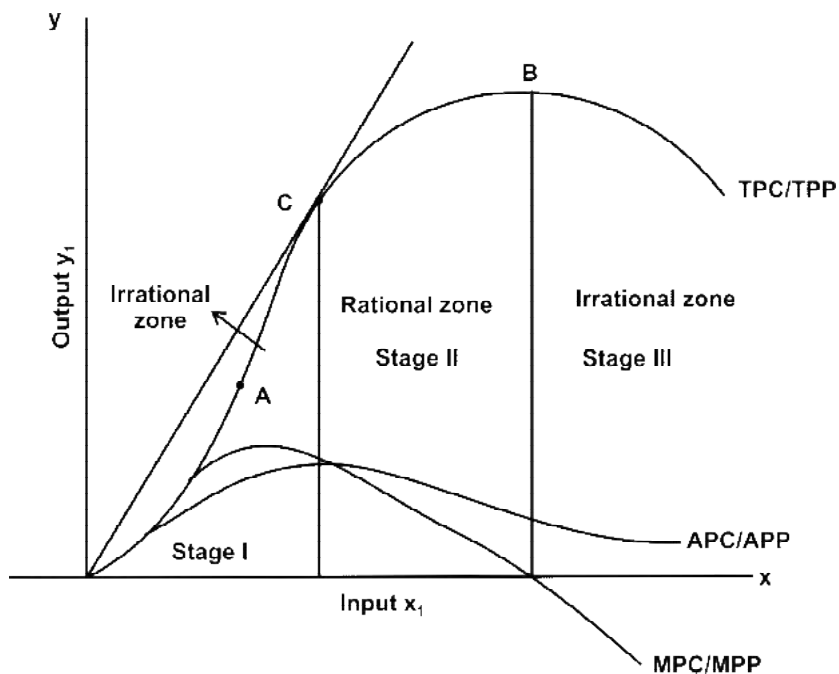| No. of worker	TP	AP	MP	Stage
1	100	100	100	
2	220	110	120	Stage I
3	270	90	50	
4	300	75	30	
5	320	64	20	Stage II
6	330	55	10	
7	330	47	0	
8	320	40	-10	Stage III

Figure 3.1

A close look at table reveals that both average product and marginal product increase in beginning and then decline off the two marginal product drop faster than the average product. Total

product its maximum when farmer employs 6th labour, nothing is produced by the 7th labour and its marginal productivity is zero, where as marginal product of 8th worker is -10, by just creating a crowed the 8th labourer only fails to make a positive contribution but leads to fall in total output.

In the Fig. total production user from zero at an increasing rate up to point A. the TPP is concave upward to point A. Beyond A output continues to rise but at a decreasing rate unit it reaches maximum, at point C. Point A on production function, where. The total product stops increasing at an increasing rate, is called the point of inflection. B indicates the point of maximum output. Beyond B Total Product – Curve slopes downwards.

From the foregoing discussion we conclude that there can be 3 types of input – output relationships in the production of a commodity only one input is varied and quantities of all other inputs are kept constant. These are
1. Constant marginal rate of return (constant productivity).
2. Decreasing Marginal Rate of Return (Decreasing Productivity)
3. Increasing Marginal Rate of Return (increasing Production)

1) Constant Marginal Return Function :

Constant productivity or constant returns the true if all the units of the variable factor which are applied to fixed factor result in equal additions to the total output of the product. The relationships between factor input and product output is termed as linear. Production function denoting constant or linear return is shown in following figure

In figure the output (rice) has been depicted on the y axis while the variable input fertilizer is depicted by x – axis. The resulting curve y_p^0 is a straight line and the production function is said to be linear.
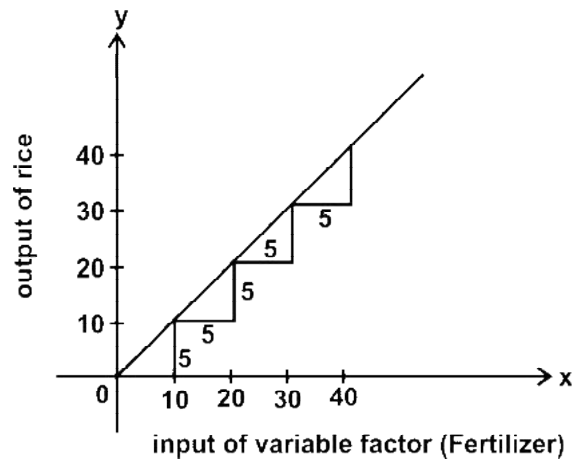
Figure 3.2

Constant returns are shown by triangles. Horizontal side of each triangle corresponds to input of 5 kgs of fertilizer the vertical side shows corresponding addition to output of 10 kg rice. This can be expressed as

Y = output x = input (variable)

$$\frac{\Delta y_1}{\Delta x_1} = \frac{\Delta y_{12}}{\Delta x_2} = ... = \frac{\Delta y_n}{\Delta x_n}$$

2)   Diminishing Marginal Return Function :

Diminishing Marginal return function exists when each additional unit of input add less to total output compared to previous unit. Diminishing returns are realised for example if first input added 25 units to total output. While second adds to 20 units, third add 15 units, forth add 10 units and fifth 5 units & so on
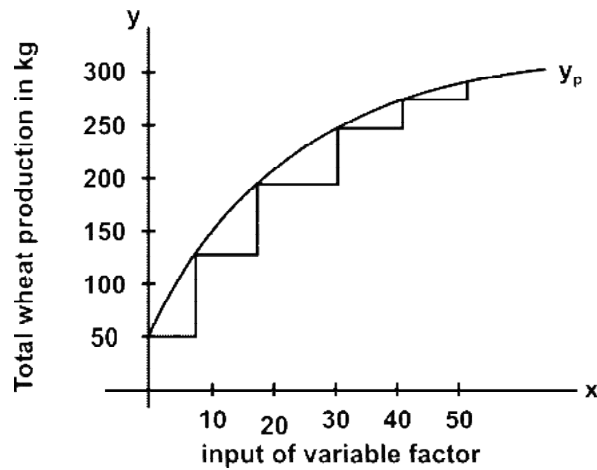
Figure 3.3

y_p is concave to x axis this relationship can be expressed as

$$\frac{\Delta Y_1}{\Delta X_1} > \frac{\Delta Y_2}{\Delta X_2} > .... > \frac{\Delta Y_n}{\Delta X_n}$$

Since $\Delta X_1 = \Delta X_2 = ... \Delta X_n$ hence the ratio of $\Delta Y / \Delta X$ goes on decreasing as we apply more units of the input.

3)   Increasing Marginal Return Function :

Increasing return to a single factor exist when each successive input of variable resource add more to total product than the previous input increasing factor returns are illustrated in Fig. by curve

Figure 3.4

The curve y_p is concave to the X axis. Triangles in the figure illustrate returns. While the return from the first unit of input is 2y, the return from the second unit is 4y, the return from there is 6y and so forth each additional of the variable factor adds more to output than previous unit. The relationship can be expressed as
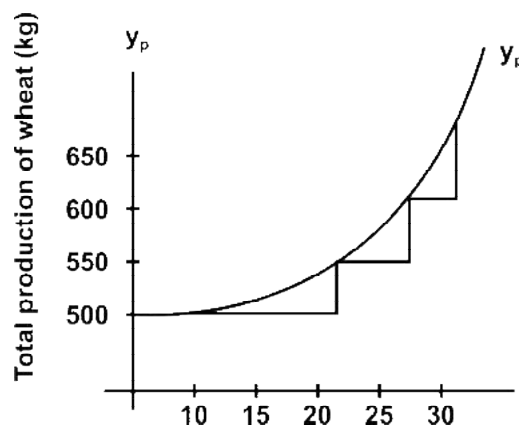
$$\frac{\Delta Y_1}{\Delta X_1} < \frac{\Delta Y_2}{\Delta X_2} < .... < \frac{\Delta Y_n}{\Delta X_n}$$

Since $\Delta X_1 = \Delta X_2 = ... \Delta X_n$, the ratio $\Delta Y / \Delta X$ will go on increasing as more and more units of inputs are added.

Stages of production Function :

Stages 1 : It starts from origin and ends at the point where MPP = APP in this stage MPP > APP as result of which APP is increasing. The MPP attains the maximum at point of inflection, thereafter it begins to decline, thereafter it begins to decline TPP increase at an increasing rate till the inflection point and thereafter it increases at decreasing rate. EP is more than are throughout the stage I of production and EP is one at end of this stage in this stage fixed resources are abundant relative to variable resources. Technical efficiency of the variable resource is increasing as indicated by increasing APP also the technical efficiency of fixed resource is increasing as reflected by increasing TPP. This stage is regarded as irrational (sub-optimal) stage of production.

Stage I : It is found from the point of equality MPP and APP and end where MPP is zero at which input use level, TPP is maximum. In this stage MPP is less than APP. However, both MPP and APP exibit declining trend. Average productivity derived from each individual unit of variable resource is on declining in this stage, through it is at its peak at beginning of stage II, TPP increases at decreasing rate as MPP is declining E_p is less than one throughout

Stage II. E_p is zero at end of this stage. It is rational stage of production. The technical efficiency of variable resource declined as indicated by the declining APP but technical efficiency of fixed resource increase as indicated by increasing TPP. In this stage variable resource is abundant relative to fixed resources.

Stage III : The starting point of stage III is end of stage II at which MPP is zero MPP is zero. In this stage MPP becomes negative APP continuously declines and TPP which is at its maximum at end of stage II begins to decline E_p is less than zero. It is irrational (supra-optimal) stage of production. The technical efficiency of variable resource and fixed resource declines. Variable resource is excessive quantities relative to fixed resource.

3.4 (B) FACTOR-FACTOR RELATIONSHIP

Any production activity requires different inputs to produce or given quantity of output. There are many ways of combining these resources or production technology in production process. The managerial problem here is to find out the least cost combination of inputs for producing a given level of output. The production function here is

$$Q^* = f\left(x_1 x_2\right)$$

Where

Q^* - fixed level of output

x_1, x_2 are quantities of variable inputs. The factor-factor relationship deals with two independent variables and dependent variable giving rise to three dimensional diagram. Iso-quant is convenient of compressing three dimensional diagram to two-dimensional diagram.

ISO-QUANT :

Iso-quant is also termed as Iso-product curve, equal product curve or product indifference curve.

The curve representing all combinations of x_1 and x_2 that produce the same level of output is called and Iso-quant. For e.g. an output *y* amounting 100 units can be produced using different combinations of inputs x_1, x_2.

Total output	x_1	x_2
100 units	1	13
100 units	2	8
100 units	3	5
100 units	4	3
100 units	5	1
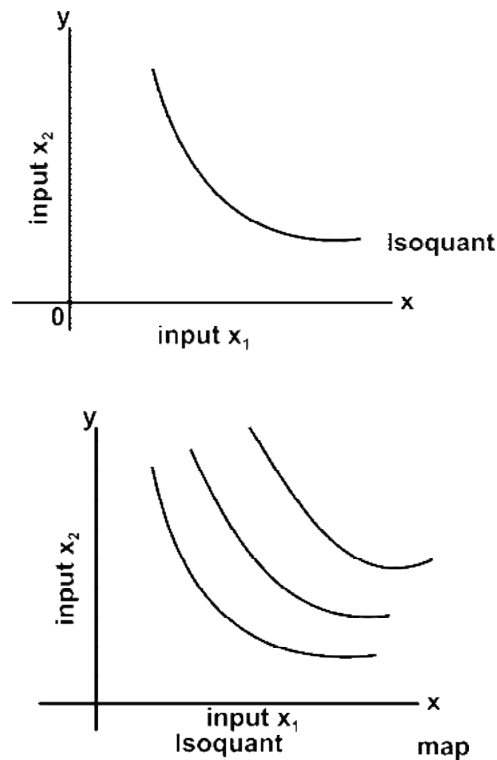
Figure 3.5

Properties of Iso-quant :

1. Iso-quant slope downward from left to right if quantity of input say x_1 is increased the quantity of other input say x_2 is decreased to obtained. Same level of output y.

2. Iso-quants are convex to the origin. The absolute slope of Iso-quant decreases, as we move left downwards to right indicating diminishing rate of technical substitution. Because diminishing marginal rate of technical substitution each added unit of one input replaces less and less than the previous unit.

3. Iso-quants place above another represents higher output. Iso-quants place for higher level of output are placed further away from the origin.

4. Iso-quants are not intersecting. No two Iso-quants intersect each other because the same combination of two input factors cannot produce two different levels of output.

Marginal level of Technical Substitution (MRTS) :

It is the rate of exchange between two productive resources which are equally preferred. The quantity of one input to be sacrificed or given up in order to gain another input by one unit in process of substitution MRTS of x_1 for x_2 is written as

$$\text{MRTS } x_1 x_2 = \frac{\Delta x_2}{\Delta x_1}$$

MRTS computed with following equation

$$\text{MRTS} = \frac{\text{Quantity of input sacrificed}}{\text{Quantity of input gain}}$$

Units of x_1	Units of x_2	Δx_1	Δx_2	MRS of x_1 for x_2
1	12			
		1	- 3	- 3.0
2	9			
		1	- 2	- 2.0
3	7			
		1	- 1	- 1.0
4	6			
		1	- 0.5	- 0.5
5	5.5			
		1	- .25	- 0.25
6	5.25			

Substitutes :

If two resources x_1 and x_2 are said to be substitute (perfect substitutes). Example – Family labour and hired labour owned bullock labour and hired labour farm produced and purchased input etc. These Iso-quants are linear and negatively sloped.
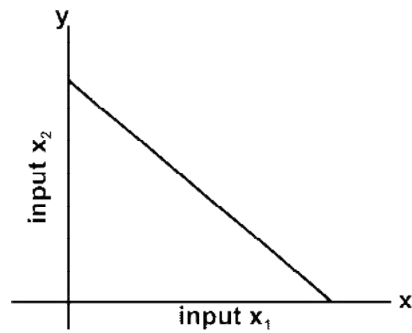
Figure 3.6

Complements :

Resources which are used together in fixed proportions are called perfect complements when inputs $(x_1\, x_2)$ are perfect complements Iso-quants are L shaped. Example tractor and driver, a pair of bullocks and human labour etc.

Figure 3.7

Iso-cost Line :

It is known as price line or Iso-outlay line or budget line.

Iso-cost line represents various combinations of two inputs that can be purchased with the given outlay of funds.

Suppose farmer has a fund of Rs.400/- and he has to spend on two inputs that is x_1 and x_2. The price per unit of x_1 is Rs.10/-

and x_2 is Rs.8/-. Then with the given price if he purchase only x_1 input then he can maximum purchase 40 units of x_1 and 50 units of x_2 to produce fixed output.
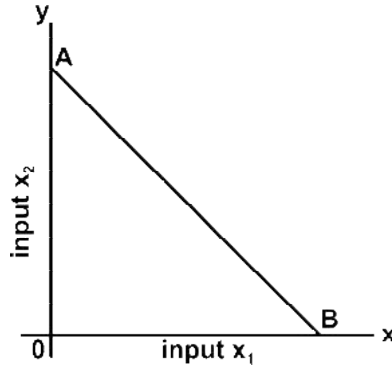
Figure 3.8

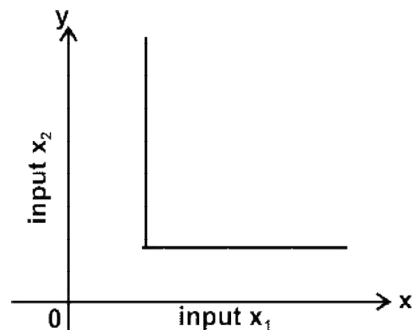Line AB shown in figure is Iso-cost line.

Least Cost Combination :

Factor-factor mainly concerned with determination of least cost combination of resources. There will be many combinations of two resources that produce the same level of output. The problem here is to find out that particular combination of inputs, which produces a given quantity of output with minimum cost. Following different methods of finding out the least cost combination.

Tabular Method :

Given the input, combinations the prices of inputs, the total cost of each input combination can be computed. The combination which cost the least is selected.

x_1 Units	x_2 Units	x_1 @ Rs.4/-	x_2 @ Rs.2/-	Total Amt.
50	219	200	438	638
55	206	220	412	632
60	194	240	388	628
65	182	260	364	624
70	171	280	342	622

In the table combination of 70 units of x_1 and 171 units of x_2 is the least cost combination.

Algebraic Method :

Step 1 $\Rightarrow$ Compute marginal rate of technical substitution

$$\text{MRTS} = \frac{\text{Number of units of resource } x_2}{\text{Number of units of resource } x_1}$$

$$\text{MRTS } x_1 x_2 = \frac{\Delta x_2}{\Delta x_1} \quad \text{(when we substitute } x_1 \text{ for } x_2 \text{)}$$

$$= \frac{\Delta x_1}{\Delta x_2} \quad \text{(when we substitute } x_2 \text{ for } x_1 \text{)}$$

Step 2 $\Rightarrow$ Compute inverse price ration (PR)

$$\text{PR} = \frac{\text{Price per unit of } x_1}{\text{Price per unit of } x_2} = \frac{Px_1}{Px_2}$$

$$\frac{Px_1}{Px_2} \quad \text{(when we substitute } x_1 \text{ for } x_2 \text{)}$$

$$\frac{Px_2}{Px_1} \quad \text{(when we substitute } x_2 \text{ for } x_1 \text{)}$$

Step 3 $\Rightarrow$ Finding least cost combination by equating marginal rate of technical substitution with price ratio

$$\frac{\Delta x_2}{\Delta x_1} = \frac{Px_1}{Px_2}$$

Graphic Method :

To find out optimum combination both Iso-quant and Iso-cost are drawn on same graph. The point of tangency between Iso-quant line and Iso-cost line indicates least combination tangency slope (MRTS) of Iso-quant equals.

Slope (PR) of Iso-quant
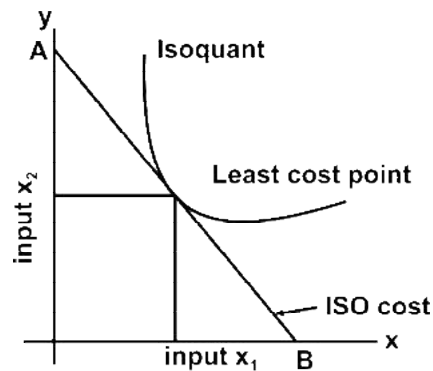
Figure 3.9

Expansion Path :

The line or curve, connecting the points of least cost combination for different levels of output is called expansion path. Expansion path is an Iso-line on which the slope of Iso-quant (MRTS) equals the slope of Iso-cost line (price ratio). The expansion path indicates best way of producing different levels of output, given the prices of inputs and technology. If expansion path is straight line starting from origin, it implies that inputs will be used in the same proportion at all output levels and hence it is also called scale line. On the other hand expansion path is curved it implies that inputs are used in various proportions.

Figure 3.10

3.5 (C)PRODUCT – PRODUCT RELATIONSHIP

The basic resources of farming viz. land, labour and capital are scarce. However, these scarce resources have many alternative uses. Scarce resources can be used in producing different crops and livestock enterprises. Therefore, the farmers are faced with the management problem of what to produce. Farmers have to decide whether to produce crops alone or livestock alone or their combinations. The farmer should choose such a combination of crop and livestock enterprises that maximizes profits.
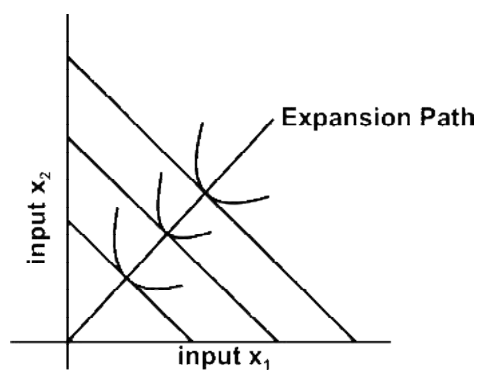
Product-product relationship deals with the allocation of resources among different crop and livestock enterprises. The objective of product-product relationship is profit maximization. In product-product relationship, resources are kept constant and the product-product relationship. Substitution and price ratios are used as choice indicators in the determination of optimum combination of enterprises. Algebraically the product-product relationship can be shown as :

$$Y_1 = f\left(Y_2, Y_3, Y_4 \ldots \ldots Y_n\right)$$

This expression reveals that a farmer is having an option of growing four or more crops in the same season in his operational holding. Then acreage proposed to be allocated under crop Y_1 is a function of acreage under crops Y_2, Y_3, Y_4 and Y_n.

Production Possibility Curve :

Production possibility curve an be drawn from production functions. Suppose a farmer has a limited input i.e. 5 acres of land. He has two alternatives i.e., the production Y_1 product and Y_2 product. The problem here is as to how to allocate this limited input between two alternatives. The alternatives are using the entire 5 acres of land for the production of Y_1 alone or allotting 5 acres of land for production of Y_2 alone.

In between these to extreme possibilities, we have different options like allocation of 1 acre for Y_1 and 4 acres for Y_2, two acres for Y_1 and three acres for Y_2 and so on. If the entire area of 5 acres

is allotted to the production of Y_2, 300 units of Y_2 would be obtained, while that of Y_1 is zero (Table 20.1). Analogously, if the total area of 5 acres is allotted to product Y_1, 300 units of Y_1 would be received but the production of Y_2 would be zero. Suppose a farmer wants to product some quantity of Y_1, he has to withdraw some area of land from the production of Y_2. If one acre is allotted to Y_1, he will obtain 100 units of Y_1 and the remaining 4 acres in the production of Y_2 yield 250 units. Likewise 2 acres of land under Y_1 and 3 acres of land under Y_2 would yield an output of 150 and 190 units respectively. Other possibilities can be seen from the table.

The different levels of land input and the corresponding levels of output of Y_1 and Y_2 represent two production functions. Production possibility curve is a convenient method of depicting two production functions on a single graph (Fig. 1).

Production possibility curve represents all possible combinations of two products (Y_1 and Y_2) that could be produced with given amount of resources.

TABLE 1

Possible Production Levels from the given acreage of Land

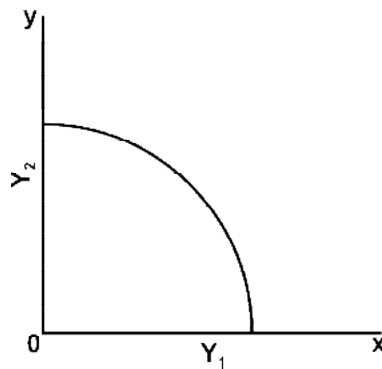| Area allotted between two products in acres		Output	
Y_1	Y_2	Y_1	Y_2
0	5	0	300
1	4	100	250
2	3	150	190
3	2	200	100
4	1	250	50
5	0	300	0

Figure 3.11

Production possibility curve

Production possibility curve is also known as Iso-resource curve or Iso-factor curve, since all the combinations of two products require the same amount of resources. Production possibility curve presents the producer all the production opportunities available with a given amount of resources and hence it is called opportunity curve. The slope of the production possibility curve indicates the trade off between the two products. it indicates the rate at which one product is transformed into another product. Therefore it is called transformation curve. It is also a frontier because the limited resources cannot help to produce anything beyond production possibility curve. It demarcates what is possible given the available quantity of inputs. The area under the production possibility curve including the axes is called the feasible set or the attainable set of outputs.

Characteristics of Production Possibility Curve
1. It is concave to the origin.
2. slope of production possibility curve indicates the marginal rate of product substitution, and
3. Change in input levels, shifts the production possibility curve.

3.6 RELATIONSHIP AMONG THE PRODUCTS

These relationships are of different forms viz., joint products, complementary products, supplementary products, competitive products and antagonistic products.

Joint Products

Products which are produced from the same production process are called joint products the two products derived through the production process are combined in fixed proportions. Production of one without the other is not possible. In agriculture almost all products are joint products. The proportion of the joint products can be altered or manipulated through research break-through in the long run. The examples are : paddy and straw, cotton lint and cotton seed, meat and wool, etc. Production possibility curve for joint products can be seen as a point for given quantity of resources. The points are as many as the levels of resources (Fig. 2).
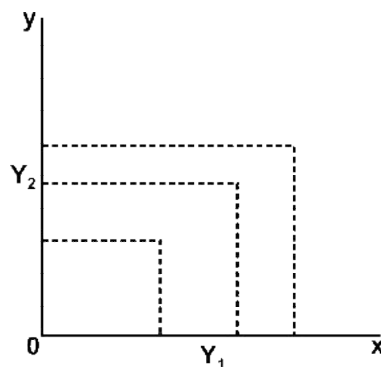
Figure 3.12

Production possibilities for joint product

Complementary Products :

The products are complementary, if an increase in one product causes an increase in the other product, when the total quantity of inputs used on the two products are held constant. Similarly, a decrease in the production of one products results in the decrease in the production of other product. They do not compete for the resources. One of the products contributes an element of production required by another thereby helping each other in production. An example that can be cited here is rice succeeding a legume crop. The legume fixes nitrogen thereby improving the soil fertility for the next crop. Similarly, paddy and livestock are complementary as paddy crop provides straw to livestock and livestock in turn makes the availability of farmyard manure to the paddy crop. Here these two contribute to their mutual production. The complementary products would become competitive, when large quantities of resources are diverted to one

product, affecting the production of the other. The marginal rate of product substitution is positive. The production possibility curve in Fig. 3 presents the range of complementary of one product to the product.

As can be seen from the figure that Y_1 is complementary to Y_2 between A and B, while Y_2 is complementary to Y_1 between C and D, between the points B and C, the two products become competitive. Farmers can take the advantage of complementarily by producing both the products till they become competitive.
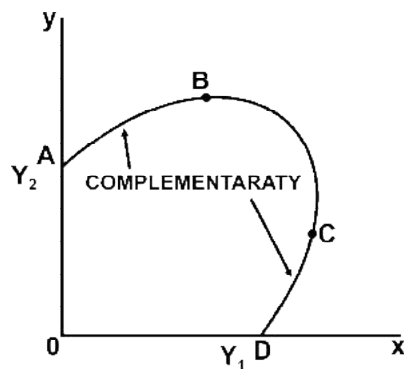
Figure 3.13

Supplementary Products :

Two products become supplementary, if the quantity of one product can be increased without increasing or decreasing the quantity of the other product. They do not compete for the resources. Instead they make better utilization of resources, which are being unutilized by one enterprise. They together add to the income on the farm. Crop production is seasonal in nature, and during off-season the resources are slack. They can be better utilized by adding supplementary enterprises viz., a small dairy unit or poultry unit or piggery unit. A farmer should take best advantage of the products by producing both of them till they become competitive. The marginal rate of product substitution is zero. Production possibility curve for supplementary enterprises is shown in Fig. 4. The product Y_1 can be increased up to AB without affecting the production Y_2. If it is further increased the two become

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competitive. It can be seen in the diagram that the two products are competitive between the points B and C.
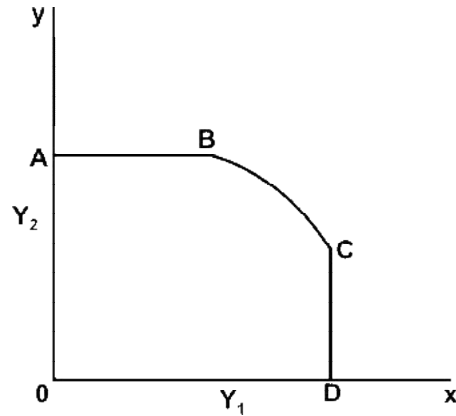
Figure 3.14

Complementary Enterprises

Competitive Products :

Two products are said to be competitive, when increase or decrease in the level of production of one results in decrease or increase in the level of production of another, given the fixed amount of resources. The marginal rate of product substitution between the products is therefore, negative. Most of the decisions regarding the selection of products involve competing products. The examples are, paddy and sugarcane, paddy and groundnut, groundnut and sunflower etc. in general, crops grown in the same season are competitive because of limited resources.

MARGINAL RATE OF PRODUCT SUBSTITUTION :

Like factors, products also substitute each other. The absolute amount, by which one product is decreased in order to gain another product by a unit is called marginal rate of product substitution.

$$Marginal\ rate\ of\ subtitution = \frac{Number\ of\ units\ of\ replaced\ product}{Number\ of\ units\ of\ added\ product}$$

$$MRS\,Y_1Y_2 = \frac{\Delta Y_2}{\Delta Y_1}$$

Marginal rate of product substitution of Y_1 for Y_2 implies that the amount of Y_2 to be given up in order to gain Y_1 by one unit.

TYPES OF PRODUCT SUBSTITUTION :

The shape of the production possibility curve depends upon the type of product substitution. Competitive enterprises substitute either at constant rate or at increasing rate or at decreasing rate.

Constant Rate of Substitution :

Two products substitute at constant rate when a unit increase in the production of one replaces the same amount of another product throughout the process of substitution. In other words, a constant amount of replaced product is sacrificed in order to gain added product by one unit. Constant rate of substitution occurs when one of the production functions has an elasticity greater than one (increasing returns), the other has an elasticity of less than one or both Y_1 and Y_2 production functions have stages of both increasing and decreasing returns. The production possibility curve is linear when products substitute at constant rate. When we find two products substituting at constant rate, the production of only one product is economical based on the relative prices of the two products. This is case of specialization. The example here is tow varieties of the same farm commodity. The relevant dates are presented in Table 2.

When we shift from A combination to B combination, Y_1 is increased by one unit Y_2 is decreased by 6 units and the marginal rate of product substitution is 6. i.e., we need to reduce 6 unit of Y_2 to increase Y_1 by one unit. Similarly, when we shit from combination B to C, C to D, D to E and E to F the amount of Y_2 to be given up is same. Fig 5 indicates the products substituting at constant rate.

TABLE 2

Two Competitive Products Substituting at Constant Rate

Combination	Y_1	Y_2	ΔY_1	ΔY_2	MRS of Y_1 for Y_2
A	0	60			
B	1	54	1	6	6 / 1 = 6
C	2	48	1	6	6 / 1 = 6
D	3	42	1	6	6 / 1 = 6
E	4	36	1	6	6 / 1 = 6
F	5	30	1	6	6 / 1 = 6

$$\frac{\Delta_1 Y_2}{\Delta_1 Y_1} = \frac{\Delta_2 Y_2}{\Delta_2 Y_1} = \ldots \ldots \frac{\Delta_n Y_2}{\Delta_n Y_1}$$

Figure 3.15

Constant Rate of products Substitution

Increasing Rate of Substitution :

Two products substitute at increasing rate when increase in one product requires larger and larger sacrifice in terms of another product. This type of substitution occurs when the production function of each independent product exhibits decreasing returns. Substitution of this nature is more common in agricultural production as the diminishing marginal resource productivity is a general situation in agriculture. Production possibility curve is concave to the origin when products substitute at increasing rate.

The examples here are, all the crops grown in the same season viz., paddy and sugarcane, groundnut and sunflower, paddy and groundnut etc. When products substitute at increasing rate it is economical to produce a combination of products. The general pattern of production is diversification. An hypothetical example of increasing rate of product substitution is presented in Table 3.

Shifting from combination A to combination B, results in increase in Y_1 by 8 units and decrease in Y_2 by 15 units. Marginal rate of substitution is 1.88. It means 1.88 units of Y_2 are to be sacrificed to gain Y_1 by one unit. When we shift from B to C, C to D, and D to E, the amount of Y_2 to be foregone is successively increasing as indicated by the increasing marginal rate of product substitution. The graphical representation is shown in Fig. .6

TABLE 3

Two Competitive Products Substituting at Increasing Rate

Combination	Y_1	Y_2	ΔY_1	ΔY_2	MRS of Y_1 for Y_2
A	0	75			
B	8	60	8	15	1.88
C	16	44	8	16	2.0
D	24	26	8	18	2.25
E	32	0	8	26	3.25

$$\frac{\Delta_1 Y_2}{\Delta_1 Y_1} < \frac{\Delta_2 Y_2}{\Delta_2 Y_1} < \text{.......} < \frac{\Delta_n Y_2}{\Delta_n Y_1}$$
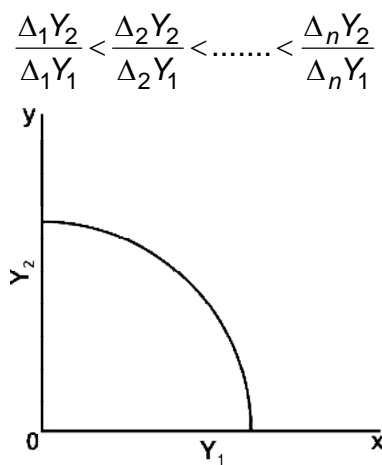
Figure 3.16

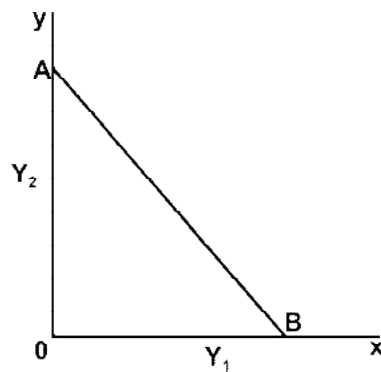**Increasing Rate of products Substitution**

Decreasing Rate of Substitution :

Two products substitute at decreasing rate when increasing in one product requires lesser and lesser reduction in another product. This type of substitution is observed when the production functions of both the products exhibit increasing returns. This type of substitution is very rare in production process, because increasing returns are seen in I stage of production which is irrational. It is economical to produce only one of the products is specialization. The production possibility curve is convex to the origin. An hypothetical example is presented in Table 4.

Shifting from combination A to combination B results in increase in Y_1 by 2 units and decrease in Y_2 by 16 units. It means 8 units of Y_2 are to be sacrificed to gain Y_1 by one unit. When we shift from B to C, C to D and D to E, the amount of Y_2 to be forgone is successively decreasing as indicated by the decrease in marginal rate of product substitution. The graphical representation of found in Fig.7

TABLE 4

Two Competitive Products Substituting at Decreasing Rate

Combination	Y_1	Y_2	ΔY_1	ΔY_2	MRS of Y_1 for Y_2
A	0	43			
B	2	27	2	16	8
C	4	15	2	12	6
D	6	6	2	9	4.5
E	8	0	2	6	3
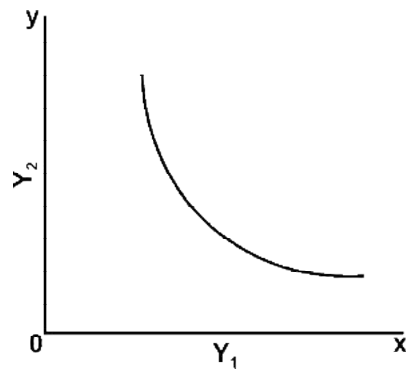
Figure 3.17

Decreasing Rate of products Substitution

$$\frac{\Delta_1 Y_2}{\Delta_1 Y_1} > \frac{\Delta_2 Y_2}{\Delta_2 Y_1} > .... > \frac{\Delta_n Y_2}{\Delta_n Y_1}$$

ISO-REVENUE LINE :

It is a line, which defines all possible combinations of two products, which would yield equal revenue. Suppose we wish to obtain total revenue of Rs. 5,000, when price of Y_1 (P_{Y1}) is Rs. 10 and price Y_2 (P_{Y2}) is Rs. 20, the expected revenue of Rs. 5,000 could be earned by producing 500 units of Y_1 or 250 units of Y_2. Similarly, 300 units of Y_1 and 100 units of Y_2 or 100 units of Y_1 and 200 units of Y_2 would help to earn the same revenue. By plotting these two extreme points of 500 units of Y_1 and 250 units of Y_2 and by joining these two points, we get the Iso-revenue line (Fig.8).

Characteristics of ISO-revenue Line

1. Iso-revenue line is a straight line, as the output prices do not change with the quantity of the output sold.
2. As the total revenue increases, the Iso-revenue line shifts upwards and moves away from the origin.
3. The Iso-revenue lines are parallel to each other, since price ratio remains constant, and
4. The slope of the Iso-revenue line indicates the inverse price ratio of the products. The slope is affected by price changes.
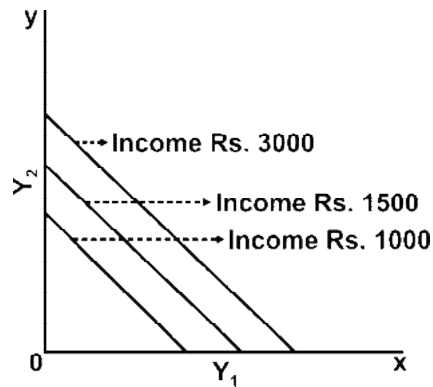
Figure 3.18

Iso-revenue Line

3.7 DETERMINATION OF OPTIMUM PRODUCT COMBINATION

To get the revenue maximizing combinations of two products, two relevant questions need to be answered viz., what combinations should be produced and how can that combination be determined. To answer these questions, the following methods need to be examined.

Algebraic method :

Step 1 Compute marginal rate of substitution between products

$$MRS = \frac{Number\ of\ units\ of\ replaced\ product}{Number\ of\ units\ of\ replacing\ product}$$

$$MRS_{Y_1Y_2} = \frac{\Delta Y_2}{\Delta Y_1}$$

Here Y_1 is replacing product and Y_2 is replaced product.

$$MRSY_2Y_1 = \frac{\Delta Y_1}{\Delta Y_2}$$

Here Y_2 is replacing product and Y_1 is replaced product.

Step 2 Compute price ratios (PR)

$$PR = \frac{\text{Price per units of replacing product}}{\text{Price per units of replaced product}}$$

$$PR = \frac{P_{Y_1}}{P_{Y_2}} (or) \frac{P_{Y_2}}{P_{Y_1}}$$

Step 3 Finding out the optimum combination of products by equating MRS with price ratio.

$$\frac{\text{Number of units of replaced product}}{\text{Number of units of replacing product}} = \frac{\text{Price per units of replacing product}}{\text{Price per units of replaced product}}$$

$$= \frac{\Delta Y_2}{\Delta Y_1} = \frac{P_{Y1}}{P_{Y2}} (or) \frac{\Delta Y_1}{\Delta Y_2} = \frac{P_{Y2}}{P_{Y1}}$$

Graphic Method

To determine the optimum combination of products through graphic method, production possibility curve and Iso-revenue line are depicted on the same graph (Fig.9). slope of production possibility curve indicates the marginal rate of substitution and that of Iso-revenue line represents the inverse price ratio of the products. The optimum combination products are at the point where the Iso-revenue line is tangent to the production possibility curve. At the point of tangency the slopes of production possibility curve and Iso-revenue line are the same.
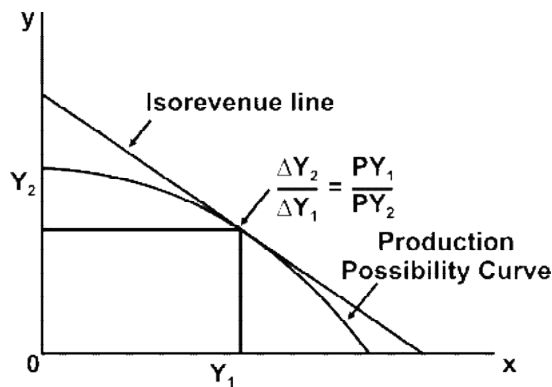
Figure 3.19

Optimum Combination of products

OUTPUT EXPANSION PATH :

Iso-cost lines are the lines or curves that pass through the points of equal slope on a production possibility map. Output

expansion path is that Iso-cost line, which connects the points of optimal product combinations on the successive production possibility curves (Fig. 10).

RIDGE LINES :

Ridges lines are the borderlines that separate ranges of competition and product complementarity. In the Fig. 20.10, OA and OB are the ridgelines. That portion of production possibility curves, falling between OA and OB have negative slope indicating the existence of competition between the products, while that portion of the production possibility curves falling outside OA and OB, have positive slopes indicating complementarity. Along the path OA, the marginal rate of substitution of Y_1 for Y_2 is zero, while along the path OB, the marginal rate of substitution of Y_1 for Y_2 is infinite.
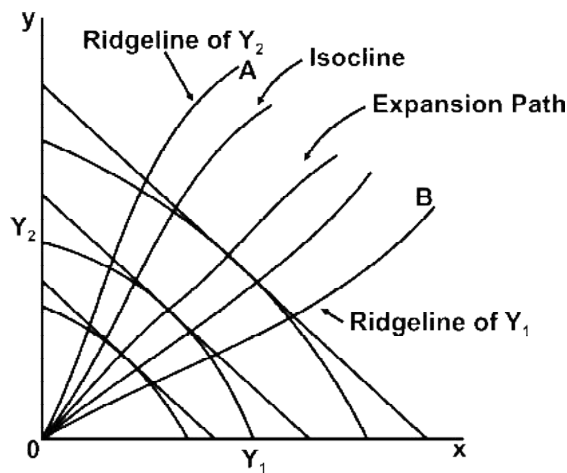
Figure 3.20

Expansion path and ridge lines

Summary of Three Basic Production Relationships

Relationship		
Factor – product	**Factor – factor**	**Product – product**
It is concerned with resource use efficiency	It is concerned resource combination and Substitution	Resource allocation
Objective is optimization of resource use	Cost minimization	Profit maximization
Management problem : How much to produce	How to produce	What to produce
Determination of optimum input to use and optimum output to produce	Least cost combination of resources	Optimum combination of enterprises
Choice indicator		
Price ratio	Substitution ratio and price ratio	Substitution ratio and price ratio
Single variable production function	Output is constant and inputs are varied	Input is constant and products are varied
Law of diminishing returns explains the factor-product relationship	Principle of factor substitution, explains factor-factor relationship	Principle of product substitution explains product-product relationship
$Y = f(x_1, x_2, x_3, ..., x_n)$	$Y = f(x_1, x_2)$	$Y_1 = f(Y_2, Y_3, ...Y_4)$

3.8 QUESTIONS

1. Write notes on the following relationships
   a) Factor-Product relationship
   b) Factor-Factor relationship
   c) Product-Product relationship
2. Explain the different forms of relationship among products.
3. Describe how optimum product combination is determined to get maximum revenue.

❖ ❖ ❖ ❖

4

RISK AND UNCERTAINTY

Unit Structure :

4.0 OBJECTIVES

- To understand and minimize farmers risk and uncertainty and maximize his return.

- To understand the role of government to reduce instability and to have growth in agriculture sector.

4.1   DECISION   MAKING   UNDER   RISK   AND UNCERTAINTY

Risk and uncertainties are more pronounced in agriculture as the laws of nature have the upper hand in these enterprises. Crop enterprises are subject of fluctuations from year to year on account of erratic fluctuations in monsoons and damages due to insects, diseases, storms and other such things.

These risks and uncertainties are permanent phenomena in agriculture and farmers will always faced, with the problem of taking suitable action against these. To the extent the farmer succeeds in minimizing risk and uncertainty, he succeed in maximizing his returns.

Risk :

Risk is the probabilistic phenomenon where on outcomes are unknown and can be predicted only in a probability sense.

Uncertainty :

Any decision or outcome which can not be predicted precisely. In contrast to risk the probability of an outcome can not be established in an empirical or quantitative sense for situation of uncertainty one can best guess the range with in which an uncertainty can materialize.

Game Theory :

The theory of games (or game theory, or competitive strategies) is a mathematical theory that deals with the general features of competitive situations. The theory is helpful when two or more individuals or organizations with conflicting objectives try to make decisions. In such situations a decision made by one decision maker affects the decision made by one or more of the remaining decision makers and final outcome depends upon the decision of all the parties.

The theory of games is based on the minimax principle put forward by J-von-Neumann which implies that each competitor will act so as to minimize has maximum loss (or maximize his minimum gain) or achieve best of the worst. The theory does not describe how a game should be played it describes only. The procedure and principles by play should be selected.

Characteristics of Games :

A competitive game has following characteristics

1. There are finite numbers of participants or competitors. If number of participants is 2, the game, for number greater than 2 it is n-person game.

2. Each participant has available to him a list of finite number of possible courses of action. The list may not be same for each number of participants.

3. Each participant knows all the possible choices available to other but does not know which of them is going to be chosen by them.

4. A play is said to occur. When each of the participants chooses one of the courses of actions available to him. The choices are

assumed to be played simultaneously so that no participant knows the choices made by others until he has decided his own.

5. Every combination of courses of action determines an outcome which results in gains to the participants. The gain may be positive, negative or zero, Negative gain is called loss.

6. The gain of a participant depends not only on his own actions but also those of others.

7. The gains (pay offs) for each and every play are fixed and specified in advance and are known to each player. Thus each player knows fully the information contained in the payoff matrix.

8. the players make individual decisions without direct communications.

Game models :

There are various types of game models. They are based on factors like numbers of players participating the sum of gains or losses and the number of strategies available etc.

1. **Number of persons :** if the game involves only two-player, it is called two-person games if there are more than two player it is named n-person game. An n-person game does not imply that exactly n-players are involved in it. Rather it means that the participants can be classified into n mutually exclusive groups with all members in a group having identical interests.

2. **Sum of payoffs :** If the sum of payoffs to the players is zero, the game is called zero-sum game or other wise non zero-sum game.

3. Number of strategies if the number of strategies (moves or choices) is finite, the game is called a finite game if not, it is called infinite game.

Some definitions :

Optimal strategy : The strategy that puts the player in most preferred position irrespective of the strategy of his opponents is called optimal strategy. Any duration from this strategy would reduce his pay off.

Zero sun game : It is a game in which the sum of payments to all the players, offer the play of the game is zero, in such a game the gain of players that win is exactly equal to the loss of player that lose i.e. two candidates fighting elections, where in the gain of votes by one is the loss of votes to the other.

For example :

Suppose a decision to be taken on modernization of rice shelters. There are 2 farm managers – A and B. each of two has alternative strategies before him.

Competitor B

	status quo	modernizes
status quo	0,0	-10,000, 30,000
competitor A modernize	30,000, -10,000	8,000, 8,000

The left hand entry in each cell is payoff to A and right hand entry is the payoff to B if both the competitors does not go for modernization then there will not be any increase in profit represented by (,0,0) increase in profit but if competitor A did not go for modernization and B goes for it B captures the market share and have 30,000 as his increased profit and A loses his market share and has -10,000 as loss. Where as if both go for modernization then both an increase there market shares and have pay off or higher profit of 8,000 each. So both will chose to modernize and here (8, 000, 8,000) can is the optimal strategy.

Decision Theory :

Unlike in the game theory, in the decision theory, there is no virtual opponent or competitor to oppose or compete with the farmer. The competitor here is considering being nature itself.

Decisions are make under 4 types of environments that differ according to the degree of certainty. The degree of certainty may vary from complete certainty to complete uncertainty. The region that lies in between corresponds to decision making. Under risk,

1. Decision making under conditions of certainty it is easy to analyse the situation and make good decisions since the decisions maker has perfect knowledge about the future, outcomes, he simply chooses the alternative having optimum pay off.

2. Decision making under conditions of uncertainty. More than one state of nature exists but decision maker lacks sufficient knowledge to allow him assign probabilities to the various state of nature.

3. Decision making under condition risk. Here also, more than one states of nature exist but decision maker lacks sufficient.

Knowledge to allow him assign probabilistic to each of these states.

4. Decision making under state of conflict situation exist in which two (or more) opponents with conflicting objectives try to make decisions with each trying to gain at cost of others. here game theory applies.

For example :

A farmer learns from reports that the wheat crop. Which he is also raising, has been damaged due to floods in the neighboring area, however he expects a bumper crop from his own land. From his experienced, he has prior, knowledge that it slump conditions prevail in the wheat market in his area, three is a 60% of chance that he will make gain of Rs. 800 per hectare if he does not raise the price of wheat. But on the contrary there is an equal chance of losing Rs. 200 per hectare in case he increases the price of wheat. On the other hand, if he expects boom conditions in the wheat markets, there is a 40% chance that he can earn a profit of Rs. 900 per hectare in case he does not increase the price of his wheat and an equal chance of making a profit of Rs. 1,200 per hectare if he increases the price.

Decision	Slum	Boom
Leaves the price untouched	p = .6	p = .4
	g = 800	g = 400
Raise the price	p = .6	p = .4
	g (-200)	a = 1200

Given these 2 situations the farmer estimates his expected gains by using the concept of mathematical expectation.

$$E(g) = \sum g_1 p_1 = g_1 p_1 + g_2 p_2$$
$$= .6 \times 800 + .4 \times 900$$
$$Rs. 840$$

If Raises prices

$$.6 \times (-200) + .4 (1200)$$
$$P\sigma. 360$$

Decision – Farmer should not raise the price of his crop.

4.2 BUFFER STOCK OPERATIONS

During the planning Commission meeting in May 1972 it was suggested that food grains stocks with Food Corporation of India should be conceptually classified into 3 categories.

a) Buffer stock
b) Operational stock and
c) Surplus stock

Buffer stock operations refer to buying of goods and selling the same with the objective of neutralizing price fluctuation. Buffer stock serves as a stock absorber in the economy and provides a defense mechanism against the widely fluctuating price levels.

The foods stocks are stored in government godowns and warehouse. Such stocks are release for public redistribution system. The govt. fixes issue price for certain food grains and thus controls the price in the open market. To safe guard the interest of poor, govt. supply food grains from buffer stock through fair price shops. There is a fixed limit for stock to be had. Now the problem comes when stock is held in more quantity and there is not out go for simple reason that market price may be at part with the fair price shops. In that case people prefer to purchase from market maintaining adequate buffer stock.

Technical group of planning commission recommended buffer stock of the order of 15-16 million tones in 1988. Basic purpose of the stock is to compensate any short fall in normal supply.

Basic objectives of buffer stock method are

1. Availability of food grains in case of Natural Calamities. Natural calamities such as drought famine etc. causes scarcity of supply of food grain in the related area. In that case stored buffer stock can be supplied to affected regions at fair prices.

2. **Seasonal production :** Agriculture production is based on seasonal changes and seasonal requirements if there is any charge in the season such as prolong monsoon which will lead to shortage or surplus of food grains. Storage of food grain will be helpful in both the cases.

3. **Price Stability :** As these stocks are supplied to fair price shops which guarantee no price hike and constant prices.

4. **Stability of farm incomes :** Buffer stock operations involves govt. buying food grains in surplus areas and selling them in deficit areas. This would help in better distribution of the available food grains besides bringing about regional equality of prices.

5. If safe guard the interest of poor. As buffer stock is supplied fair price shops it safe guard the interest of poor.

The buffer stock operations should be implemented and executed that the govt. is not involved in heavy financial losses under a buffer stock policy, the govt. builds up stocks of food, agricultural goods and other essential commodities either though direct purchase from the domestic market or through imports from outside and releases these stocks for sale in domestic market when prices are rising. The buffer stock operation only alters the balance of demand and supply in the market. It does not obstruct the essential function of market, namely allocation of goods among buyers and through that signaling via factor prices, the hanged decided in allocation of resources. The buffer-stock operations influences the market forces and through that the allocation of resources. It does not disturb the market mechanism.

Considering likely size of the crop and fluctuation in production it was suggested that a buffer stock of about 10 million tones (which was 10% of production in base period 1968-69) should be achieved, if situation of excess or short fall in production were to be meant in 19 out of 20 years.

However it was recognized that the constrained of shortage, finance and turnover would impose a limit on its size finally a buffer stock of about 7 million tones was considered more realistic (This was to be over and above operational stock required for meeting the normal requirements of public distribution system.

4.3 MINIMUM SUPPORT PRICE

Food grains and prices committee in 1964 recommended the establishment of Agriculture price commission to enforce a balanced and integrated price structure in the country, and

accordingly it was set up in the year 1965. However in 1985 the agriculture price commission was renamed as commission for agriculture Costs & prices. The main function of the commission is to announce Minimum Support Price (MSP) procurement prices and to fix prices for a number of agricultural commodities to be sold to public minimum price is also called Reserved Price.

Definition of MSP :

Support price is defined as price at which the government would be under obligation to buy the entire stocks that may be offered to it for sale. the support prices would have no direct incentives, role to play, but ensure farmers against risk of price falling below particular level.

The main objectives of announcing MSP are

1. To prevent fall in prices in the situation of over production.
2. To protect the interest of farmers by ensuring them minimum price for there crop in situation of price fall in the market.

The support price would no direct incentive role to play but would ensure farmers against risk of prices falling below a particular level. Under this policy govt. attempts to stabilize the incomes of farmers by entering the market itself buying and selling in open market when there is shortage.

What should be the minimum support price?

Guidelines for determining support prices of agricultural products would depend on objectives that are sought to be achieved. Objective of agricultural price support policies can be and are in fact diverse in different countries. By definition a support price policy assures the farmers against a fall in prices beyond the stipulated level, in some countries (mainly advanced), such price insurance has primary objective of maintaining the general level of farm income. i.e. income – oriented approach.

In several other countries (specially developing countries) the main objective of support price policy is to help augment – overall agriculture production i.e. product oriented approach.

In most developing countries, including India the main objective in present context is to step up the rate of growth of agriculture production so as to match the growth of consumer

demand. The support price policy, which is production oriented therefore would seen to have greater relevance. The objective of improving agricultural incomes will be achieved as a sequel to increased production and productivity.

For fixation of minimum support price some economist believed that it should be based on cost of production. But question is what cost should be considered? As the cost of production of a commodity depends on number of factors which vary from farm to farm, size of the farm, soil type, cropping pattern, farm ???? as well as techniques of production employed. As such it is not easy to work out the average cost of production. To avoid these difficulties support price has to be related to the costs of a farms for which the inputs are mostly purchased and not home produced. The reserve price has to be related to the cost of production of a "model". Commercial farm, for which alone the cost is measurable concept the reserve price may thus be deformed as "The price than ensures the cost of production of commercial farm under normal weather condition." Thus defined it will vary from year to year depending upon changes in the condition of supply & hence it will have to be flexible.

However we must sure that primary objective of the support price policy in our country has to be that of augmenting agriculture production and not of achieving income redistribution between agricultural and non-agricultural sector. The deterring support prices will have to be involved keeping this objective firmly in view.

According to this programme, the govt. should fix the price of farm produce at a level which is higher than the market price and to buy from the farmers. Whatever surpluses are not cleared in market in Fig. P_0 is market price of say wheat
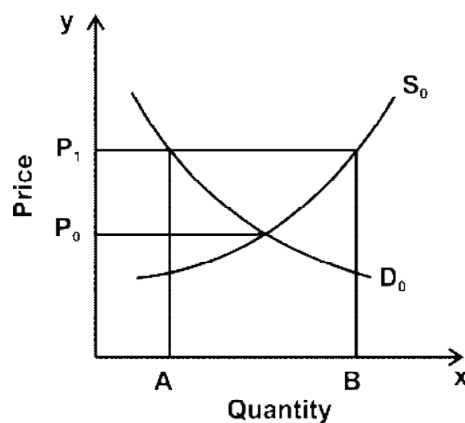
Figure 4.1

The support price by the govt. pegs the price P_1 at that price, according to demand curve D_0 only OA units of wheat are taken by consumers. But on the other hand OB units of wheat are offered for sales. Thus the government under the obligation to purchase this surplus supply and keep it in the buffer stock.

In case this policy is successful we will, firstly have smaller fluctuations in the price of farm produce than there would be if price were determined on the basis of completely free market. Secondly total revenue of the farm producers will get stabilized in face of fluctuations in production.

In case of long run one can increased the output as the producer knows he can expand production by increased inputs or costs. Higher support prices fixed by govt. may stimulate agricultural production by causing farmers to use none labour and variable resource inputs to reach higher output level with existing methods of production and the discovery and adoption of new agricultural technologies that result in new, lower cost production possibilities by farmers. Thus it brings about the growth in production in long run.

4.4 QUESTIONS

1. Explain how farmer minimizes his risk and maximizes his returns.
2. Discuss the Buffer Stock operations in India.
3. Define and explain the Minimum Support Prices.

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5

Module 4

RURAL MONEY MARKET

Unit Structure

5.0 OBJECTIVES

- To study the demand for credit in rural area.
- To study the classification of demand for credit
- To study various sources of Agricultural Finance.
- To study Non-Institutional sources of agricultural credit
- To study Institutional sources of agricultural credit

5.1 INTRODUCTION : RURAL MONEY MARKETS :

A money market is the market for lending and borrowing of short term funds. In this market short term surplus investible funds of bank and other financial institutions are demanded by borrowers. The Indian money market consists of two parts unorganized money market and organised money market. The unorganized sector comprises indigenous bankers and non-bank financial institutions.

The organised sector consists Reserve Bank, the State Bank of India and its associate banks, 20 nationalised banks and private sector banks.

Demand for Credit :

The demand for credit from rural area is for rural farm sector and rural non-farm sector. The demand for credit is classified as following:

Classification of demand for rural credit :

1)   Fixed and Working Capital :

Fixed capital can be used a number of times without exhausting it's utility. The fixed capital investment is required in agriculture for the following purpose i) purchase of land and improvement of land. Ii) provision irrigation like lift irrigation and provision of well irrigation iii) purchase of capital goods like tractor and agricultural implements iv) Purchases of livestock and animals for dairy purpose v) Plant, buildings and machinery vi) construction of farm house. All the agents in agricultural production which are durable and posses utility for long time comes under the category of fixed capital.

The another form of capital required for rural farm and non-farm sector is working capital. It is required in farm sector for purchase of seeds fertilizers, manures, and pesticides etc., which are consumables during the agricultural production process. The working capital is required for various agricultural operations during a production season like, preparations for sowing, weeding, spraying and dusting, harvesting, threshing and transporting etc. The working capital is also required for family consumption during the process of production and marketing. The family consumption needs consists purchase of cloth, utensils, medical and educational expenses, litigation, birth, death and marriage ceremonies etc. It is required for the repayment of interests.

2)   Production loans and Consumption loans.

I)   Production loans :

Production loans are associated with different agricultural operations varying from purchase of inputs to marketing of produce. Production loans are required for agricultural inputs like seeds,

manure, fertilizers, fodder etc. It is required for payment of changes like wages, revenue, less etc. There loans are required for irrigate the crops, payment of current farm expenses, purchase of livestock, banding the land and other improvements. Production loans are required for repair of agricultural implements, machinery, farm houses grain goals and cattle sheds, repair of wells, laying of new wells, orchards, purchase and reclaim of land, developing new irrigation sources, purchase of machinery and equipments and other capital expenditure on agriculture. This expenditure is related to production. These activities increase the income of the farmer.

II) Consumption loans :

Apart from borrowing for production, the farmer has also borrow for his consumption expenditure. The purposes of consumption expenditure are purchase of domestic good like clothing, utensils, medical and educational expenses, construction and repair the house, expenses related to death, marriage and other ceremonies, purchase of ornaments, litigation expenses etc. This consumption expenditure do not earn any income to the farmer, so the burden of debt increase gradually.

3) Time period of loans :

Agricultural credit needs of the farmers can be classified into three categories on the basis of time.

i) Short term loans :

The period for such loans is less than 15 months. Short term loans are required for seasonal inputs like seeds fertilizers; feeds and folder, internal agricultural operations during season, payment of wages of hired labour, litigation and consumption needs and unproductive purposes during the season. Main agencies for providing short term loans are money lenders and co-operative societies.

ii) Medium term loans :

The period of medium term loans is 15 months to 5 years. the amount of medium term loans remains greater than short term loan, which farmer can return gradually in yearly installments during the five years. Medium term loans are generally obtained for the purchase of cattle, small agricultural implements, repair and construction of wells etc. Such loans are generally provided by

money lenders, relatives of farmers, co-operative societies and commercial banks.

iii) Long term loans :

Long term loans required to introduce some permanent improvements on land, the purchase of some machinery and expensive equipment, the purchase of additional land, digging tube wells, repayment of old debts. Obviously the amount involved in such loans is very large. This could be paid back over a number of years only. The number of years of a long term loan exceeds 5 years. The maximum limit is not laid down normally. It is ranging between 15 and 20 years. These loans are normally taken from primary co-operative Agricultural and Rural Development Banks and Commercial banks.

Sources of Agricultural Finance :

The sources of agricultural finance can be divided into two categories 1) Non-institutional sources 2) Institutional sources.

1) Non-Institutional Sources - Unorganised Sector :

Non-Institutional sources of agricultural finance is a unorganized segment of the rural money market. Non-institutional or private sources include money lenders, traders, commission agents, relatives and landlords. These sources are not come under purview of the Indian banking Company act. The accounts of these agencies are not assessed by the Government. There is not any control of the Government on these agencies. These agencies have informal relationship with their borrowers. There is elasticity about rate of interest, rules and guarantor. The non-institutional sources are the following i) moneylenders ii) relatives iii) traders iv) commission agents v) landlords.

Table 5.1

Share of Non-Institutional Sources in Rural Credit

	Source	Percentage Share In total Credit			
		1951-52	**1961-62**	**1971**	**1981**
1	**Institutional Credit**				
	I. Government	3.3	2.6	7.0	4.1
	II. Co-op societies	3.1	15.5	20.0	29.0
	III. Commercial Banks	0.9	0.6	2.0	28.0
	Sub - total	7.3	18.7	29.0	61.0
2	**Non Institutional Credit**				
	I. Relatives	14.2	67.4	14.0	9.0
	II. Money lenders	69.7		37.0	17.0
	III. Others	8.8	13.9	20.0	13.0
		92.7	81.3	71.0	39.0

Source - Indian Journal of Agriculture Economics 1988.

The above data indicates that at the time of independence the share of Non-Institutional credit in total finance was 92.7% and the institutional credit was very weak. With the development of two tire and three tire credit structure of co-operative credit and with the Nationalisation of commercial Banks the institutional finance was increase In 1981 the share of Institutional finance was increased upto 61%, but still the importance of Non-Institutional credit in rural credit was 39.0%.

The All India Debt and investment survey (1981) estimated that the share of non-institutional sources had slumped to about 37% in 1981, moneylenders accounting for barely 17%,

A) Money lenders :

At the time of independence, the most important source of agricultural credit was money lender. At that time share of money lender was 69.7%. There are two types of money lenders in rural areas; professional money lenders and Non-professional money lenders. The professional money - lenders whose only occupation is money lending. The non professional money - lenders were rich farmers, traders and commission agents. They combine their

traditional occupation with money lending. With the development of institutional credit the importance of money-lender has declined rapidly. However, there are many reasons for the importance of money lenders even now.

a) The moneylenders don't ask reason of credit, he freely supplies credit for productive and non-productive purpose.

b) He is easily accessible and closely in the contact of borrower. He keeps the transaction confidential.

c) His methods are simple and elastic.

d) He is well known to local people psychology and therefore, he knows how to realize the given amount.

Weaknesses of money lending by money lenders :

a) The rates of interests are very high which money lender charge.

b) The burden of unproductive loans goes on increasing.

c) Because of illiteracy, farmers give their thumb on blank paper, so moneylenders under manipulates the accounts.

d) There was an obligation on borrower to sell their crops to the creditor at unfavorable prices.

B)   Relatives, landlords and others :

The other non institutional sources consists relatives, landlords traders, commission agents and landlords. The traders and commission agents supply funds to the farmer on the mortgage of potential crop. They force the farmers to sell their crops at low price to them. This source is important in case of cash crops like cotton, tobacco, fruits etc. This finance is based on exploitations. Apart from this farmers borrow from their relatives. These loans are contracted in an informal manner. The rate of interest remains low and returned immediately after harvest. These sources has also all the defects associated money lenders. The interest rates remain exorbitant. The small farmers are cheated and their lands are appropriated. With the development of institutional finance the importance of Non-institutional finance has decreased.

2)   Institutional Sources - Organised Sector :

Need for institutional finance :

The need for institutional finance arised from defects and inadequacy of Non-institutional finance. These defects are as follow:

i) It was based on exploitation and profit motive.

ii) It was not related to productivity of land, so they were expensive.

iii) These loans were given to most needy persons but does not flow through desirable channels.

iv) These loans were not available for long periods so it was not utilised for agricultural improvements.

v) These loans were not properly linked with agricultural operations.

AGRICULTURAL FINANCE

——————— Short Term

- - - - - - - Long Term

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Government of India          RBI

NCDC                    NABARD
(Co-op. Institutions)
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| State Co-op. Banks | State Land Development Banks (SLDB) | Commercial Bank (CB) | Regional Rural Bank (RBI) |

| District Central Co-op. Banks (DCCB) | | SLDB Branches (Co-op. | Primary Land Devt. Banks (PLDB) (Co-op. Institutions) | | |

| Primary Agricultural Credit Societies (PACS) | Other Co-op. | | | CB Branches | RBI Branches |

| Members PACS | SLDB Member Farmers | PLDB Member Farmers | Individual Farmers and |

Source - Morris :17   World Bank 26598

5.2 INSTITUTIONAL FINANCE AND IMPERFECTIONS IN RURAL CREDIT MARKETS IN INDIA :

5.2.1 Evolution of Multi-agency Approach :

Institutional credit is not exploitative. This credit always helps farmers to raise productivity. It's rate of interest remains low and different for different groups of farmers. It makes clear difference between short term, medium term and long term credit. It is integrated with needs of the agriculture. Since independence multi agency approach comprises co-operative banks, commercial banks and regional rural banks. The objectives of the multi agency approach were, to ensure timely and adequate finance to agriculture sector to reduce and gradually eliminate the non-institutional finance from rural sector, to make available credit facilities to all the regions of the country to provide larger financial support to areas covered by special programmes in agriculture.

Institutional credit refers funds made available by co-op. Societies, Commercial Banks and Regional Rural Banks. Previously there was a dominance of money lenders. To reduce the dominance Government set up Co-op. Credit Societies and Land Mortgage Banks. According to a Survey of rural credit in 1950-51 showed that, cooperative could meet nearly 3.3% of total credit requirements of farmers and the money lenders accounted for 93% of the credit needs of the farmers. The All India Rural Survey Credit Samittee 1954 Stated Co-operation has failed but co-operation must succeed. The All India Rural Credit Survey Committee 1969 recommended the adoption of multi agency approach to finance the rural sector. According to the recommendation of this Committee, RBI took a serious measures to strong then the cooperative movement. The State Bank of India set up in 1955 by the nationalization of the Imperial Bank. In 1969, 14 leading Commercial Bank were nationalized. After nationalization Govt. has taken a step of setting up of Regional Rural Banks (RRB's) in 1975. Thus, the multi agency approach of institutional credit to agriculture evolved over a number of years.

While the Reserve Bank of India was helping the cooperative sector directly. For this purpose National Cooperative Development Corporation (NCDC) was set up at national level. After that, it was

felt that, multi agency approach required a special banking institution to coordinate and help all the institution in rural finance. For this purpose NABARD was set up as a Apex Bank in rural finance in 1982.

### 5.2.2 Institutional Credit to Agriculture :

Table No. : 4.2

(Amt. in Rs.Crores)

Year	Co-op. Bank	%	Commercial Banks Amt.	%	RRBs Amt.	%	Total Institutional Credit Amt.	%
1984-85	3,440	55	2,790	45	-	-	6,230	100
1997-98	14,090	44	15,380	50	2,040	6	31,960	100
2002-03	24,300	34	41,050	58	5,470	8	70,810	100
2005-06	39,400	22	1,25,860	70	15,220	8	1,80,480	100

Source : Economic Survey 2006-07 Page No.171

It is revealed from Table no.4.2 that, total agriculture credit from institutional sources as steadily increased from Rs.6,230/- crores in 1984-85 to Rs.1,80,480/- crores in 2005-06. The share of co-operatives was 55% in total institutional credit 1984-85 but decline upto 22% in 2005-06. At the same time the share of Commercial Bank including RRBs raised from 45% to 70% during this period. The table no.4.2 however shows that, during the first three years of Xth plan (2002-03 to 2005-06) there was substantial increase in institutional credit flow and the average annual credit flow was above one lakh crores. The table no.4.2 shows that, even though the total institutional credit in agriculture has been steadily rising. There has been steady decline in the contribution of co-operative banks in rural credit from 55% in 1984 to 22% in 2005-06. The share of RRBs has increased nearly from 6% to 8%. The share of commercial Banks has steadily rising from 45% to 70%. It is an good idea that, RRBs are made subsidiaries of Commercial Banks.

5.2.3 Present Credit System in India :
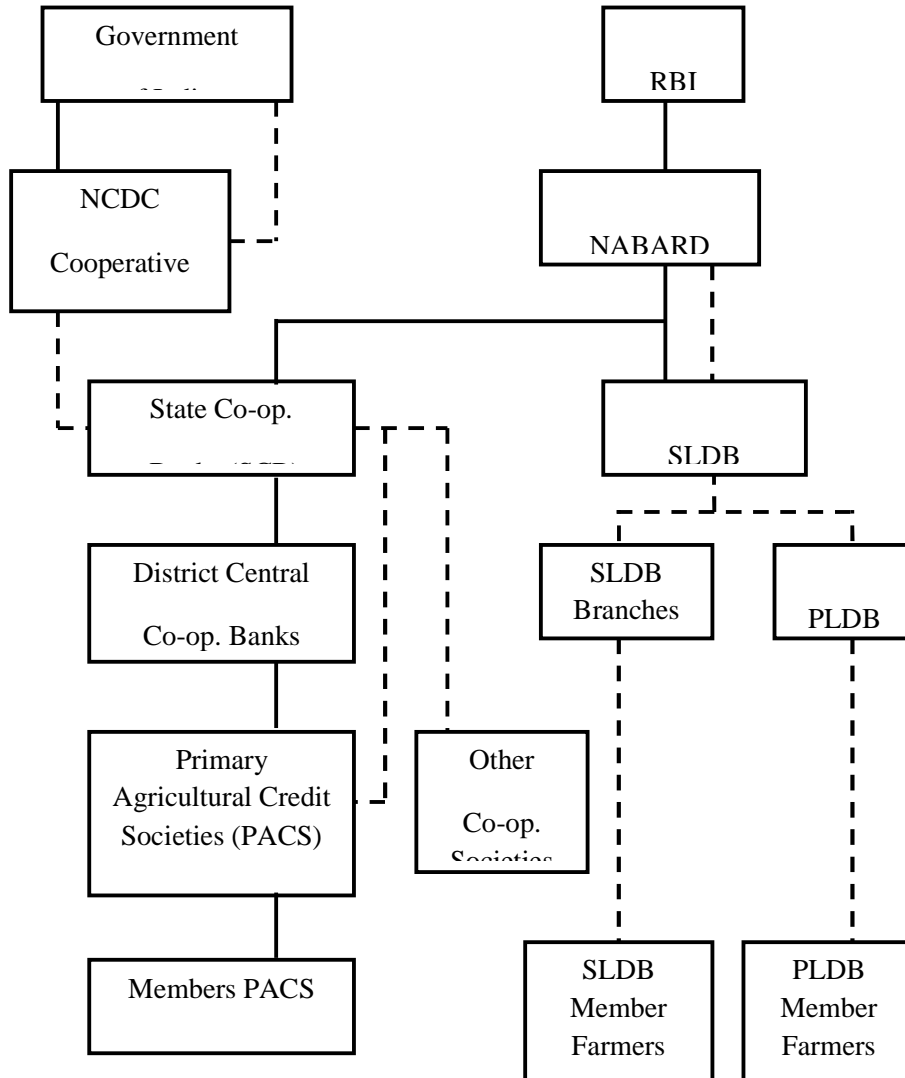
Source - Morris :17   World Bank 26598

1.   State Co-operative Banks :

Presently, there are 30 State Co-op. Banks in the country. They are apex of the coop. credit structure in each state. Agriculture sector requires short term and long term finance. The three tire structure has developed for short and medium term finance. In the three tire structure the State coop. Banks are at apex level means at state level. The SCB finances and control the working of the District central coop Bank in the state. The SBS are financed by NCDC and NABARD. NCDC provides long term

finance to SCBs and NABARD provides long term finance to SCBs. The SCBs are link between NABARD and DCCBs. The State coop. banks obtain its working funds from its own share capital and reserves, deposits from the general public and an advance from NABARD and NCDC. The NABARD constitutes between 50 and 90% of the working capital of state coop bank in the country. The SCB not only interested in rural credit movement but also promoting other cooperative ventures. In 2001-02 the 30 SCBs had lent about Rs. 34220 crores to DCCBs and PACSs.

2) District Central Cooperative Banks (DCCBs) :

In 2001-02 the number of DCCBs was 369 in India. Their loans outstanding amount was Rs. 56650 crores. The DCCB is a apex bank of PACS. These banks have few private individuals as share holders, who provide both finance and management. the DCCB lent to village level primary credit societies. At the same time it was expected that, to attract deposits from general public. But, this expedition has not been fulfilled and the most of the DCCBS act as a intermediaries between SCBs and PSCs. Recently, the NABARD has formulated a scheme for rehabilitation for week DCCBS

3) Primary Agricultural Credit Society (PACS) :

The Primary Agricultural Credit Society an be started with a 10 or more persons normally belonging to a village. Primary Agricultural Societies are the grass root level agency of short term coop. credit structure. PACSs directly gives finance to their member borrowers. PACSs given short and medium term loan for agriculture and allied purpose in the village. The importance of PACSs rising steadily. In 1950-51 it advanced loans of Rs. 23 crores, this rose upto Rs. 200 crores in 1960-61 and Rs. 34520 crores in 2001-01. the PACS advances to the weaker section. Particularly to the small and marginal farmers. But as compare to demand for finance the work of PACS is not adequate. The most of the PACSs are dependent on the finance provided by DCCBs. Where there DCCBs are week the PACS are starved of finance which affects on the credit function of PACS. At the end of March 2002 the loans outstanding for PACS were over Rs. 32520 crores.

4) Long Term Rural Credit - Cooperative Agriculture and Rural Development Banks (CARDBS) :

There was a great need in India for an institution specially designed to cutter to the long term credit needs of agriculture and allied activities in the rural area. The CARDBs initially land mortgage Banks. After words they were called Land Development Banks. In recent years they have been renamed as a cooperative Agricultural and Rural Development Banks (CARDBS). The first SLDB has started in Madras in 1929. The progress of Land Development Banking has been very slow and also uneven. After independence, Land Development Banks has developed. The present progress is concentrated only in Few States Viz. Andhra, Tamilnadu, Karnatak, Maharashtra and Gujrath. The number of PCARDBs and their branches increased from 86 in 1950-51 to 739 in 2001-02. While the number of SCARDBS increased from 5 to 20 during the same period. The loans advanced by PCARDBs during 2001-02 were Rs. 1930 crores and the loans outstanding was of Rs. 8960 crores and the same time SCARDBs sanctioned loan of Rs. 2690 crores in 2001-02 and amount of loans outstanding was 12,380 crores. SCARDBs provides loans on fixed interest and for fixed period generally upto 20 years. The CARDBs is to grand loans on the security of agricultural properties.

5) Commercial Banks & Rural Credit :

Before nationalization the commercial Banks largely indifferent to credit needs of agriculture sector. To overcome this problem 14 Commercial Banks has nationalized in 1969. At that time the total numbers of branches were 1860 and now increased over 47190 by March 2002. Presently 16 million agricultural borrowing accounts with Commercial Banks amounting Rs. 63080 crores in 2005-06. Commercial Banks has given Rs. 125860 crores to agriculture sector in the total institutional credit. The contribution of Commercial Banks was 70%. At present short term crop loans account for nearly 42 to 45% of the total loans disbursed by Commercial Banks to farmers. The percentage of term loans accounts for 35 to 37% of total loans disbursed by Commercial Banks. The loans disbursed to allied activities like dairying, poultry farming, piggery, bee-keeping, fisheries, are accounts for 15 to 16%. Since, October 1980 the Govt. of India has started Integrated Rural Development Programme for weaker section. The Commercial Bans has fulfilled their targets of disbursing loans to

weaker section. The Commercial Banks indirectly financing to the Cooperative Societies.

6)   Regional Rural Banks (RRBs) :

According to the 20 point economic programme initially 5 Regional Rural Banks were set up on October, 2 1975. The each Regional Rural Bank had an authorized capital Rs. 25 lakhs. The share capital of Regional Rural Bank was subscribed by the Central Govt. (50%). The State Govt. concerned 15%, and the sponsoring Commercial Bank (35%). The area of Regional Rural Bank is limited to specific region that is one or more districts. The Regional Rural Bank grant direct loans and advances only to small and marginal farmers, rural artisans and agricultural labours. The RRBs received many concessions such as lower rate of interest on borrowings, cost of staff deputed to RRBs. The Reserve Bank has allows RRBs to maintain Cash Reserve Ratio at 3% and Statutory Liquidity Ratio at 25%. NABARD has provided refinance facility to RRBs. Presently, there are 196 RRBs in 23 states having 14500 branches. The aggregate deposits of RRBs are of Rs. 43220 crores and RRBs has advanced Rs. 18370 crores during 2001-02. In 2005-06 RRBs has given credit to agriculture of Rs. 15220 crores. The contribution of RRBs in total agricultural credit is 8%. RRBS has eliminated the importance of money lender in rural area.

7)   The National Bank for Agricultural and Rural Development (NABARD) :

With the widening of the role of bank credit from agriculture development to rural development the Govt. proposed to have a more broad based organisation at apex level to extent support and give guidance to credit institutions. A National Bank for Agriculture and Rural Development (NABARD) was set up in July 1982. The aurhorised share capital of NABARD was Rs. 500 crores and its paid up capital was Rs. 100 crores which is equally contributed by Central Govt. and Reserve Bank. The paid up capital of NABARD raised upto 2000 crores in 1999-2000. The resources of National Agricultural Funds were transferred to NABARD. The World Bank and IDA are also providing Fund to NABARD. The most important funds of NABARD are now rural infrastructure development, deposits. NABAR is highly dependent on general line of credit from the Reserve Bank of India. Presently NABARD is apex refinancing agency of all institutional credit which provides short term and long term credit. NABARD sanctioned short term credit worth Rs. 8820

crores during 2003-04 for financing seasonal agricultural operation at the concessional rate of 3% below the bank rate. The NABARD has made obligatory to Commercial Banks to disburse a specific percentage of short term loans to small and marginal farmers. NABARD provides short term, medium term and long term credit to credit institutions. The NABARD has given 6590 crores to SCBs and RRBs in 2002. The NABARD has refinanced upto 7080 crores to State Govt. by the end of 2002. The aggregate refinance from NABARD for short term agriculture finance was of Rs. 12,000 crores in 2001-02. Overall NABARD is a very strong refinance agency at national level.

8) Micro Finance :

Micro Finance is a concept of banking with the poor. In this concept the credit is provided the poor through Self Help Groups (SHGs). Micro credit attempt to lower transaction costs and higher degree of repayments. This SHGs - bank linking programme was introduced and encouraged by NABARD. There are 30,000 branches of Commercial Banks, RRBs, and Cooperative Banks in over 520 districts in 30th states and union territories. In 2003-04 the total number of SHGs was 10,79,090 out of which 3,61,730 were financed by banks. The banks has disbursed loans was 3900 crores in 2003-04. the micro credit has shown that the banking with poor. The micro credit is a best method of creating additional employment and removing poverty. The NABARD has given refinance support of Rs. 2120 crores.

5.4.4 Imperfections in Rural Credit Markets in India :

1) Pitiable financial conditions of small and marginal farmers :

Out of the total land under cultivation, 62% land is dependent on monsoon and out of the total cultivators 80% cultivators are small and marginal farmers. They had very poor assets to mortgage due to frequent crop failure and due to deficit budget the borrowing capacity of this section of the society is very poor. Because of that, they are compelled to borrow at high rates from money lenders. There were a series of suicides among farmers in Andhra Pradesh Maharashtra and Punjab.

2)   The problem of overdues of Cooperatives :

There is highest overdue problem of coop. credit institutions. The estimation of overdue is between 9000 crores to 10,000 crores. According to RBI study group there is lack of will and discipline among the cultivators to repay loans was the principle factor to responsible for the existence of overdues in cooperatives. The reasons are the defective lending policy, lack of quick actions against reluctant members and absence of favourable climate are the main factors. apart from these intervention of external forces such as loan waivers, concession in various forms towards repayments affects the recovery performance of credit. It is disappointing that, 45% outstanding is in overdue in case of cooperatives.

3)   The problem of uneven distribution :

The weaker section of the rural community consists tenants, share croppers, landless agricultural labours and rural artisans. This section is poorest and most needy. Their share in coop. credit is 3 to 5%. The % of small and marginal farmers in the total cultivators is more that 80% but their share in coop. credit is 35%. This is quiet inadequate to meet production needs. There is also the problem of uneven distribution of co. op. credit between different states. The cooperative credit advances are better in Gujarat, Punjab, Haryana and Tamilnadu. The cooperative advances are poor in Orissa, Bihar, U. P. and West Bengal. The situation of Co. op. credit in tribal and hill areas is also very poor. The weaker sections of the rural community still out of the Co. operative membership.

4)   Problems of Long Term Rural Credit :

Increasing overdues in most of the Cooperative agriculture and rural development banks is a serious problem. The overdues of PCARDBs is between 42 to 44%. Such higher percentage limits the lending capacity of the banks. CARDBs have grown over the years but the manpower is not capable of shouldering the increasing business and to face the emerging challenges. To bring quantitative change in lending of CARDBs should have adequate technical personnel. The CARDBs diversity their loans to dairy, poultry farming, inland and marine fisheries, sheep rearing, sericulture etc. There is good scope for financing to agro-processing industries. The CARDBs have to explore the possibilities of financing various diversified activities.

5)   Problems of Commercial Banks in Rural Finance :

The Financing of agriculture is not only quantitative problem but also of coverage in rural area. The problem is concerned with orgnisation and the personal available to the national banks. The majority rural population consist small farmers. These farmers are spread in 5.5 lakhs villages throughout the country. The reach all of the farmers with only about 47000 banking offices is a difficult task even after completion of branch expansion programmes commercial banks may not be in a position to cover many of the villages. The all Commercial Banks and all RRBs are experience in severe financial strength on account of higher transaction costs involved in handling of large number of small size loan accounts. There is also another problem of concessional rate of interest on small size loan. The presence of overdues particularly after the implementation of agricultural and Rural Debt Credit Scheme 1990 and 2008-09 adversely affected the economic viability of rural branches of Commercial Banks.

6)   Weaknesses of Lead Bank Scheme :

The Banking Commission 1972 found that, lead banks were not properly equipped to conduct the techno economic survey districts allotted to them. The banking Commission opinioned that, such survey should be conducted by state Govt. as they were said to be useful for point of comprehensive planning. It should be the responsibility of the State Govt. and not the lead bank to plan in the development of the district. The lead bank was expect to be a coordinating agency for commercial and cooperative banks and financial institutions and the district authorities in the state. The commission pointed out that, the lead bank has no authority to others and nor was it necessary for others to approach the lead bank for any specific purpose. Besides in a far of district comparatively junior officers lead bank might be posted and they find it difficult to get necessary cooperation from other banks if the latter happened to be seniors. If other infrastructural facilities such as transport, communication, storage processing and marketing are not developed in such situation the lead bank could have only limited success.

7)   Problems faced in service Area Approach Strategy :

In 1988 new strategy for rural lending has adopted named as a service area approach. Under this approach each semi urban and rural branch of commercial bank was assigned a specific area

comprising a cluster of villages within which it would operate, adopting a planned approach for its economic growth. The justification behind this approach was to avoid duplication of efforts and scattered lending over wider areas. The compactness in the area operating will make it easy for the lending to a small farmer. But, the service area approach has encountered various problems such as allocation of villages was not always expectable to all branches, there was under utilization of bank. Under the new strategy of service area approach new bank branches was curtailed. This naturally made much of specialized staff under utilised and redundent. This staff posted to rural areas were generally reluctant to move and leave in rural areas because of the absence of facility for their housing, education and on. The tribal and hill areas of North-Eastern states, Orissa, South Bihar are under developed. Under the system of service area approach 52 villages were allowed to a single bank branch. Such allocation does serve to useful purpose.

8)   Problems of Regional Rural Banks (RRBs) :

According to Reserve Bank of India the recovery position of RRBs on the whole is not satisfactory. According to Narshimaham Committee, there was the basic problem that, many restrictions placed on the basis of RRBs and due to that RRBs has low earning capacity. This sponsoring bank were also running there own rural branches in the varying area of operation of the RRB. This has given rise to avoidable expenditure to control and administration. On the other side the wage and salary side of RRBs have been rising, so, the expenditure side of RRBs remaining very high.

9)   Weaknesses of Micro-Finance :

Out of an estimated 56 million poor families at the end of March 2004, only 17 million poor families (30%) have been covered by micro finance scheme, nearly 70% of poor families are yet to be covered. In most of the state in the country have not yet encouraged organisation and promotion of SHG bank credit link. The success of SHGs is in both urban and rural area will have a positive effect on poverty alleviation.

One another notable development is a introduction of Kisan Credit Card in 1998-99 (KCC). The purpose of KCC scheme is to facilitate short term credit to farmers. This scheme has been implemented by 27 commercial banks and 187 RRBs and 334 central cooperative Banks. Upto March 2004 more than 41 million

KCCs have been issue. The KCC scheme has become very popular in farmers. The KCC holder has also another benefit of personal accident insurance cover of Rs. 50,000 for a death and Rs. 25000 for disability.

5.3 QUESTIONS

1. Explain various Institutional and Non- Institutional sources of agricultural finance.
2. Discuss the classification of demand for credit in rural money market.
3. Describe the evolution of credit systems in India.

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6

Module 5
LABOUR MARKETS

Unit Structure :

6.0   Objectives
6.1   Concept of work, skill & productivity
6.2   Methods of measurement of employment and unemployment
6.3   Concepts and data sources of employment and unemployment
6.4   Free & unfree labour
6.5   Questions

6.0 OBJECTIVES

- To study the Concept of work, skill & productivity
- To understand the Methods of measurement of employment and unemployment
- To study the Concepts and data sources of employment and unemployment
- To study the meaning of FREE & UNFREE labour

6.1 CONCEPT OF WORK, SKILL & PRODUCTIVITY

'Work' is defined as engagement in economic activity i.e. any activity resulting in production of goods and services that add value to the National Product. As per United Nations System of National Accounts (UNSNA) 1993, all production of goods irrespective of whether it is used entirely for self consumption, by the producer, household or it is partly or fully sold in the market and irrespective of its production and distribution is legal or illegal fall within the production boundary.

However, in case of services, only those services that are at least partly marketed; fall within production boundary. Consistent with the India system of National Accounts (INSNA), engagement in production of goods entirely for market by the producer / household is considered in primary sector. Further, processing of primary products entirely for self consumption is also not covered in the ambit of economic activity. However, own account construction (building of house for one's own use) is included in economic activity for employment and unemployment surveys. Thus, we understand that by now, definition of work in NSS (National Sample Survey Employment & Unemployment surveys) is not fully synchronized with the 1993 UNSNA.

It may be noted that speed of work controls the quantity of labour. One labour who works at a double speed completes the supply of other labour. This speed depends upon various factors such as education, health, climate and skill having impact on tendency of work.

Skill of work is related to the proficiency of the labourer. Skill is related with the kind of work that how much wastage is done, how many accidents are committed and many other factors are considered to know the efficiency of work. Augmenting the skill endowments of labour force is essential for improving productivity and output. Traditionally, the skills are obtained or skills come from, 'Learning by doing' or practice makes man perfect. However, recent trend prices that focused training improve the capabilities of labour. Much of workforce is illiterate, which fails to understand the processes, system and standards and therefore basic education upto secondary schooling is at least must in improving skills. The skilled labour force improves the quality of employment and the productivity of labour.

Productivity may be defined as the ratio of the output of goods and services to the in parts human as well as others used in production process.

i)   Labour productivity, the best known measure of factor productivity reflects the influence of various factors (such as capital quality of labour technological change and organisation of production) that affect the productivity.

Based on inputs to production, labour productivity can be decomposed into two components :

a) Productivity due to capital deepening (i.e. improvements in physical capital available per labour unit, and ;

b) Multi factor productivity (TFP) or Total Factor Productivity (TFP) : It is the contribution other than that emanating from the increased use of inputs (capital and labour). TFP than measures the increase in efficiency with which resources are being used through innovations and improved management techniques to increase the output from a given contribution of capital and labour.

Following are seven determinants of productivity growth :
1) The rate of technological progress.
2) Investment in physical capital such as machinery, equipment and structures.
3) The Quality of the workforce.
4) Size and quality of the natural resource base.
5) Industrial structure and intersectoral shifts.
6) The macro economic environment or aggregate demand conditions.
7) The micro-economic policy environment.

Harris had identified three proximate drivers (The Big Three) of productivity growth.
1) Investment in machinery and equipment
2) Education, training and human capital
3) Openness to trade and investment.

While the proximate drivers may not be exhaustive, they do point to the critical elements of an enabling public policy for enhancing productivity and employment.

The ICT can have a positive impact on growth not only through a surge in ICT investment, strong productivity effects from the ICT-producing industries but also through a more productive use of the ICT in the rest of the economy. The ICT equipments enable new organizational models and other innovations in the production process as well as the production of new goods and

services. Thus, even if the ICT investment goods are standard products, they enable firms to innovate and accumulate firm-specific capital with positive spillovers on production.

Most of the empirical studies on productivity in India have focused on the growth in the TFP in the manufacturing sector. These studies suggest a decline in the total factor productivity growth (TFPG) till 1970s, with a turnaround taking place in mid – 1980s persuent to the reoriented trade and industrial policies and improved infrastructure performance.

The transition to high-growth phase occurred ground 1980 a full decade before economic liberalization due to pro-business policies that started being adopted during the 1980s. Various incremental reforms in the industrial sector during the 1980s appear to have had a positive impact on the productivity during the 1980s. The trends in productivity in past reform period show significant increases in productivity. At the sectoral level, there is evidence of improved TFPG for the exporting sectors vis-à-vis the non exporting ones. (Dholakia and Kapur, 2001; Unel, 2003). More recently, Kato (2005) finds that the smaller the market share of a firm, the higher is its productivity growth.

Recently Virmani has attempted to measure the TFPG for the Indian economy as a whole. His estimates suggest that the TFPG has followed a V-shaped pattern since independence, with near flattening from the late 1980s. Growth in the TFP decelerated since early 1950s, when it was about 2.5 percent till mid-1970s when it fell to less than 0.5 percent. Subsequently the TFPG recovered and peaked at about 2.6 percent in 1988-89 and has broadly remained around these levels since then.

6.2 METHODS OF MEASUREMENT OF EMPLOYMENT AND UNEMPLOYMENT

Accelerating growth and expanding employment opportunities are the goals of economic policy. To provide productive employment for the continuing increase in the labour force is an integral part of our objective of inclusive growth. Higher growth leads to enhanced employment. However, the question that arises is at what rate? Employment elasticity with respect to output

measures the percentage increase in employment due to the percentage increase in output. The overall employment elasticity of an economy is the combined effect of the sectoral employment elasticities and the composition of output. It is also true that as an economy grows, employment elasticity may fall which is in part a reflection of the improved productivity of labour. Improved productivity of labour is necessary in order to sustain high G.D.P.

A development programme aimed at expanding opportunities must focus on three factors; growth productivity of labour and relative price of labour and capital. The structural changes that occur in the process of growth have also an impact on employment trends. In India, we find two important features of these trends.

1) Structural transformation in India followed the typical pattern of agriculture yielding to industry and industry to services. However, the share of services sector exceeding 60% of GDP shows that, economic development has shown 'jump' to the third stage of development.

2) The structural change in India shows another significant change. In the pattern of sectoral shares of employment. While the share of agriculture in GDP has declined significantly from 52% in 1951 to 21% in 2001, the share of employment has declined only marginally from 65% in 1951 to 57% in 2001.

Conversely, even though services sector account for nearly 51% of output in 2001, its share in employment was only 22%. The pace of employment shift has lagged behind the pace of sectoral shift in output. This is particularly striking because services sector employment elasticity is higher than employment elasticity in agriculture. V.K.R.V. Rao called this as 'Structural Retrogression' of economy.

6.3 CONCEPTS AND DATA SOURCES OF EMPLOYMENT AND UNEMPLOYMENT

The major source of information on employment and unemployment has been the National Sample surveys conducted periodically by the Department of Statistics. (National sample

survey Organisation). Besides, there are other sources such as Employment Exchange Registers, the Decennial Population Census and Economic Census by CSO. The NSSO conducts quinquennial large sample annual surveys as also annual thin sample surveys. Results of thin sample annual surveys have to be examined with care as to their statistical significance. The National Sample Surveys provide three different measures of employment and unemployment :

1) Usual principle status (UPS) that indicates a status in terms of major time over the 365 days before the date of interview.

2) Current weekly status (CWS) where the reference period is the week i.e. the seven days preceding the interview and

3) Current daily status (CDS) that reflects labour time disposition during each day o the week in terms of two half days.

For each UPS status person (employed, unemployed, out of labour force), a subsidiary status (SS) is also recorded. There is no agreement among analysts on which of these measures provides a more accurate insight into the employment and unemployment situation. The Task Force on employment Opportunities used the usual principal ad subsidiary status for analyzing employment and unemployment whereas the Special Group on Targeting Ten Million Employment Opportunities per year used the current daily status data. Given the availability of different sets of data, it will be a good practice to compare the conclusions drawn from one set of data with conclusions from another set just for a reality check.

In the NSS-Employment-Unemployment Surveys, an activity classification of the population on the Usual Principal Status is followed up with a set of probing questions to find out whether and how many of the surveyed population at all sought work or were available for work in the preceding 365 days and if yes, the period for which they sought or were available for work. And, tabulations based on the set of probing questions are available in the published reports.

A fair proportion of those who reported "Zero days of unemployment" during the reference work are those who did report themselves to be seeking / available for work at least on some days, on some months in the preceding 365 days and this proportion is sizable for the rural casual labourers on the Usual

Principal Status. At the very leas, this would suggest that the claim, that the estimate of unemployment on the current Daily Status fully captures the non-utilisation of available labour time is open to some doubt.

It needs to be stressed that, in terms of individuals, the two types of problems discussed above a proportion of those reporting unemployment on all 7 days of the reference week being workers on the Usual Principal Status and of those reporting Zero days of unemployment during the reference week but reporting seeking / available for work in the preceding 365 days cannot be treated as off setting one another.

In matching the demand for and the supply of labour, on the supply side, the estimates of labour force person-days are derived as the product of the labour force participation rates on the current Daily Status in a given population segment and an estimated / projected total population in that segment and summed across the population segments.

The Central question here is : can the product of the estimated population in the given population segment and the estimated proportion unemployed on Current Daily Status be treated 'as the number of persons unemployed' or even as person years of unemployment? Such an inference carries with it the implicit assumption that each individual in the labour force on the Current Daily Status is or should be in the labour force on all 365 days in the year!

In striking a demand supply balance, this distinction between persons in the labour force / work force and person years of work / unemployment is important because, on the employment generation side, person – days of employment is an appropriate unit. Of account only in a limited number of activities such as NREGP or other public works. In respect of all regular wage / salaried employment and in respect of all employment in the organised sector, the appropriate unit of account is number of persons employed.

In arguing for the use of UPSS – based estimates in our employment planning exercises, there is no presumption either that

those in the workforce on UPSS are at work throughout the year or that the unemployed on UPSS are unemployed throughout the year.

6.4 FREE & UNFREE LABOUR

'Free labour' implies voluntary entry of a labourer into employer employee relationship as per his choices at the selected and accepted terms and conditions of payment and work. On the other hand, unfree labour denotes the conditions of involuntary entry by compulsion; may be f economic or social condition learning no choice to the labour for term and conditions of work and place. Unfree labour is also called as 'Forced labour'. The conditions of unfree labour are precisian and the living is quite vulnerable. Often the unforced labour results into situation like 'Bonded' system or 'Slavery' system and it is a bane on humanity.

Unfree labour has received an unusual amount of official attention during the last few years. the continued existence of slavery and slavery-like practices has also received renewed official attention, including that of the UN Commission for Human Rights and its Working Group on contemporary Forms of Slavery. Most notable among UN Organisations is, however, the International Labour Organisation (ILO), which has launched a campaign against 'Forced labour', and , as part of this, has ventured an estimate of the extent of forced labour world-wide.

The recent ILO report 'A global alliance against forced labour' (ILO 2005a) represents the most coherent and most empirically informative international report on forced labour.

The International Labour Organisation is the UN agency responsible for international labour standards, and is the only international organisation pursuing labour rights issues at the international level. Its approach to labour issues is, by definition, consensual. Not only is it a UN organisation, it also has a tripartite set up, encompassing governments, employees and labourers; a set up which is unique within the UN system.

The ILO fight back took place through a reformulation and refocusing of its efforts, centered on the 1998 ILO 'Declaration on

Fundamental Principles and Rights at work', following which the main ILO objective become 'decent work for all'. This has been pursued through a campaign for a 'fair globalisation', internationally, regionally, sector specifically. Central to this were four 'core labour standards', namely : freedom of association and the right to collective bargaining; elimination of all forms of forced or compulsory labour; effective abolition of child labour and the elimination of discrimination in respect to employment and occupation. An ILO special Action Programme to combat Force Labour exists, and has published several survey-based reports within the field of forced labour.

The ILO defines forced labour as work or service extracted from any person under the menace of any penalty and for which the said person has not offered himself Voluntarily.

In other words, forced labour involves involuntary entry to the labour relation, and coercion to remain within it, this is the internationally, legally accepted definition of forced labour types of forced labour, including slavery, serfdom and debt bondage. 2005 report 'A Global Alliance Against Forced Labour (ILO 2005a) seeks to create public awareness about the phenomenon of forced labour, through quantifying it.

The 2005 report calculated that a minimum of 12.3 million people in the world work as forced labour. This is the first official estimate of the magnitude of forced labour world wide, and it is emphasized that this is a minimum estimate. The main region for forced labour by far is Asia and the Pacific, with more than three quarters of all forced labourers and with the highest incidence of forced.

Following are the different forms of forced labour.

1) Private Economic Exploitation : It is most commonly found and nearly ⅔ rd of all forced labour belongs to this type. This includes unfree labour of bonded labour type, forced domestic work or forced labour in agriculture and remote rural areas.

2) Forced Labour Imposed by the state : This includes compulsory recruitment of citimen in defense or any other government led activities learning little freedom of choice of acceptance to them.

3) Forced labour for Commercial, sexual exploitation : Regional patterns are observed all over the world about these types of unfree labour.

It is very difficult to quantify the unfree labour. According to Bales (1999) the estimate of forced labour globally is more than twice the size of that of ILO minimum estimate (27.9 million against 12.3 million). Within the unfree labour category debt bonded labour dominates in many regions of South Asia and Latin America. In Sub-Saharan Africa, previous Master-slave relations have been modernized but not been replaced with free labour relations in some regions, whilst in – conflict and post. Conflict areas, abductions followed by slave-like relations or enrolment as child soldiers are the main forms of forced labour.

The ILO analysis of forced labour is however restricted. Trafficking of unfree labour is labelled as, 'the underside of globalization'. Commodity chain links between global retailers, suppliers and labour contractors, leading to employment of forced labour at the end of global chains so as to compete on cheap and stable production are noted. It is stated that, in order to compete on the world market, employees in transition countries may make use of unfree labour : and it is pointed out that deregulation of labour markets, downsizing of labour inspection.

In the main ILO report on unfree labour, little is done to link unfree labour to present day capitalist development and to the general ILO strategy for decent work in this context. The strategy of the ILO is to isolate the 'worst forms of "un-decent labour"', so that these incidents can be dealt with in isolation, without challenging the overall system that created the conditions for their occurrence in the first place. The focus is on dealing with what is seen as 'exploitation', namely unfree labour, child labour etc. standard 'free' labour relations on the other hand, are not seen as exploitative. This means that the ILO Report depoliticizes unfree labour issues, isolates them as an 'unnatural' element of capitalism.

THEORETICAL DEBATE ABOUT UNFREE / FORCED LABOUR

The discussion regarding forced labour and capitalism is observed around existing debates between Tom and Jairus Banaji. There are important similarities between Brass, Rao and Banaji. They all locate their work in relation to that of Marx, and distance

themselves from liberal views that argue that labour relations such as bonded labour are free and equal, since they are freely entered, contractual relations. They all share the basic Marxist understanding that the sheen of equality provided by contracts covers the fact that all labourers are exploited through their production of surplus value. Exploitation is not something reserved for forced labour, and free labour does not exchange equal values through the exchange of their surplus value producing labour power for wages as liberal economists and the ILO among others would have it.

Regarding the relationship between forced labour and capitalism, for Marx, commodification of labour power and thus, free labour were essential to capitalism. The commodification is based on labour being doubly free: freed, or dispossessed, from the means of production, and free to sell his / her labour power to any capitalist who wishes to buy it. It is axiomatic for Marx that labour will be commodified and hence doubly free, in the above sense under capitalism.

In the debate on Free/ unfree labour, Brass proposes that unfree labour and capitalism are compatible. He argues that the creation of unfree labour is an essential part of modern capitalism. It represents class struggle from above, as labour is displined through being robbed of / losing the control of the sale of its own labour power, and labour power is thus cheapened.

Brass theory provides a general and seemingly progressive framework for understanding present – day unfree labour relations. Empirically, he focuses mainly on debt bondage relations, where the labourer mortgages his / her future labour power against a loan from a creditor employer. It enables him to argue that debt based labour relations are unfree, irrespective of duration and ideological dressing. This enables him to conceptualize new forms of seasonal labour relations in capitalist agriculture in India as being unfree, as the relations involve the mortgaging of future labour power against loans. This is discussed in detail in the next section 'employer – employee relationship'.

6.5 QUESTIONS

1. Define and explain the concepts of work, skill and productivity.
2. Explain how employment and unemployment can be measured.
3. Differentiate between Free and Unfree Labour.
4. What are the various sources to find data for employment and unemployment.

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7

TYPES OF EMPLOYER- EMPLOYEE RELATIONSHIPS

Unit Structure :

7.0   Objectives

7.1   Employer – Employee relationship

7.2   Determinants of wage rates

7.3   Labour Market segmentation

7.4   Questions

7.0 OBJECTIVES

- To study the types of Employer – employee relationship
- To study the Determinants of wage rates
- To study the Labour market segmentation

7.1 EMPLOYER – EMPLOYEE RELATIONSHIP

The employer-employee relationships have undergone changes over a period of time. Many factors determine this relationship. Production methods, land reforms, alternate occupation increased political power of lower castes are some other factors.

1) During colonial times, bonded labour shed the vertiges of patron – client relations which used to include certain modest benefits for the labouers.

2) In the later part of colonial period it was replaced by hand nosed modern economic relations more exploitative than those previously existed.

3) After independence most classical bonded labour relations ceased to exist, rural employers turned to new, more effective labour relations often involving migrant labour instead of employing the ex-bonded laboure as free labour.

4) In many parts of rural India, more or less free labour relations have been developed within agricultural. As methods of production have moved away from labour intensive economic activities bondage have been modernized into a relation called as, 'neobondage'.

1) Neobondage involves the tying in of prospective labourers through loans / advances given during the lean season before the start of seasonal employment relation. Labour here is seasonal migrant. The migrant labour force tends to be more effectively exploited through longer working hours, lower wages and less labour unrest. During employment period, he may only be paid a minimum allowance while the overall payment is settled at the end of the seasonal employment. This compels the labourers to stay in employment after advance has been paid off. This kind of relationship is identified in agriculture especially in sugarcane, rice mills, construction, family bondage is also common, caste relations are also an issue. The vast majority of bonded labourers continue to belong to the lowest, ex-touchables caste groups and tribes. Due to economic compulsions, men enter into neobondage female bonded labourers and children may or may not enter the relationship voluntarily.

However, it needs to be understood that advances are common place even if free employment relations, due to poor economic position and also because such advances provide an incentive for employer to keep the labourers in employment. In the recent research it is found that labourers viewed an advance from an employer as the preferred option, compared to other types of loans as such, relation offered a chance to pay off the debt.

2)   Jobber / Contractor labour relation : Many a times, a bonded labour relation is organised through jobbers/contractors, who will provide the advance, organize the migration and be the manager at the work place. The jobbers would be working for one ore more employers or for a main jobber, who would provide the advances and rely on them to deliver the labour. The labourers are in the long term debt relationship with the jobbler & not with the end destination employer. As the poor labourers have debt bondage.

3)   Contract labour : The official classification of work under taken through jobbers or labour contractors is contract labour. Contract labour is wide spread. An estimated 10.7 million labourers in construction alone are contract workers, comprising 83% of all construction workers. Contract work is widespread in unorganized sector activities such as stone quarrying, beedi rolling, rice shelling and construction.

4)   Long term debts and Casual labour relations : The poorer the labourer is less alternative opportunities of employment, he will have. This condition makes him enter into long term debt bondge. Recently, if has been found that labourers manage to avoid the long term debt bondge with more alternative job opportunities. The long term debts and casual labour relations are seen in Tamilnadu and they also are seen alternate over time even in Andhra Pradesh. Here, the jobbers tend to be from the area of the origin of the migrant labour and form part of power relations built into the local social order. This enables them to enforce loan or advance based labour relations over several years. Long term debt bonded labourers compare themselves to the traditional bonded farm servants and they are free to change the jobber fairly and regularly.

5)   Debt bondage without jobber : There are causes of debt bondage which do not involve debt jobbers. This is particularly the case where no migration is involved, i.e. where employers are in a position to enforce debt related employment pledges through local power relations. The old style debt bonded yearly relationship in agriculture is of this kind.

6)   Other forms : Milder forms of unfree relations are also found, such as share cropper conditioned on the acceptance by the share cropper of labour service duties, performance of some unpaid labour throughout year in order to be given work during the harvest season, free labour service in exchange of grazing land etc. Some involve the actual confinement of the labourers in the work location or sometimes under the armed guard.

The above description about the various types of relationship between labour and employer points towards the degree of freedom or unfreedom and inequality over and above what normally

called as standard free labour relation. The distinction between milder and harsher forms of bonded labour points towards a continuum from more or less free relations to fully unfree relations i.e. the degrees of unfreedom and / or inequality unlying the labour relation. The catagorisation of such type reflects the character of labour relations.

It is difficult to say if the 'low route' of development in India has involved an increase or decrease in bonded labour relations. What is certain is that while the old style, year – round, intergenerational bondage relations have lost their overall importance, the development of new bonded labour relations, and other labour relations involving degree of unfreedom, compatible with capitalism has been facilitated.

7.2 DETERMINANTS OF WAGE RATES

Determination of wage rate is a basic problem of an organisation. The central point of all the labour problems in an organisation is the wages and salaries. This question determines the capacity of the production, the rate of productivity, efficiency of labour cost of production, sale price of commodity, profits of the organisation, and industrial peace in the country. Wages can broadly be divided into three categories – Living Wages, Minimum Wages and fair wages.

1)   Living Wages :

Living wages means the wages that may be sufficient to provide for the bare necessities as well as certain amenities for the employees. It means the level of wages that may be sufficient to provide for the bare necessities and such amenities that are considered necessary for the well-being of the employee and his family members in accordance with his social status

Article 43 of the constitution of India states that. The state shall endevour to secure by suitable legislation or economic organisation or in any other way to all workers, agricultural, industrial or otherwise work, a living wage, conditions of work ensuring decent standard of life and full enjoyment of leisure and social and cultural opportunities.

The term Living Wages has been defined as under : The Fair Wage Committee Report, "The living wage should enable the male earner to provide himself and his family not merely the base essentials of food, clothing and shelter but a measure of frugal comfort including education for the children, protection against ill health, requirements of essential social needs and measures of insurance against the more important misfortunes against old age".

Thus, Living Wage must provide not only for the bare necessities, such as food, clothes and shelter, but also for some conforts and amenities by current human standards such as – traveling, health, education of children, social needs, old age and recreation etc.

2)   Minimum wages :

According to Fair Wages Committee, "Minimum Wages should provide not only for the bare necessities of a worker. It should also provide for the maintenance of efficiency of the worker. From this point of view, minimum wages must be sufficient to provide for all requirements of education, health and other essential amenities".

Minimum Wages means the minimum payment to worker so that he may be able in providing for basic needs for himself and his family members and to maintain his working efficiency only some other scholars are of the new that minimum wages should also provide for minimum education, medical facilities and other amenities. According to them, minimum wages should ensure a minimum standard of living considering the health, efficiency and well being of the worker.

Objectives of Minimum Wages :
1) To maintain the efficiency of workers, particularly in the industries where the workers do not get fair wages.
2) To discourage the strikes, lock-outs and industrial disturbances so that industrial peace maybe maintained.
3) To check the unhealthy competition among entrepreneurs.
4) To protect the interests of workers, particularly when the workers are not organised.
5) To strengthen the labour unions.
6) To check the exploitation of workers by the entrepreneurs.
7) To increase the efficiency of workers.

8) To help the workers in maintaining and increasing their standard of living.
9) To provide economic and social justice to the workers.
10) To check the unhealthy competition among the workers.
11) To improve the management system.
12) To improved the productivity of workers.

Methods of minimum wages :

There are two methods to determine the Minimum Wages. These methods are as under :

1)   Indirect Method : The Government determines minimum wages keeping in view the following provisions of Minimum Wages Act.

a)   Government determines minimum wages for the workers working in government departments. Following the wages so determined by the government, the minimum wages in the private sector industries is also determined.

b)   While working on contract, the government imposes a condition of minimum wages in contract deed.

2)   Direct Method : For the determination of Minimum Wags, the Government may take following steps :

a)   To Appoint Wages Boards : State government may also appoint wage boards for the determination of minimum wages. These boards may be of two types

i)   Wages boards appointed for the purpose of advising government on the issue of minimum wages. It is important to know that these boards are responsible to give their advice only.

ii)   Wages boards that are appointed to determine the minimum wages after considering the circumstances of the industry. Representatives of both the workers and employers take part in these boards.

b)   To Determine Minimum Wages : Under this method of wages determination, the state Government may determine minimum wages for the workers working in different industries.

After determining such wages the Government issues orders to the enterprise to pay these wages to the workers working in their industries. This method is widely adopted in India.

Principles of Determination of Minimum Wages :

Following are the principles that should be followed while determining minimum wages.

1) Principle of Paying Capacity of the Industry : While determining the minimum wages for the workers, paying capacity of the industry should also be considered because the wages to be paid should not prove a burden upon the industry.

2) Principle of Equality : According to this principle, all the workers doing same work and having equal ability and experience, must be paid equal wages. This principle does not man equal wags for all. It only means that all the workers in the same industry having equal efficiency and experience should get equal wages.

3) Principle of Standard of Living : While determining minimum wages, the principle of standard of living, should also be followed. The wages should be enough to provide for the bare necessities and essential amenities to the workers. From this point of view, different wages may be determined for different places and different industries. In addition to this, rates of wages should be modified from time to time.

3)   Fair Wages :

It is very difficult to give a precise definition of Fair Wages because it varies from country to country and from time to time. Therefore, it is possible that an amount of wages that is fair for one country at one time may not be fair for another country or for next time. Therefore, fair wages can be determined only after considering the specific circumstances of the industry for which the wages are to be determined. The term 'Fair Wages' has been defined as under.

Prof. Marshall, "Rate of wages in a particular industry can be regarded as fair wages only when it is almost equal to the wages which is paid in other industries for the works which are of the same caliber and equally difficult and require almost equal efficiency and training".

Prof. Pigou, "Fair wages is the wages which is paid at the rate which is being paid to the workers of same status in the enterprises of the same type and of near-by areas".

On the basis of analytical study of above definitions, it can be concluded that Fair Wages is the amount of wages that may provide the basic needs and amenities to the workers according to their social status.

Fair Wage is more than minimum wages. Fair Wage is determined after considering several factors such as the wages paid for similar work in other trades and industries requiring same amount of ability and adjustment, productivity of the labour and paying capacity of the industry. Fair Wage is determined between the lower and upper limits. The lower limit of wage is the minimum wage and the upper limit is the capacity of the industry to pay.

Determination of Fair Wages :

The rules and the problems in the process of determination of Fair Wages are as follows :

Determination on the Basis of Paying Capacity of the industry. According to this technique, fair wages should depend upon the paying capacity of the industry. Generally, the paying capacity of on industry estimated on the basis of net profits of the enterprise but following are the difficulties in adopting this method as the base of determination of fair wages.

i)   The amount of profits may be substantially reduced by increasing the provision for depreciation and other provisions and reserves.

ii)   Similarly, the amount of profits may be increased or decreased by increasing or decreasing the expenses.

Considering these difficulties, Fair Wages Committee has suggested that the paying capacity of an enterprise must be related with the current rate of wages which depends upon,

i) Purchase Price ii) Quantity of Production iii) Profit of the Enterprise iv) Unemployment.

2) Difficulty in the Execution of Fair Wages :

i) As all the employees work with the same efficiency and ability

ii) It is necessary that the working conditions of all the workers getting equal rate of wages must be similar.

3) Determination on the Basis of Productivity of the industry :

Rate of Wages is closely related with the productivity of the labour. Productivity of the labour does not depend upon the efficiency of labour only. It depends upon many other factors also, such as – managerial capacity, financial management and technical facilities etc. Therefore, these factors must also be considered while determining the rate of wage on the basis of productivity and labour.

7.3 LABOUR MARKET SEGMENTATION

Labour market segmentation is said to exist if

1) Jobs for individuals of a given skill level differ in terms of their pay or other characteristics and
2) Access to the more attractive jobs is limited in that not all who want the better jobs can get them.

The notion of labour market segmentation can be stylized most simply by maintaining that there are two labour market segments. A realistic assumption is that all who participate in the labour market want the better jobs, but good jobs are available only for a fraction of the labour force. Those who do not get the good jobs must either take up a bad job or remain unemployed. Models with two labour market segments prove to be both tactable and insightful, and so are used here.

The labour market consists of quite distinct segments that are linked with one another. When there are just two segments, those models are called, "dualistic" labour market models.

Assumptions :

1) Firms, in these models are assumed to be maximizing profits. This means that they hire workers, raise wages, and improve worker quality if and only if it is in their profit. Maximizing interest to do so.

2) Workers in these models are assumed to be maximizing utility. Especially, in poor countries, in which large number of people value additional goods greatly compared to leisure, the utility – maximization assumption may often be fruitfully replaced by an income maximization assumption.

3) The notion of, "Market equilibrium" used here needs to be clarified. "Market equilibrium" is the state toward which market tends and once there, it tends to stay. "Market – clearing" is a state in which the quantity of a good or service supplied equals the quantity demanded. Some of the equilibria we shall deal with here are market – clearing and other are not. And finally, the objective of this paper is to make labour outcomes more understandable; much of what is understandable is not pretty.

I) The Essence of Labour Market Dualism :

At the core of segmented labour market modeling is the distinction between one part of the labour market and another. In the literature, one sector is alternatively called "formal", "modern", "industrial", "good jobs" or "urban", while the other is alternatively called "informal", "traditional", "agricultural", "bad jobs" or "rural".

Labour market dualism is a useful stylization of what has been called "labour market segmentation" or "labour market fragmentation".

The distinguishing feature used by Nobel laureates Arthur Lewis (1954) and Simon Kuznets (1955) as well as other dual economy modelers is the fact that workers earn different wages depending on the sector of the economy in which they are able to find work. Lewis wrote, "Earnings in the subsistence sector set a floor to wages in the capitalist sector, but in practice, wages have to be higher than this, and there is usually a gap of 30 percent or more between capitalist wages and subsistence earnings". Lewis explained that although part of the gap is "illusory" because of the higher cost of living in the capitalist sector, there remains a real wage gap due to

a) The "psychological cost of transferring from the easy going way of life of the subsistence sector to the more regimented and urbanized environment of the capitalist sector,"

b) The payoff to experience in the capitalist sector, and

c) "workers in the capitalist sector acquiring tastes and a social prestige which have conventionally to be recognized by higher real wages.

Kuznets (1955) further developed the model of wage dualism and intersectoral shifts by exploring how various measures of income inequality (including the income share of the lowest income quintile, the income share of the richest income quintile and the range) would change as the high income sector comes to employ on increasing share of the population. All of the inequality measures used by Kuznets (he income share of the poorest quintile, the income share of the richest quintile and the interquintile range) exhibited an inverted – U pattern, which later came to be known as the "Kuznets Curve".

Later writings on labour market dualism were grounded in human capital theory as developed by Schultz (1961, 1962), Becker (1962, 1964) and Mincer (1962, 1974) this later literature on labour market dualism stressed that for dualism to exist, different wages must be paid in different sectors to comparable workers.

Criticism :

1)   Rosenzweig (1988)

2)   An Inter-American Development Bank Report (IADB, 2003) says, according to (the dualistic view of the labour market), the formal and informal economics operated in segmented labour markets and there is limited mobility between the two.

Labour markets are better characterized as being segmented in the sense of cumulative advantage and low level traps (Nelson, 1966; Merton, 1968; Doeringer and Piore, 1971; Bouden, 1973; Meade, 1976) than as being unified in the sense that the next best employer is essentially indistinguishable from the current one.

The formal sector labour market, the informal sector labour market and the interactions between them is explained below :

II)   The Formal Sector Labour Market :

This section presents four alternative models of wages and employment in the formal sector; the market – clearing labour market model, models with wags set above market – clearing levels for institutional reasons, models with wages set above market-clearing levels for efficiency wage reasons, and models with wages set above market-clearing levels because of supply side considerations.

A)   The Market – Clearing Labour Market Model :

First, The amount of labour demanded is taken as a decreasing function of the wage, other things equal. The market labour demand curve slopes downward because of diminishing marginal revenue product of labour and the associated substitution and scale effects of a wage change. Second, the amount of labour supplied is taken as an increasing function of the wage, other things equal. The market labour supply curve slopes upward because a higher wage induces workers to enter this labour market from other labour markets and induces non workers to enter the labour force. And third, the wage is set by supply and demand in order to clear the market.

According to the market-clearing model, three equilibrating forces operate; behaviour of firms, behaviour of workers, and behaviour of wages. In the model, firms are to hire workers or not depending on what is in their profit maximizing interest to do. If market conditions change, what is in their profit maximizing interest to do will change accordingly; and firms are free to act on these changes. Similarly, workers are free to supply their labour in any given labour market or not depending on what is in their utility maximizing interest to do. For them too, if market conditions change, what is in their utility maximizing interest to do will change accordingly, and they (workers) are free to act on these changes. And finally, if supply and / or demand conditions change, real wages are free to rise or fall accordingly.

B)   Above Market – Clearing Wages Set Institutionally :

An important class of models in the labour market literature holds that wages in the formal sector are set by a set of forces different from supply and demand. It is useful to distinguish five institutional features that may be important in different settings (e.g.

Fields and Wan, 1989; Fields, 1999). They Are : minimum wages; trade unions; public sector pay policies; multinational corporations; and labour codes.

C) Above Market – Clearing Wages set by Efficiency Wage Consideration :

An old and well established idea that commands nearly universal agreement not only in economics but in human resource management is that a firm can raise its labour productivity by paying a higher wage. Efficiency wage theory incorporates the proposition that higher wages can result in higher productivity but goes beyond it in a fundamentally important way. According to the core micro-economic model of firms, firms are trying to achieve higher profits, which may or may not be enhanced by higher productivity. Thus, the basic postulate of efficiency wage theory is that the profit maximizing firms will pay higher than market clearing wages if and only if the gains in productivity from doing so outweigh the costs, so that the profits are increased. In other words, it is not enough simply to maintain that paying a higher wage generates benefits. It must be that the benefits exceed the costs.

Efficiency wage theory has also contributed usefully to analyzing the mechanisms by which productivity gains are realized. Where the efficiency wage models come out then, is that wages remain above the market – clearing level because firms in the labour market find it in their profit maximizing interest to keep the wages above market – clearing level. A firm that is paying efficiency wages would hurt its profits if it lowered wages.

D) Above Market Clearing Wages set on the supply side :

According to the standard account of equilibrating forces in labour markets, when the wage is higher than the market-clearing level, unemployed workers would offer to work for lower wages rather than remain unemployed.

If the demand for labour is inelastic, the total wage bill paid to labour over a longer period such as a month or a year will be higher the higher is the daily wage. Each of the unemployed knows that he or she will earn more on average over the course of many days if she / he do not under cut the established wage & therefore

will not do so. Wages remain above the market-clearing level as a result

2) The Informal Sector Labour Market :

The crucial feature of labour market dualism described above is that the formal sector offers relatively attractive wages and other terms and conditions of employment while the informal sector offers relatively unattractive ones. This leads to the first characterization of the informal economy; workers pre formal sector jobs and enter informal sector only as a last resort. More recently, though a different view has been put forth; that the informal economy is a desirable sector that the workers choose in Preference to formal sector work. A third view is that the informal economy has its own internal dualism, combining these two characterisations.

A) The Informal Economy as a Free Entry Sector of Last Resort :

The working poor are found disproportionately in the informal sector. Ample empirical research has shown that labour earnings in the informal sector are low, lower even than in the formal sector in a large number of countries.

The existence of free entry employment opportunities in the informal sector helps explain why open unemployment rates in developing countries are comparable to those in developed countries and often considerably lower.

A second approach is to regard a part of the informal sector as facing, instead of zero marginal products, constant marginal product. The dual economy model developed by Harris and Tadaro (1970) was formulated to fit the East African case, which they and others regarded as a land surplus economy at the time. Harris and Tadaro assumed that anyone who wanted to work in agriculture could find a plot of land cultivate it an earn the marginal product from his or her efforts, Agricultural Wages were equated to marginal product, not average product as in Lewis. If the marginal worker and the marginal land are assumed to be as productive as preceding inputs were a convenient simplifying assumption would be to regard the marginal product of labour in agriculture as constant.

A third approach is intermediate between the first two : a positive diminishing marginal product.

A fourth approach is to model a full demand system for agricultural and non-agricultural products and workers.

To conclude, the most common characterization of the informal sector is that it is an easy-entry sector that workers can enter to earn some cash in Preference to earning nothing. An alternative view has been gaining popularity in recent years.

B)   The Informal Economy as a Desirable Sector :

It is the idea that a large number of those working in the informal sector are there voluntarily. The choice approach to the informal sector has been developed more recently in a series of papers by William Maloney. Maloney offers a number of reasons why workers might want to be in the informal sector; some can earn more (or at least hope to earn more) in informal self employment than they could earn in formal sector employment; they value the independence of self employment; they would rather use the money that formal sector protections cost them for investing in their own small informal enterprises; they do not value protections such as health insurance which formal employment offers to them, in some cases because they already have these protections, and they do not trust the government to deliver on promises such as future pension benefits. For any or all of these reasons, there may be a sizable numbers of workers who prefer informal self employment to formal wage employment.

C)   The Informal Economy with Its Own Internal Dualism :

The preceding subsections put forward two polar views. One is that informal sector employment is worse than formal sector employment but superior to unemployment. The other is that employment in the informal economy is preferred to formal sector employment.

A way of combining these two polar views would be to regard the informal sector as having its own internal duality. On this synthesized approach, some informal activities are preferable to formal sector jobs and some are not. Such a view is developed at length in Fields (1990) where the two parts of the informal sector are labeled, "upper-tier" informal activities and "easy entry" ones.

Another way of modeling the duality of the informal sector is to specify two informal sectors that are geographically distinct. Todaro (1969) had three employment sectors – urban modern employment, urban traditional employment and agricultural employment – but no unemployment. Harris and Todaro (1970) had urban modern employment, agricultural employment and unemployment but no urban informal sector. Fields (1975) had three employment slates – urban modern employment, on urban informal sector, and rural agricultural employment – plus unemployment.

If these various sector distinctions are put together, we should have four employment states-employment in the formal sector, employment in the upper-tier informal sector, employment in the easy – entry sector and employment in rural agriculture – plus unemployment.

Adding in rural off – farm employment what is sometimes called Z-goods sector (Hymer and Resnick, 1969; Ranis and Stewart, 1993) would introduce a fifth employment state.

IV) Formal – Informal Linkages in the Labour Market :

It can be explained as follows
1) The integrated labour market model with full market clearing.
2) Models with wage dualism but no employment and
3) The Harris-Todaro model, both in its original form and as extended, which features both wage dualism and unemployment.

A) The Integrated Labour Market Model with Wage Equalisation and No Unemployment :

The integrated labour market model, also called the unified labour market model, has as its distinguishing features that
1) Each labour market clears and
2) Full inter market equilibrium is achieved through actual wage equalization.

In the integrated labour market model, economic growth in one sector benefits workers in all sectors. Three groups of workers have been identified in this analysis:

1) Those who had been working in manufacturing and now earn higher wages than before; 1) Those who are drawn by higher wages into manufacturing and now earn higher wages than before; 2) Those who are drawn by higher wages into manufacturing from agriculture and 3) Those who remain in agriculture and earn more than they did previously. In this way, economic growth in a country's export sector reverberates through-out the labour market, benefiting those who produce manufactured goods and those who produce agricultural gods.

The extension for the integrated labour market from two sectors to N sectors is immediate.

B.   Models with Wage Differentials and No Unemployment :

In contrast to the integrated labour market model, a number of segmented labour market models are characterized by wages differentials between segments. Models with wage differentials between segmented and no unemployment include the unlimited supply of labour model of Lewis (1954), the interseetoral shifts model of Kuznets (1955), the crowding model of Bergmann (1971), the minimum wage model with incomplete coverage of Welch (1974), and the modern sector enlargement model of Fields (1979b, 1980) are famous versions of this.

Within this class of models, the most heralded version is the Nobel Prize-winning work of Lewis (1954), As discussed above, the distinguishing feature of the Lewis model was that the modern sector faces an unlimited supply of labour at wages only some what higher than Subsistence levels. It is this that makes the Lewis model, "classical", in contrast to a, "neoclassical" model in which labour is scarce and has to be bid a way from other uses. This feature of the classical model was later elaborated on by Rains and Fei (1961), Fei and Ranis (1964), and Jorgenson (1967).

In the Lewis model, when the formal sector wage is above the informal sector wage, the potential quantity of labour supplied to the formal is the entire labour force. However, because formal sector employers do not wish to employ all the workers who would like to work there at that wage they (the employers) face an effectively unlimited supply of labour. Specifically this means that no individual employer need raise the wage to attract additional labour, nor must employers as a whole within a substantial range.

Indeed, there is a horizontal curve, but that curve is the wage as a function of employment, not the amount of labour supplied as a function of the wage.

C. Models with wage Differentials and Unemployment : The Harris – Todaro Model and Extensions of It.

John Harris and Michael Todaro (1970) formulated a model characterized by wage dualism and unemployment. Wage dualism arises is Harris and Todaro Model because employers in the formal sector are compelled by unions, minimum wage laws, or other institutional forces, to pay higher than market clearing wages, while the wage clears the informal sector labour market. The Harris Todaro model also featured a spatial distinction; to be hired for a formal sector job, it was necessary for a worker to be physically present in the urban areas, where the formal sector jobs are assured to be located.

In the Harris-Todaro model, more workers search for formal sector jobs than are hired, Employers hire some of the searchers but not all of them. Those not hired end up unemployed ex-post.

The integrated labour market model maintains that the wage that any worker receives reflects supply and demand for labour in the labour market as a whole. Specifically, the wage is determined by what the last employer is willing to pay in order to attract and employ a worker and by what the last worker requires in order to be attracted and employed.

One common misperception is that the wage 'should' vary directly with labour 'productivity', commonly measured as value added per worker, in a given firm or sector. According to the integrated labour market model, nothing could be further from the truth.

The more general point of the integrated labour market model is that a worker's wage is set not just by that worker's own productivity nor by labour productivity just in that worker's sector. Rather, wages are set by supply and demand for that category of labour in the labour Market as a whole.

7.4 QUESTIONS

1. Describe various types of employer-employee relationships.
2. What are the various categories of wages and discuss how they can be determined.
3. Discuss in detail the concept of Labour Market Segmentation.
4. Explain the essence of Labour Market Dualism.
5. Differentiate between the Formal Sector Labour Market and Informal Sector Labour Market.

References :

Economic Development in India – Academic Foundation various issues.

Economic and political weekly – various issues.

Gary S. Fields, 2009 : Segmented Labour Market Models in Developing Economy.

ILO Report – 2005.

Genes Lerche, 2009, 'An Aliance Against Forced Labour in India'.

K. Sundaram, 2009 : Measurement of Unemployment and Employment in India – some issues.

M. S. Chauhan, 2010 : 'Labour Economics – Issues and Policy'.

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8

Module 6

LAND AND LEASE MARKETS

8.0 OBJECTIVES

- To know the types of farming
- To understand the specialized farming
- To understand the Diversified farming
- To study the merits and demerits of specialized farming
- To study the merits and demerits of Diversified farming
- To understand the Single-crop farming
- To understand the Multi-crop farming
- To understand the Mixed farming
- To understand the Dry and irrigated farming
- To understand Ranching
- To know the Factors Determining The Types Of Farming

8.1   INTRODUCTION

There are different type of farming. These refer to the combination of products that a farmer may chose to produce during a particular crop season or over a long time as a regular practice. The type of farming also refer to the method of farming an to different practices that are used in carrying out the farming operations. Mention may be made of specialized farming and diversified farming in this regard. Similarly, farming may be carried out as a single crop enterprise or a multi-crop enterprise.

Many a times, the expression "System Of Farming " is also used in such discussion .The distinction between the two terms, viz ;type and system of farming, is not very clear. In fact these two terms have been used interchangeably in some studies though in others ,a clear distinction has been sought to made out. The expression, "System Of Farming ", is generally used to denote the ownership of land, farm resource management and other managerial decisions. The system of farming may be owner-cultivator or peasant proprietorship : it may be co-operative farming: it may even be tenant farming on a share-cropping basis. The system of farming may ,therefore be treated as different from the type of farming. In this chapter ,we are concerned with the type of farming.

8.2   TYPES OF FARMING

The main types of farming which are commonly practiced are listed below :

1) *Specialized and Diversified Farming.*
2) *Single-crop farming and Multi-crop farming.*
3) *Mixed farming.*
4) *Dry and irrigated farming.*
5) *Ranching.*

8.3   SPECIALIZED AND DIVERSIFIED FARMING

In a general sense ,when only few enterprises are run by the farmer in which he acquired special knowledge is known as specialized farming .On the other hand when a farmer is engaged in a multitude of farm enterprises, it is referred to as diversified farming. Specifically ,specialized farming refers to only one kind of farm business such as raising of food crop ,or rearing sheep or raising a dairy cattle Against this ,if a large number of crop enterprises, with or without a number of non-crop enterprises are run by a single farmer it is referred as a diversified farming. Extreme forms of specialization or diversification seldom exist. These may be a few instances when only one crop is raised on a plot of land repeatedly over a long period of time or only one form of livestock is kept for along period of time.

But usually in the developing countries ,such situations are few .A farmer may usually allocate his holding to raising of crops ,fodder and vegetables during the same crop season .He may hold cows, buffaloes and sheep's simultaneously. In practice it may therefore be difficult to draw a clear demarcation line between specialized farming and diversified farming .Raising of two to three crops may make it specialized and raising of five or six crops make it diversified.

Two types of farming point to different motives. The motive behind specialized farming is profit and the motive behind diversified farming is self-sufficiency. The farmer wants to maximize his profit by specializing in only a few enterprises and may choose to buy his requirements from the market and in the latter case, the farmer chooses to raise as many enterprises as are feasible and

thereby minimize his dependence on the market. Specialized farming, thus, is run on known business principles, as in the case of other enterprises .Again while having a close look at these type of farming, we may observe that specialized farmers do not produce for home consumption alone. The difference is always of degree. It may also be noted that agriculturally advanced countries have more of specialized farming compared to developing countries where there in more of diversified farming. Again one may find evidence of big farmers specializing in fewer enterprises compared to small farmers who run a combination of heterogeneous farm enterprises. Specialized farming may be treated as an index of the extent of commercialized farming. Higher the degree of commercialization, greater is the degree of specialization. Should a farmer opt for specialized or diversified farming is a question to be investigated. There is no criteria on the basis of which one would make an out-right choice in favor of one and not the other. In order to examine this question we shall have to discuss the merits and demerits of each of these two types of farming.

8.4　MERITS OF SPECIALIZED FARMING

(i)　Marketing Advantages :

Specialized farming always takes place on the larger scale, giving rise to bulk production. This large scale production of a homogeneous nature attracts wholesale trading activity at a single place. This leads to better marketing and convenient buying and selling of the agricultural produce.

(ii)Efficiency Advantages :

Specialization leads to formation of skills which makes work less bothersome ,improve speed and spare drudgery to the farmer .It leads to optimum utilization of farm resources and strengthens the standard of efficiency.

(iii)Capital Advantages :

Specialised farming can be started with a smaller amount of capital, a smaller amount of fixed charges and a smaller amount of equipment. The farmer can afford better machines and equipment and can naturally manage his enterprises more efficiently.

(iv) Other Advantages :

Among other advantages that specialized farming enjoys are a smaller requirement of labour and in some cases, a smaller requirement of land as well. The management of the farm can be more efficient and leakages can be kept at a minimum. The farmer may also be left with more leisure and time for enjoyment.

8.5 DEMERITS OF SPECIALIZED FARMING

(i) Market Uncertainties :

As already stated, specialized farming leads to large-scale production and greater dependence on the market. If the market fails to clear the volume of production ,the farmer may suffer heavy losses and may at times become bankrupt. Such situations have occurred in the USA when specialized farmers suffered heavy losses due to uncertainties of the market. The cotton-growers of America have been facing problems owing to the market not generating enough demand for their produce. As such ,specialized farming may bring heavy losses and defeat the purpose of profit maximization.

(ii) International Relations :

It has often been noted that the specialized farmers ,consciously or unconsciously get involve in international trade. He does not provide for the national market alone but for international market as well. During abnormal times international trade suffers a set back and makes trading across the national frontiers more difficult. In such situations the farmer is rendered helpless. In the international market the term of trade may also not be always favorable and the farmers bargaining position may become weak in such situations. Very often ,restraints are put on international trade due to political policies of governments which operate harshly on the farmer whose trade receives a set-back under such condition.

(iii) Uncertain Crop Conditions and Irregular Investment Flow ;

The successes of specialized farming depends upon the crop conditions and if a crop fails, it brings disaster for the farmer. He has nothing to fall back upon .At times of falling prices ,the farmer is hit hard. Since the crops are harvested once or at least twice a year the farmer gets his income at distant point of time and can think of investment only at such times. This does not ensure continuous flow of investment in farm enterprise.

(iv)   Other Disadvantages :

Specialized farming may not be conductive to the maintenance of soil fertility. Raising the same crop repeatedly over a long period of time reduces the soil fertility and this may resulting soil losing its fertility irreparably. It has been seen that crop rotation helps in replenishing soil fertility .Limited use of land ,labour and machinery may leave a part of these previous resources unutilized or under-utilized .This defeats the purpose of efficiency and optimization. Specialized farming also makes the farmer considerably dependent on the market for a large number of his requirements and he often faces trade risk to meet his necessities even when he might have been a bulk producer of a specialised item.

Lets now consider the case of diversified Farming by examining its merits and demerits :

8.6   MERITS OF DIVERSIFIED FARMING

(i)   Better Resource Utilization :

Because of the very nature of farming spread over the crop year ,the farmer can use his resources optimally and reduce the extent of under-utilisation of his resources such as equipment ,land and labour ,etc.. It ensures steady utilisation of farm labour throughout the year. There is a regular flow of income as well. Land can be used more economically and without loss of fertility. Rotation of crops helps maintain the intrinsic properties of the soil and keep it fit foe further   use. Not only is soil fertility kept in tact, soil of different qualities and varieties can be used efficiently under different enterprises .Diversified cropping also reduces the necessity for leaving the land fallow.

(ii)   Better Product Utilisation :

Under diversified farming different enterprises can be run on the same holding. For example, a farmer may raise crops and at the same time, may also keep a dairy farm .Some of the crop by-products can usefully be employed in feeding the dairy cattle and hence waste can be avoided. In a similar fashion, several other enterprises can be raise together and by-products used optimally for the purpose. Further diversified farming ensures a regular flow of returns as different enterprises mature at different time of the agricultural year. This facilitates a regular flow of investment in agriculture .Returns are also not subject to any serious fluctuations

because risk of climatic hazards and market uncertainties can be safeguarded by engaging in diversity of enterprises.

(iii)   Other Advantages :

Those farmers who lack adequate training and experience in agriculture can safely start diversified farming because such a pursuit may not necessitate specialized training as required for specialized farming. There is every chance that under diversified farming, even a beginner ,an untrained and inexperienced farmer may find some enterprises clicking and yield him a return to stimulate his interest and generate confidence in him to stay in the farming enterprises. The very fact that the farmer experimenting with a large number of enterprises gains vast and varied experience leads to the development of better management qualities in him .Diversified farming may also help in absorbing a larger volume of labour force and sustaining a larger population.

8.7   DEMERITS OF DIVERSIFIED FARMING

i)   Ineffective Supervision :

The presence of a number of enterprises on the farm will stand in the way of the farmer in bestowing effective supervision. Effectiveness can be found when there a limit to the number of enterprises. The diversified enterprises allow the scop for the leakages in the farm business go unnoticed .This is likely to affect the farm economy.

ii)   Less Possibility For Maintaining a Variety Of Implement and Machinery   :

It becomes expensive to purchase and maintain the required suitable implements and machinery for the various enterprises taken up on the farm

iii)   Probable Marketing Insufficiencies :

The growing of a variety of crops is likely to bring in problems on marketing front. The farmers have to search for markets.

Check Your Progress :

1. Write notes on :

    a)   *Specialized   Farming.*

    b)   *Diversified Farming.*

2. Explain the merits and demerits of Specialized Farming.

3. Explain the merits and demerits of Diversified Farming.

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8.8 SINGLE-CROP FARMING AND MULTI-CROP FARMING

Single crop farming is a form of specialized farming .If a farmer specializes in crop enterprises it is left to him to produce a single crop or a multiplicity of crops. Producing a large variety of crops may not make a farmer a specialist in the strict sense of he term, although he will acquire varied experience in crop enterprises. In practice it may happen that a farmer seldom produces a single-crop except in the case of cash crops such as sugarcane etc. Even if a farmer wishes to specialize in crop cultivation, he will often choose more than one crop to safeguard against market uncertainties and also to ensure the optimum utilization of his resources. By producing a single-crop he will be incurring a great risk if the crop fails or the price fluctuates and at the same time ,he may not be able to use his labour ,machinery and land optimally.

A large multiplicity of crops is also not good .It creates problems of management. The farmer may not be able to supervise all the operations and some of these crop enterprises may suffer from the farmers neglect. Multiplicity of crops would also imply the distribution of farm inputs over a large number of uses which may

result in small-scale production and pose marketing problems. In the hope of getting a continuous and regular flow of income ,the farmer may not be able to ensure proper return on his land .It may ,therefore, be observed that neither a single crop nor a multiplicity of crops would be a desirable proposition .The farmer would play safe if he produces a small number of crops that he can manage effectively and in the production of which he can utilize his resources to his best advantage.

8.9 MIXED FARMING

Mixed farming refers to the combination of two independent agricultural enterprises on the same farm .A typical case of mixed farming is the combination of crop enterprise with dairy farming or in more general terms, crop cultivation with livestock farming. It may be defined variously but the essence is of combining several enterprises. Mixed Farming may treated as a special case of diversified farming. As such ,it is more prevalent in the developing countries. In a majority of cases mixed farming manifests itself in the combination of crop and livestock and that is why this combination is almost treated as synonymous with mixed farming. This particular combination of enterprises is important in the sense that support each other and add to the farmers profitability.

The farmer raises his livestock on the by products of crop growth .He utilizes the existing manpower and equipment and has not to incur any additional expenses .Similarly ,by raising livestock ,he draws a number of benefits from it for crop cultivation. Crowding is used as manure, bullock power is used on the farm and also for transport purposes and several other operations connected with agriculture .The two enterprises ,therefore, sustain each other with not much additional cost ; but on the other hand, it arguments the income of the farmer and provides him more economic soundness.

A few study conducted to compare the advantages of mixed farming with single enterprises farming have shown that income per unit of land is considerably higher in the case of the former than the latter .Utilization of land and labour is better under mixed farming as compared to single-enterprises farming. Mixed farming is most suited to densely-populated countries, for it generates more employment and income .Mixed farming also be justified on ground of scarcity of land.

8.10 DRY AND IRRIGATED FARMING

Farming is those areas which are deficient in rainfall and which have no assured source of artificial irrigation ,is referred to as dry farming. On the other hand ,farming with assured water supply from artificial irrigation is known as irrigated farming .

Dry farming is difficult in the sense that land starved of water is hard and port in soil fertility. The yields are low whereas the effort required is quite substantial .The possibility of introducing new technology is limited and crop seasons are rigidly time-bound corresponding to the distribution of rainfall .On the other hand irrigated farming is easier and more remunerative .It is flexible and adaptable to changing technology .

8.11 RANCHING

Ranching refers to the practice of grazing animals on the public lands. Some public lands may also be used for raising livestock .This practice is common in **Australia** and **Tibet**. In our country ,ranching is prevalent in some measure in the hill regions which are rich in pastures and gazing lands .But ranching is slowly dying out in our country because of the growing pressure on public lands .Those farmers who have been all along subsisting on ranching are now seeking new avenues of employment. Owing to the reckless decimation of forests in the country over the decades, grazing lands and pastures have been dwindling in size ,forcing the ranchers to seek new avenues employment.

8.12 FACTORS DETERMINING THE TYPE OF FARMING

There are a number of factors that determine the type of farming. These may be Physical as well as economic. Among the physical factors climate, soil fertility and topography influence a great deal in the selection of the type of farming. Among economic factors are the profitability ,marketing feasibility, capital and labour availability .A brief discussion about these factors now follows :

(a) Physical Factors :
Physical factors caused by the type of farming to vary from area to area and result in to a comparative advantage of a

particular enterprise in one region over the other. As already mentioned the important factors under this category are :

(i) Climate :

(ii) soil :

(iii) Topography :

(i) Climate :

Climate is one of the most important factors determining the type of farming .The distribution of rainfall ,sun-shine, temperature and other climatic conditions greatly determine which enterprise the farmer should choose. Climatic conditions of the hill regions and plain differ greatly and correspondingly ,the nature and the scope of the different type of farming also differ significantly .The amount of rainfall a particular area receives alone in an important factor significantly affecting the type of farming .For example, most crops can be grown in areas receiving about 60 cm rainfall and annually is itself ,but paddy and sugarcane require 100 cm of rainfall and pulses and small millets can be grown on areas which receive even less than 60 cm of rainfall. Thus, the total rainfall and area receives annually is itself an important factors determining the type of farming .Whether a farmer specializes in one or a few crops ,or in one or more than one enterprises shall greatly depend upon the climatic conditions .Whether a farmer should choose mixed farming ,single crop or multi crop farming depends solely upon the climatic conditions.

(ii) Soil :

The quality of soil is also important for determining the type of farming .All soil may not be suitable for crop cultivation or for raising livestock or poultry or any other farm enterprises. Different soil suit different enterprises, depending upon the different qualities possessed by them. For example ,clayish soils and sandy soil support different crop enterprises .Alluvial soil may be best suited to the cultivation of crops such as wheat and rice and heavy black soil may suit the cultivation of cotton and so on .Hill soil may be suitable for growing fodder alone and may suit the raising of livestock .It is due to variation in soil that different crops are localized in different area in India.

(iii) Topography :

Topography is equally important in determining the type of farming .Topography greatly tells upon the temperature and soil fertility and hence it has a significant bearing upon the choice of farming that is practiced. It is due to topography that the cropping pattern generally followed in the plains differ from the cropping pattern followed at higher attitudes.

(b) Economic Factors :

The physical factors discussed above ,demarcate the feasibility of following various type of farming in a particular area ,but before making the final decision about the type of farming to be adopted ,the farmers are mostly led by the consideration of profitability. If for example, livestock is more profitable than crop cultivation ,the farmer will certainly opt for the farmer .Similarly ,if it is more profitable to raise an orchard than growing rice or wheat ,the farmer will obviously choose an orchard .In the **Terai** region of **Utter pradesh** ,both paddy and maize can be successfully grown that is ,as far as physical factors are concerned ,cultivation of both the crops is feasible .But when along with the physical factors, economic factors are also taken into account ,farmers usually prefer to cultivation paddy as it is more paying .Some of the important economic factors which influence the farmers decision regarding the type of farming are discussed below

(i)   Comparative Advantage :

Guided by economic considerations ,the farmer will produce only those commodities in which ha has an advantage. These advantages are of two types, comparative and absolute .While making a decision regarding the types of crops to be raised on his field ,the farmer is always guided by the consideration of comparative cost rather than the economic cost. The law which deals with such situations is known as the law of comparative advantage which states, " the producers in each locality tend to use their resources in the production of goods which have a comparative advantage in that area . With the proceeds from these goods ,they purchase for their own use ,goods produced under greater advantage elsewhere ."

(ii)   *Marketing Cost :*

The cost of marketing the produce is an important consideration in deciding the type of farming. If the nearby market promotes a particular enterprise the farmer will prefer that than the one for which the market may be distantly located and involve heavy transport cost . Marketing considerations weigh heavily when a choice has to be made between growing vegetables and other crops .If the market is not readily available at a short distance ,it may not be wise to go in for vegetable cultivation .

(iii)   *Location Of Processing Plants :*

The cultivation particularly of cash crops in a particular area is influenced by the presence or otherwise of processing plants . For example ,most cotton mills in india are in **Gujrat** and **Maharashtra** and most of the area around these mills continues to be under the cotton crop .

(iv)   *Availability Of Capital and Labour :*

 The availability Of capital and labour is of vital importance for determining the type of farming .The available capital and labour may force a choice , keeping in view the tradition and training of labour and the nature of the capital The adaptation of new agricultural technology requires a huge amount of capital .The availability of capital ,therefore ,would determine the type of technology to be used by the farmer and also affects the selection of enterprise and hence the type of farming . Similarly ,before starting a particular type of farming ,the farmer will have to be sure about the availability of labour trained to handle that particular enterprise .

8.13 LEASE MARKET

Leasing activity is quite prevalent in farming. Normally absentee landlords would like to lease out the lands by identifying the tenants who have the reputation of being a loyal tenant. Also those residing in the village, who are not interested in farming because of their pre-occupation also involve in leasing out activity .Some other farmers in view of the management problems also lease out part of their operational holdings. Coming to the tenants they may be landless labourers, small and marginal farmers who have abilities of managing big farms. Leasing in activity when examined will throw open the following merits.

Merits :

1) A source of income Augmentation :
For any one who is engaged in leasing in activity, it helps to augment their present income levels.

2) Increase in the size of Operational Holding :
For those who have some operational holding ,leased in land add to the area of operation. Possibilities exist for better management of land resources.

3) Crop Diversification :
Relatively larger acreage on account to leasing in activity permits crop diversification. Apart from higher income, risk in farming can be reduced

4) Flexibility Of Rent :
Rent normally is fixed by the owner-farmer based on the prevailing rents for similar type of lands in the village. Yet flexibility does exist based on understanding between the owner and the tenants. Moreover during the times crop failures also ,owner is not rigid in collection of rent after all he is humane and can understand the situation sympathetically.

Demerits :

1) Insecurity Of Tenure :

Normally in the leasing activities written agreements are seldom made ,it is only through oral agreements Irrespective of the likes and dislikes of the tenant, his tenure can be terminated as per dictates of the owner-farmer.

2) Less Scope For Land Development :
A tenant more often than not ,is interested in deriving as much as he can from the leased in land in the light of the insecurity of tenure. His aim is to extract as much as he can from the available soil nutrients. Hence, no efforts are made for land development.

3) Poor Infrastructure Development :

Farmers are generally are not much concerned regarding developing the necessary farm infrastructure like farm building ,fencing, etc for the lands leased out .They do not feel the need to develop these facilities, since they are not owners of the land.

8.14 LAND LEASE AND RENTAL

Under system of state ownership of land ,when the customary land regimes no longer exist ,tenure security can be provided by long-term ,transferrable leases as mentioned above .When this approach is adopted ,the lease should be at least 25 years in duration ,preferably longer, in order to encourage investment in the land ,and they should be automatically renewable provided that the cultivator has met normal obligations in respect of payment of lease fees and taxes. The list of requirements can include putting into effect sound environmental practices for land management .In order that efficiency criteria be satisfied , it is necessary that the leases be transferrable (saleable)without requiring government approval ,and that the parties to the transaction be free to negotiate their own price .The only procedural requirement would be that the new leaseholder be registered as much within a certain period after the consummation of the transaction is required , then the leasehold would lose much of its value ,and banks could not use it as collateral in the event of default.

To the contrary ,if long term ,transferrable leases are not adopted ,then it will not be possible to meet the normal requirements of tenure security for cultivator on state lands. In this regard ,under modern(non-customary) land tenure systems, the choice are not many: there are only two basic options for providing tenure security and adequate incentives to improve the land : private ownership and long –term ,freely transferrable leases.

The rental of agricultural land ,and share tenancy system have been prohibited in the agrarian codes of many countries .The apparent reasoning ,more political than economic ,is that rental and share cropping arrangements are perceived to represent the exploitation of the tiller by the land owner .Under many of the agrarian reforms laws and land codes ,from the **South Koria** and Taiwan to Senegal ,Peru the land which was rented out in those cases it usually was adjudicated to the person who was renting in the land .

Land rental and sharecropping commonly occur because they bring about four principlal benefits :

- The practice eases rural poverty by providing a mechanism through which low-income farming families can gain access to additional land and acquire farming experience .

- Almost by definition ,rental or a share tenancy arrangement for plot of land is likely to improve its productivity ,because it transfers the use of the plot from a party who is less interested in or capable of working it to one who is more interested or capable .

- The option of temporarily renting out land reduces income risk to landowners by providing a mechanism for obtaining at least minimal flows of income from the land in years when for reasons of health ,family finances or other factors ,the landowner is incapable of cultivating the land .

- For large landowners , it has been shown that rental or sharecropping contracts normally will be a more efficient way to have the land worked than hiring wage labor, mainly because of the reduced supervision cost.

Check Your Progress :

1.	Write notes on :
	a)	*Single-crop farming*
	b)	*Multi-crop farming*
	c)	*Dry and irrigated farming*
	d)	*Ranching*
2.	*Write the Factors which Determines The Type Of Farming.*
3.	*Write the merits and demerits of land lease market.*

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8.15 SUMMARY

1. The expression, "System Of Farming ", is generally used to denote the ownership of land, farm resource management and other managerial decisions.

2. The type of farming also refer to the method of farming an to different practices that are used in carrying out the farming operations.

3. The main types of farming which are commonly practiced are listed below :

1. *Specialized and Diversified Farming.*
2. *Single-crop farming and Multi-crop farming.*
3. *Mixed farming.*
4. *Dry and irrigated farming.*
5. *Ranching.*

4. when only few enterprises are run by the farmer ,in which he acquired special knowledge is known as specialized farming.

5. when a farmer is engaged in a multitude of farm enterprises, it is referred to as diversified farming.

6. Specifically ,specialized farming refers to only one kind of farm business such as raising of food crop ,or rearing sheep or raising a dairy cattle.

7. if a large number of crop enterprises, with or without a number of non-crop enterprises are run by a single farmer it is referred as a diversified farming.

8. Specialized farming always takes place on the larger scale.

9. Specialized farming can be started with a smaller amount of capital

10. In specialized farming, If the market fails to clear the volume of production the farmer may suffer heavy losses and may at times become bankrupt.

11. *Uncertain Crop Conditions and Irregular Investment Flow may hit hard the farmer.*

12. Under diversified farming different enterprises can be run on the same holding .For example, a farmer may raise crops and at the same time, may also keep a dairy farm .

13. Those farmers who lack adequate training and experience in agriculture can safely start diversified farming

14. In Diversified farming the growing of a variety of crops is likely to bring in problems on marketing front .The farmers have to search for markets.

15. Single crop farming is a form of specialized farming .If a farmer specializes in crop enterprises it is left to him to produce a single crop or a multiplicity of crops.

16. Mixed farming refers to the combination of two independent agricultural enterprises on the same farm.

17. Farming is those areas which are deficient in rainfall and which have no assured source of artificial irrigation ,is referred to as dry farming.

18. Dry farming is difficult in the sense that land starved of water is hard and port in soil fertility.

19. Ranching refers to the practice of grazing animals on the public lands .Some public lands may also be used for raising livestock.

20. There are a number of factors that determine the type of farming. These may be,

A) Physical factors.   :
The important factors under this category are :

(i) Climate   :

(ii) soil   :

(iii) Topography   :

B) Economic factors. :

The important factors under this category are :

(i)   Comparative Advantage   :

(ii)   Marketing Cost   :

(iii)   Location Of Processing Plants   :

(iv)   Availability Of Capital and Labour   *:*

8.16 QUESTIONS

1)   Write notes on the following :
a)   Specialized   Farming.
b)   Diversified Farming.
c)   Single-crop farming

d)   Multi-crop farming

e)   Dry and irrigated farming

f)   Ranching

2)   Answer the following questions

A)   Explain the merits of Specialized Farming.

B)   Explain the demerits of Specialized Farming.

C)   Explain the merits of Diversified Farming.

D)   Explain the demerits of Specialized Farming.

E)   Explain the demerits of Diversified Farming.

F)   Explain the Physical Factors which determines The types of Farming

G)   Explain the Economical Factors which determines. The types of Farming

❖❖❖❖

9

ECONOMICS OF SHARE TENANCY

Unit Structure :

9.0 OBJECTIVES

- To know the share tenancy
- To understand the Crop –Sharing practice in India.
- To study the Inequity In Distribution of Holding .
- To understand the Size of Holdings.
- To study Factors Determining Size of Economic Holding
- To study the Causes For Small Size of Land Holdings
- To understand the Agrarian structure
- To study the Features of the Emerging Agrarian Structure
- To know the Agrarian Relations in India
- To understand the market interlocking and interlinkages

9.1 INTRODUCTION

If dispanssionate discourses is the hallmark of science,the writings of the political economists on share tenancy would have to be treated as far cry from science. For reasons which find difficult to comprehend, this subject seems to have touched to an emotional chord in many , giving rise to both compassion and fury. John Stuart Mill(1848) and Higgs(1894) wrote admiringly of the system. On the other hand the Marquis ed Mirabeaus observed (quoted in Higgs,1894) that share tenancy is a   "deplorable method of cultivation, the daughter of necessity and mother of misery."

The early wisdom on share tenancy, based on the writings of Smith (1776) and Marshall(1920),was that share tenancy, is an inefficient system. A share tenancy or sharecropping contract is by defination one in which the tenant promises to give the landlord a fraction (r) of the total output. The fraction is decided in advance and ,it has been empirically that it trends to be around 0.5.

Now assume, as is often the case ,that it is the tenant who has to decide what input, like fertilizer, pesticides, etc. to be used and he is one who incurs the input cost. Assuming that r is 0.5, note that if through some new input the output increases by more than the cost of the input, it may still not be in the interest of the tenant to apply the input since under share tenancy, the tenant dose not get the full additional output but only half of it. Hence, on land given to share tenancy, the application of inputs-labour, fertilizer and other things will tend to be sub-optimal. This was the essence of the Marshalian critique.

The charge of inefficiency is however not the only one against share tenancy. It has a corollary according to which it is arrational for a landlord to lease out this land on share contracts instead of fixed-rent contract or wage contract. The argument is this .Suppose a landlord switches to a fixed-rent contracts, that is ,one where the tenant pays a fixed amount of rent-this may be in cash or kind. Now since the tenant will get the full benefits of additional inputs used, he will apply more inputs. Hence under fixed rent the total output from the same amount of land will be higher. If the landlord sets the fixed rental a level such that the tenant earns whatever he used to earn(on average) under share tenancy, clearly the landlord will be better off. To sum up the argument: not that under a fixed –rental contract the total output is greater than under sharecropping. If the tenants income is the same under both

systems, the landlords income, which is total output minus tenants earning, must be greater under the fixed-rental arrangement.

Following this argument, the economists of the earlier part of this century set out to urge landlords to be rational and to switch over to the fixed-rental system. But by the seventies doubts began to arise .Instead of being committed to the Marshllian Model of tenancy or its varients and treating rural landlords as irrational, perhaps we should rethink our model. Perhaps rural landlords are not foolish or irrational but it is our model which is missing out on some essential feature of reality and thereby wrongly showing up the landlord who gives his land to a share tenant as irrational. This is indeed the current view of share tenancy And from the mid-seventies the focus of the share tenancy literature has shifted over to showing why sharecropping may indeed be the dominant tenurial arrangement where it occurs.

This has however turned out to be a hard area of research. The economists ingenuity seems to have found its match in the rural landlords alleged "Low cunning".

9.2 CROP-SHARING PRACTICES IN INDIA : (SHARE TENACY CONTRACTS)

To some, sharecropping caries connotations of exploitation, but in fact it is the predominant form of land rental in developing countries if some key features of reality are assumed away lack of uncertainty ,perfect access to credit and insurance for the rural poor –It has been demonstrated theoretically that sharecropping is always inefficient-It always result in lower output, and lower labour input on the land ,than pure cash rental contracts. However, when the analysis is made more realistic, "With risk aversion and uncertainty, a share contract provides the possibility of partly insuring the tenant against fluctuations in output", and "a limit of a working capital available to the tenant because of imperfection in credit market ,can lead to the adoption of a share contracts as the optimal solution to the bargaining problem(between landlord and tenant)"

Empirical test have been made regarding the motivation for sharecropping contracts, statistical test performed on a sample of Tunisian farmers indicated that the credit constraint, rather than risk aversion, was the major factor underlying the choice of a share tenancy contracts.

Research in land rental market in Ethiopia found that the negative efficiency effect of share tenancy is small and that rental market as a whole improve the efficiency with which productive resources are allocated in agriculture.

Research indicates that land rental markets have two opposing effects on agricultural efficiency

1)Positive land reallocation effect.:- The positive reallocation effect results from better matching between land ,labour and oxen power.

2)Negative incentive effect :- The negative intensive effect arises from the standard inefficiency argument according to which sharecropping reduces labour effort.

In sharecropping(share tenancy) it is not necessary to make policy intervention to avoid the danger of rental rates getting out of date, since the payment is a share of the output. Prof. Binswanger warn against attempting to regulate tenancy contracts : "Historically, land reform that resulted in establishment owner-operated farms appears to have been a farmer successful way of addressing the equity questions.".On the other hand ,"in some cases of highly unequal distributions of landholdings and prevalence of sharecropping arrangements, it appears that legislating the division of the crop may improve both efficiency and equity."

The results for an agricultural tenancy reform of this nature in the Indian State of West Bengal were summarized as follows :

"A primary goal of the reform was to change the division of output between landlord and tenants in favour of tenants. As a result…. The division of output on many tenancies changed from an even split to a 70 – 30 split in favour of tenants. By 1982 the reforms had reached about half the states sharecroppers, and over the next decade West Bengal achieved a breakthrough in agricultural growth."

Banerjee and Ghatak(1996) estimate that more than a third of West Bengals growth in agricultural production during 1981 – 1992 was due to the tenancy reforms. Thus the land tenancy reform not only redistributed income to the poor, it also changed the intensives of the poor to be productive by changing the tenancy contracts under which they supplied labour. In this way

redistribution substantially increased the income generated by the poor.

Share tenancy is increasingly recognized as a useful system for access to land, in part because landowners often are a source of creditor the sharecroppers. This kind of contract also reduces risk to the landowners, in the face of possibilities of crop failure vis-à-vis the option of paying wage labour. In summary :

Sharecrop tenancy seems to offer a package of incentives, insurance and interlinkage to other markets which is often best for both parties when compared to the relevant alternatives…..This observation is consistent with the conclusion that cultivation under share tenancy is not less efficient or less productive than other forms of tenancy……We now have an abundance of research which demonstrates, both in theory and practice, that while a particular form of tenancy may not be efficient in an economically perfect world, in many instances the type of contracts which prevails is optimal in the real world.

9.3   INEQUITY IN DISTRIBUTION OF HOLDING .

Meaning of Agricultural Holding :

The term "Agricultural Holding " implies the total area of land which is held for cultivation as a single unit by an individual , joint family or more than one farmer on a joint basis. Such land may either entirely be owned, taken on lease ,or may be partly owned and partly rented,

An "Operational Holding " is one which includes all lands(i.e., cultivated , fallow and even the land which is not under cultivation) used wholly or partially for agricultural production operated as a single technical unit by a single household or a number of households operating jointly. An individual may have a single or a number of operational holdings if each of them constitutes a separate unit of management .

On the other hand "Ownership Holding " includes all the area owned by a cultivator or a number of cultivators jointly whether under own cultivation or subject to others. The concept of this type of holding is useful under feudal systems ,as it gives an idea whether land ownership is concentrated in a few hands or is evenly distributed .It may also be known if the tendency is towards dispersal among a number of persons.

It also helps in finding out the level of income and living of the farmer, employment, requirements of hired labour, and utilisation of farming equipment. This type of information provides the necessary background on which agrarian relations in a socialistic society could be based .If there is a heavy concentration of land in a few hands, it may be distributed among those without land through legislative measures .

9.4   SIZE OF HOLDINGS

The size of an agricultural holding in any country depends on geographical and climate conditions ,partly upon the laws and social institutions ,partly upon the methods and technique of cultivation .The ideal size of the holdings will vary likewise with the nature of the crop, and the objective behind agricultural production .Thus ,where grain and food are in demand ,the larger holdings alone can be regarded as economic .Small farm on the other hand ,are best suited for dairy produce ,vegetable and fruit growing or for vine orchards .According to Crver to be most profitable a farm devoted to the cultivation of wheat must be at least 160 acres ,but this is obviously an impossible ideal in the Punjab or in Tamilnadu .The question where a holding is economic or uneconomic can not be settled in a rigid manner. Various authorities have attempted to define an economic holding for Indian conditions .

According to Keatinge , " A holding which allows a man a chance of producing sufficient to support himself and his family in reasonable comfort after paying his necessary expenses may be termed an "economic holding". On the other hand Dr. Mann has defination economic holding as "one which will provide for an average family at the minimum standard of life considered satisfactory. "

The summary of the limit of economic holdings ,as prescribed by different authorities may be given below :

limit of economic holdings

Authority	Economic Holdings
Keatinge ,W	40 to 50 acres of fair land in one block with at least one good irrigation well.
Mann ,H	20 acres.
Baroda Economic Enquiry Committee	30 to 50 bighas.
Lucas,C.D.	More than 14 acres.
Darling ,M.L.	10 to 12 acres, when land is cultivated on batai system.
Stanley Jevons	20 to 30 acres.
U.P.Congress Agrarian Committee	It is movable and may be between 15 to 20 acres.
Floud Commission	2 ½ acres in Tippera District but 10 acres in West Bengal .
Raghvacharya,T.V.	4 to 6 acres.

Prof. East has adopted 2 ½ acres per capita as the minimum needed to produce an adequate diet for one person. Keeping in mind the fact that in many part of the country two crops are raised during the year and the food requirements may be less in the East than in the colder countries of the West ,we may safely assume that 5 acres in the minimum size of agricultural holding necessary for the maintenance of a family of the 5 souls or 1 acre per capita, although differences in soil ,productivity, water supply ,crop rotation and agricultural practice may alter the size of the holding to some extent. Dr.D.Stamp assumed that one acres of well-cultivated land in the mid-latitude is sufficient to produce an adequate diet for one person .

It may be said that an economic holding should be such as may offer reasonable opportunities to the peasant and his family to employ the factor units(i.e. a pair of bullocks) in the most efficient manner .The return from such a holding will depend upon fertility of soil ;intensity of cultivation ;crops raised ;method of cultivation ,and the organisation of agriculture; cost and returns and living cost .

The agrarian reforms committee evolved an idea of three norms of size of holdings

(a)   Economic holding :
According to the Committee, an Economic holding is that :

> (i)   which must afford a reasonable standard of living to the cultivators
>
> (ii)   Provide full employment to a family of normal size and at least two pair of bullocks .
>
> (iii)   Have a bearing on other relevant factors peculiar to the agrarian economy of the region

(b)   Basic holding :
A basic holding is a holding smaller than the economic holding which may be able to provide a reasonable standard of living to the cultivator but not efficient for the purpose of the agricultural operations .

(c)   Optimum holding   :
An optimum holding is the holding ,which keeping in view the ceiling to the size, the managerial capacity and financial resources of an average cultivator, refers to the size not exceeding three times the size of an economic holding.

9.5 FACTORS DETERMINING SIZE OF ECONOMIC HODING

If the term an "Economic Holding " is understood in the above sense ,it should be at once obvious that an economic holding can not be a fixed quantity of land at all places and under all circumstances. It is obvious that size of an economic holding will be different in the fertile land of Punjab compared to dry land in Deccan and an economic holding in the case of plantation crops like tea, coffee, and spices will be different from one in the case where only jowar, maize and such other minor cereals can be produced. The size of an economic holding in the case of horticulture would be different from that of land producing tobacco, or groundnut or one which can grow rice.

It is also obvious that size of an economic holding in the case where primitive technique of production is yet employed would be different from the one where mechanisation of agriculture has taken place .

What then are the factors that determine the size of economic holding in a country ?

Broadly following factors may be said to determine the size of an economic holding in a country at any particular time :

(i)   The quality of land ,degree of fertility, etc.;

(ii)   Availability of adequate and steady supply of water , say ,from an irrigational project in the area making double or even treble cropping possible .

(iii)   Method of cultivation, namely whether the land is cultivated extensively with conventional tools and implements or whether modern methods of cultivation such as mechanisation, use of chemical fertilisers, improved seeds and pesticides, etc., are used.

(iv)   Nature of crops grown on land –whether it is tobacco, or wheat ,or rice or tea or coffee or jowar and maize ,will determine the size of an economic holding in the country ;and

(v)   Organisational capability of a farmer is also an important determinant .

It is thus clear that various factors such as quality of soil ,rainfall ,possibility of adequate and regular supply of water ,whether single or multiple cropping is adopted ,mode of cultivation , distance from city markets , organisational capability of the cultivator ,etc., determine the size of an economic holding. It should be obvious that size of an economic holding will differ from region to region and from one time to another depending upon the above factors.

The concept of an "Economic Holding" comes to be quantified in terms of "Standard Acres" which enable an average family of a farmer to earn an income sufficient for at a minimum level of civilized consumption or in simple terms a reasonable standard of living prevailing at any particular time in the country.

9.6 SIZE OF HOLDINGS IN INDIA

At The time India bacame independent in 1947 ,the country had about 5 million holdings. Projections indicate there are now some 140 million holdings in the country .Today even fourth farmer in the world is an Indian .But what is the size of holding that he cultivates ? Information about the size of holding in India available

in four rounds of the NSS, viz., the 8 [th] round (1953 – 1954) , 16 [th] round (1960-1961) , 17 [th] round (1961-1962) and 26 [th] round (1970-1971) as also in all India agricultural censuses conducted at periodical intervals : 1976-77 ,1980-81 ,1985-86 ,1990-91 ,1995-96 ,2000-2001 and latest with 2005-2006 as the reference year. Land holding pattern as per number and area classification is shown in the table below.

Land holding pattern as per number (In Acres)

Classification Of Land ………………..	Number(In Acres)
Marginal	61.6
Small (1-2 acres)	18.7
Small-Medium (2-4 acres)	12.7
Medium (4-10 acres)	6.1
Large (10 hect.above)	1.7

Land holding pattern classification as per Number(In Acres) shown in the Fig.9.1 below.
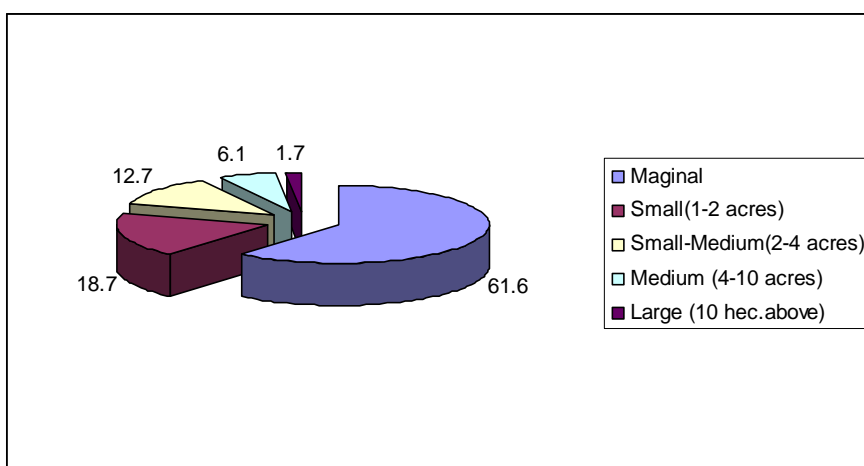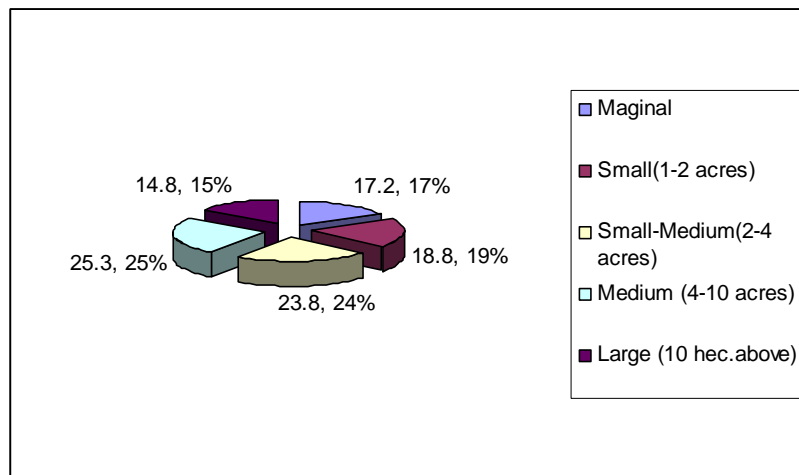

Fig.9.1 Land holding pattern in india

(by Number(In Acres)

Land holding pattern as per area classification is shown in the table below.

The size distribution of holding by area

Classification Of Land ………………..	Area(Percentage …..)
Marginal	17.2
Small (1-2 acres)	18.8
Small-Medium (2-4 acres)	23.8
Medium (4-10 acres)	25.3
Large (10 hec.above)	14.8

Land holding pattern as per area classification is shown in the Fig. 9.2. below.

Fig. 9.2. Land holding pattern in India

(Percentage Distribution)

An analysis of the available data brings out the following facts:

➢ The average size of an operational holding in India has been continuously falling 3.12 hectares in 1953-54 to 1.41 hectare in 2000-2001 .

➢ The number as well as the proportion of marginal holdings (up to 1 hect.)have significantly increased. Whereas ,in 1961-62

marginal holdings constituted 36.84 percent of the total holdings ,this proportion went up to 61.6 percent in 2000-01. This phenomenon is referred to as marginalisation of holdings .This has implication for the basic viability of agricultural production as the market surplus from small scale farming is low leading to a continuation of the low production – low profits – high poverty – low production cycle .In order to ensure the attainment of the envisaged 4 percent growth in agriculture, it is important that programmes aiming at high productivity, diversification, cultivation of high value commodities and production of value added products target this group of cultivators.

➢ Area under marginal holdings that formed 5.58 percent of the total area in 1953-54 progressively increased to 17.2 percent in 2000-2001.
➢ The small landowners(between 1 hect . and 2 hect.)formed 35.11 percent of the total holdings in 1961-62 ; this proportion declined to 18.7 percent in 2000-01.
➢ Area under small holdings which was about 8.39 percent of the total land area in 1953-54 progressively increased to 18.8 percent in 2000-01 .i,e.,it has shown an increasing trend.
➢ Large holding (10 hect. and above) formed 0.68 percent of the total number of holdings in 1961-62 .This proportion went up initially to 3.9 percent in 1970-71 , but subsequently has declined to 1.2 percent in 2000-01 .Similarly ,the area under large holdings has significantly declined from 36.62 percent in 1953-54 to 17.8 percent in 2000-01 .

In short ,over the period there has been significant structural shift in land holding pattern ,indicating growing inequalities.

9.7 CAUSES FOR SMALL SIZE OF LAND HOLDINGS

Indian agriculture is characterised by the dominance of very small size of holdings. As already seen ,more than half of the operational holdings in India are either sub-marginal (below 0.5 hect.) or marginal (0.5 to 1.0 hect.) .The following are the main causes o smallness of holdings.

1)   Growing population in the country :

Fast growing population in our country has placed heavy pressure on the fixed supply of land .With every increase in population, the land gets divided and sub-divided, leading to a smaller size of holding   .

2)   The Law of Inheritance   :

Another important factor giving rise to the small size of holding is the operation of the law of inheritance. At the death of the farmer ,his land gets divided among all his sons.

3)   Decline Of Joint Family System   :

Under the joint family system ,the land of the whole family was held and cultivated jointly. With the breakdown of this system ,the number of small holdings has increased.

4)   Decline Of Handicrafts And Village Industries   :

It is a known fact that India was on world map of the finest handicrafts in the past. The village economy was marked by a close co-operation between industry and agriculture. Villagers were self-contented economic units exchanging surpluses between industry and agriculture. With the advent of Britishers on the Indian scene, the situation progressively deteriorated and Indian handicraft faced stiff competition from British manufactured goods.

The British occupation slowly changed the professional system ,ruining the overtaxed peasant, developing exchange and monetary economy, reducing millions of craftsmen to poverty through competition from modern industrial goods. The decline in village industries and handicrafts displaced the village artisans and compelled them to take refuge in agriculture. This increased the pressure on land and resulted in its sub-division into smaller holdings on a large-scale.

5)   Rural Indebtedness :

Indebtedness of   the rural peasant has been a serious problem .With too much of belief in superstitions ,rituals and social ceremonies an too much of an authority of the priest ,the poor peasant always cut their coat beyond the cloth and have to resort to borrowing .With the absence of the organised credit institutions, they have often to borrow from the village money lender who always welcome them to fall in to his trap. With high rates of interest , the amount of loan keep on compounding and renders it difficult for the borrower to repay it in full. At one or the other stage ,therefore, the money lender would annex part of the land holding of the borrower leaving only a small holding for him .Since millions living in the village fall into this trap ,small holdings also multiply by millions and in a large number of cases peasants become landless.

6)   Attachment Of Landed Property :

The social structure in the country is such that people remain greatly attached to landed property and this results in the family holding being divided over and over again. There has been rigidity in the occupational structure. Sufficient or not ,a family will remain attached even to a small piece of land rather than look out for an alternative employment.

Ckeck your progress :

a. What are the causes for small size of land holding in India.
b. Write a brief note on size of land holding in India
c. What are the various Factors which determines Size of Economic Holding ?

4.Write short note on :

A) Agricultural Holding

B) Operational Holding

C) Economic holding

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9.8 AGRARIAN STRUCTURE

The significance of land reforms anywhere arises from the defects in the prevalent agrarian structure .In the context of India ,it will be proper to have a look at the agrarian structure that obtained on the eve of the overall strategy of agrarian reconstruction and growth.

Agrarian Structure on the Eve of Independence :

Various interests in land on the eve of independence fell into four classes:

- **Cultivating Holders :**
  These may be classified into two categories, (a) owners, (b) tenants. If the owner cultivates the land himself, there is no other person holding an interest in his land above or below him and between him and the state. As against this, tenant-holders do not have any ownership rights on land. They may more appropriately be described as ' occupancy tenants' to distinguish them from the 'tenants-at-will'. They have no direct relation with the state, but there is a chain of intermediaries.

- **Intermediaries :**
  These are either non-cultivating owners of land or non-cultivating occupancy   tenants.

- **Tenant-at-will :**
  He cultivates the land and bears its cost of cultivation. He may or may not have any security of tenure. Invariably his interest is not permanent and heritable.

- **Agricultural Labourers :**
  These constitute the mass of unemployed landless population in village; very few of them are at the bottom of the socio-economic ladder of the rural community.

  The agrarian structure in pre-Independence period was woven around these varied interest. It presented decadent semi-feudal order with wide inequalities and multifarious exploitation of the mass of cultivators. There was a high degree of concentration of land ownership at the top.

  This type of agrarian structure, acts as a powerful 0bstacle to economics development in four ways :

- The tenant has little incentive to increase his output since a large share accrues to the landowner who incurs no cot.
- A very small margin is left with actual cultivator; and this may be quite insufficient to provide for capital in vestment on the land.
- Tenants secure no benefits of working with better equipment or with better seeds. In short, under this type of agrarian structure landlords and intermediaries grow rich and continue to flourish, the state is revenue and the cultivator-tenants live a hand-to-mouth existence.
- It is in this backdrop that we have to examine the major objectives of land reforms policy in India, the progress achieved structure. This type of analysis will help us make suggestions for an improved land   relations system in future

9.9 BROAD FEATURES OF THE EMERGING AGRARIAN STRUCTURE

The emerging agrarian structure reveals the existence of three distinct sectors of Indian agriculture, coexisting but also contending with one another.

- The first sector is the developed sector of modern entrepreneur farming by rich peasants.

- The second sector comprises the area under self-cultivation by medium, small and marginal farmers.

- The third sector is composed of the vast area of land under cultivation by share-croppers and various kinds of tenants and sub-tenants having no proprietary rights in land, no security of tenure, no share in the various aids, no security of tenure, no share in the various aids and inputs distributed by the State or institutional agencies.

It is this third sector which is the worst placed in the agrarian economy and is still subject to various forms of semi-feudal exploitation such as rack-renting, usury, economic bondage and caste.

This makes it necessary for us to suggest as to what the agrarian structure in future should be. Before we should know the causes that have been responsible for the relatively poor performance of land reforms in India.

Cause for poor performance :

- **Lack of political will :** Enactment of progressive measures of land reforms and their efficient implementation call for hard political decisions and an effective political support, direction and control. considering the character of the political power structure obtaining in the country it was only natural that the required political will was not forthcoming the political bosses and the powers –that-be resorted to what can be called 'land grabbing'. The political will assured that land reforms failed.

- **Absence of pressure from Below :** The beneficiaries of land reforms, particularly share-croppers and agricultural labourers, are weighed 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. In the circumstances, it is

small wonder the there has been no insistent pressure from below, a prerequisite for the effective implementation of land reform laws.

- **Administrative Organisation-Inadequate :** Policy Instrument In all the States, the responsibility for the implementation of measures of land freeform rests with the revenue administration. The implementation of land reforms is only one among its many function. Traditionally, high priority is given to the maintenance of land reforms is only one among its many function. Traditionally, high priority is given to the maintenance of public order, collection of land revenue and other regulatory functions. Land reforms do not, therefore, get the required attention.

- **Legal Hurdles :** The land reform laws were defective in many ways. Legislations relating to the land reform were so full of loopholes that a commentator was led to say that an elephant could easily walk through them. Some loopholes were deliberately built in, while others were the result of poor drafting. Practically, in every State protracted litigation has delayed and often frustrated the implementation of land reform laws.

- **Absence of Correct Updated Land Records :** 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. The position regarding records of tenancies, particularly in the matter of entries relating to the rights of share-croppers, is not satisfactory anywhere in the country, and no records exist in some areas. The main reasons for this unsatisfactory state of affairs are the following.

➢   In some areas, where cadastral surveys have been out-of-date for a long time, resurveys have not taken place;

➢   Some areas have never been cadastrally surveyed ;

➢   In some cases no machinery of any kind has existed for maintaining village records;

➢   In some areas(such as the zamindari areas,) The machinery which keeps records is private;

➢   Even where records are kept by Government revenue officials there is no uniform system;

➢   Even official records may not be correct.

The errors would be of two kinds with reference to their origin;(a) Bona fide errors arising out of law on the part of the recorder; (b) Deliberate wrong recording from mala fide motives.

The problem is largely administrative.

- **Some Weak Spots in the Programme :** The programme of land reforms has been viewed so fat in isolation form the mainstream of economic development. The main ingredients of the programme like the abolition of intermediary tenures, tenancy reform and ceilings on agricultural holdings were treated as disjointed programmes and sought to be implemented as such .

The lack of financial support has been the weakness of land reforms right from the beginning. No separate allocation of funds was made in the Five-Years Plant for financing land reforms.

9.10   SUGGESTIONS FOR IMPROVEMENT

Review of Tenancy Legislation: The existing legislation was enacted in background of the traditional agricultural technology. With the new agricultural technology coming in, things have changed radically. Owner cultivation of a minimum size of land has become viable and it no longer needs legislative support. Moreover, in some areas the ground-level picture has changed as small farmers are facing difficulties in coping with the new expensive agricultural technologies. Under the compelling to give their land to a bigger farmer who has enough resources including tractors and other implements of cultivate more land. This rich tenant in some cases has used the protective, well-intentioned legislation to cheat the poor owner.

No social purpose is served in giving the big tenant security at the expense of the small landlord. There is, therefore, need to liberalise tenancy laws.

Effective Implementation of Ceiling legislation : Firm measure are required against fictitious and benami transfers deliberately effected by big landowners to circumvent ceiling laws. The State Government should hold a proper enquiry into such transfers. If on enquiry it is found that the transfers wee made to evade the provisions of ceiling laws, the land so transferred should be vested in the State after the imposition of a suitable penalty on the transferor.

Ceiling may be relaxed in case of uncultivated waste land where large and long gestating investment may be needed, provided it can be ensured that the land will be used for agricultural purposes and that it will not be used as a tax shelter.

Surplus Land and Its Distribution : The surplus land should be allotted to the beneficiaries on the specific condition that they would not be permitted to sell or mortgage these lands to private individuals. If at any time a beneficiary wants to leave the profession of cultivation the land held by him would revert to the State

Simplifying Legal Procedures and Administrative Machinery : The establishment of special courts to dispose of cases in villages of their origin or in the close- by township would expedite work as they would be in the know of relationship and happenings in the field and thereby serve the ends of justice better.

Land reform cannot be properly enforced without popular co-operation and support at all levels. Popular co-operation and support at all levels. Popular 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 statutory powers like the inspection of records and sites, collection of evidence, etc., weight age.

Generation of Awareness among Potential Beneficiaries : The requires the support of educational campaigns and political mobilization on the principles of land reform, Further, the existing socio-economic order in which the power base lies with the rural rich should be radically reconstructed to form a new order in which the power balance will favour the rural poor. There are three developments in recent times that may have favourable impact on this type of change:

- Emergence of 'biological, technology' in agriculture which has made the small-peasant agriculture potentially viable;

- Political dependence of the power elite of all types of ideological and political persuasions on peasant support; and

- Emergence outside the agricultural system of State-sponsored institutional framework of State-sponsored institutional framework of scientific research, technological innovation and

diffusion, water control, input and credit supply and price support for agricultural development.

9.11   AGRARIAN RELATIONS

The British rule had brought about far-reaching changes in India's land system primarily with a view to safeguarding the government's command over land revenue. In the process, private property in land had come to be formally recognized by law. Ownership of land, at the time of independence, was highly unequal; while the vast majority of cultivators were peasant proprietors engaged in personal cultivation of their land, a large proportion of cultivable land was in the hands of relatively large landowners- including especially the zamindars of UP, Bihar, and Bengal who held vast estates which were cultivated either with the held of tenants or wage labourers. This agrarian structure has long been recognized to be both iniquitous and inimical to progress. Some limited efforts at land reform even during the British period (especially tenancy reform) were made.

A section of the Congress party advocate the necessity for radical land reform to ensure 'land to the tillers' and there was indeed a spurt of land reform legislation in the wake of independence. These reform had three main components: (1) abolition of the zamindari estates; (2) tenancy reform; (3) imposition of ceilings on land ownership.

Zamindari abolition and tenancy reform were expected to correct the gross inequalities in land ownership, and simultaneously- by giving the actual cultivators ownership or at least more favourable and secure long-term rights in land cultivated by them – create conditions for in creasing land productivity. The intention behind land ceiling was primarily to take over land from those who had more than a specified size and distribute the surplus among those who did not have any land, or had very little, thereby achieving a more egalitarian land distribution.

Zamindari abolition was perhaps the most successful: it led to the braking up of large feudal estates and conferring ownership rights on the cultivators. Tenancy reform did not make much headway expect in a few states like Kerala and West Bengal. It is well known that the ceiling legislations did not yield much surplus

land for redistribution to the landless or to those with holdings of a non-viable size.

Data from the National Sample Survey(NSS) do not show any significant change in either the degree of landlessness or the extent of inequality in land ownership anywhere since 1960 What it suggests is a progressive decline in the average size of holding and near stable distribution around the mean. This suggests that increase in demographic pressure has been the dominant influence. While there is no marked change in the degree of inequality in land ownership, there is ample evidence of significant shifts in the distribution of land between castes, at least in some regions. In Tamil Nadu, for instance, the locus of land control has shifted dramatically from upper castes, to lower castes, including Harijans, partly due to tenancy laws and partly because the upper castes have tended to more out of such areas into urban occupations

The NSS also shows a more or less universal trend for the reported area under tenancy to decline. How far this reflects a genuine reduction and how far it is due to increasing concealment id difficult to establish. There is no doubt that the decline in some regions is real . In Punjab- Haryana, the advent of the HYV-private tube wells combination has made personal cultivation so much more profitable that those who had leased-out land have resumed self-cultivation; and increasingly those with small bits of land are seen to be leasing it out to larger farmers to take advantage of the benefits of new technology. In Kerala and West Bengal, tenancy reform is known to have been quite effective but is should not be assumed that the resulting redistribution of owenership rights necessarily benefited the small tenants. In Kerala, the bulk of tenancy was with farmers with medium – size holdings

The disadvantage of small and marginal farmers in terms of access to technology and resources needed to exploit the potential for raising yields as well as the implication for the distribution of gains from technological improvement (especially of high yield varieties) has been the subject of much debate.

Large farmers may have an initial advantage, the use of HYVs and fertilizers has, over a period of time, spread to all classes of farmers; and that where HYVs have produced rapid growth, employment and rural wage rates have risen. However, large and medium farms are better placed to exploit groundwater; HYV

technology is available for only a few crops and that too under irrigated conditions and in the high growth tracts of north-west India, there has been a significant displacement of a bearing on the tenants and a corresponding increase of wage labour.

9.12 MARKET INTERLOKING AND INTERLINKAGES

The literature on agrarian contracts in less developed countries(LDCs) highlights the presence of " Interlinked Markets". Transaction in any one market are invariably linked with the nature of transactions in the other markets. While theoretically ,interlinkages may be of various kinds , the most commonly observed one sare those involving the informal (agrarian) credit market , the labour market and the market for gain.

What makes the problem of interlinkage interesting is the diversity of relations among the various markets in LDC agriculture . Agrarian contracts have been variously interpreted by political economists as examples of exploitation and power or , alternatively as necessary internalization for efficiency of external market forces. To be able to resolve the debate, it is essential to know the major empirical facts in agrarian economies.

FIRST ,how do we identify interlinkages ? Consider two markets dealing in two commodities A and B .There are agents operating on both sides (i.e. as buyers and sellers) of the two markets. Suppose there are some agents who are common to both the markets. If it is observed that some common agents transact at prices different from those operating in one of the market only ,we will say that there is interlinking of markets by the common agent(s).

The SECOND observation deals with the credit market per se Agrarian credit markets in India are characterized by (i) the high variability of interest rates and (ii) the existence of very low interest rates. For an understanding of (ii)b we will have to explain what is meant by low interest rates. Suppose the opportunity cost of the borrower for loans is r if a particular lender is willing to offer this borrower a loan at interest rates less than r ,we will say that a low interest has been charged .This is clearly a significant and the difficulty of small farmers and landless labourers i.e those without much collateral , to obtain loans even from nationalized banks.

While (i) has been partially explained by the term structure of different loans ,the difference in interest rates for loans of similar duration still have to be explained .High interest rates have been interpreted by many authors to reflect the imperfection of credit markets either through the monopoly of the lenders. This has led to an intense debate between those writing about the power structure in agriculture lending to exploitation through "usurious" interest rates , and the others highlighting the importance of government policies to correct market imperfections.

THIRD We come to the related issue of collateral and what has been termed , In particular instances ,as " bonded " labour. The borrower has often been found to transfer asset to the lender as part ,or full ,repayment for a contracted loan. This ,in itself ,is not surprising ; however, it has been noted that these collaterals are undervalued during the transfer .When future labour had been contracted as the collateral and underpriced ,this has obviously led to politically sensitive issue .

9.13   SUMMARY

1)   Research indicates that land rental markets have two opposing effects on agricultural efficiency

   a)Positive land reallocation effect.   b)Negative incentive effect.

2)   The term "Agricultural Holding " implies the total area of land which is held for cultivation as a single unit by an individual , joint family or more than one farmer on a joint basis.

3)   An "Operational Holding " is one which includes all lands used wholly or partially for agricultural production operated as a single technical unit by a single household or a number of households operating jointly.

4)   "Ownership Holding " includes all the area owned by a cultivator or a number of cultivators jointly whether under own cultivation or subject to others.

5)   " A holding which allows a man a chance of producing sufficient to support himself and his family in reasonable comfort after paying his necessary expenses may be termed an "economic holding".

6)   Economic holding means "one which will provide for an average family at the minimum standard of life considered satisfactory. "

7) Broadly following factors may be said to determine the size of an economic holding :

(vi)   The quality of land ,degree of fertility, etc.;
(vii) Availability of adequate and steady supply of water.
(viii) Method of cultivation.
(ix)   Nature of crops grown on land.
(x)   Organisational capability of a farmer.

8) The emerging agrarian structure reveals the existence of three distinct sectors of Indian agriculture

- The first sector is the developed sector of modern entrepreneur farming by rich peasants.

- The second sector comprises the area under self-cultivation by medium, small and marginal farmers.

- The third sector is composed of the vast area of land under cultivation by share-croppers.

9.12 QUESTIONS

1. Explain the Factors Which Determining Size of Economic Hoding

2. Explain the Size Of Holdings In India

3. Explain The Causes For Small Size Of Land Holdings

4. Explain The Features of the Emerging Agrarian Structure

5. Write short note

   A) Agricultural Holding

   B) Operational Holding
   C) Economic holding
   D) Basic holding
   E) Optimum holding
6. Define the term : Market Interlocking And Interlink ages

7. Explain the Broad Features of the Emerging Agrarian Structure

8. Write short note on Agrarian Relations in India.

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