Types and systems of farming

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Preface
In cultivation, it is necessary to answer three basic questions: what to produce, how much to produce and how to produce. These three questions if answered, give directions to all agricultural processes to be followed by the farmers. In this booklet we have briefed the types of farming to answer what to produce and systems of farming to answer how to produce, and the other question how much to produce will be automatically solved by knowing total need of the country.

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I. Introduction
Generally, the two terms, i.e. types and systems of farming create confusion in the mind. However, both terms are used to connote different concepts. The types refer to the nature and degree of product or a combination of products being produced at the farm and the methods and practices used for the same, while the latter is generally concerned with the organizational set up under which the farm is being run. The systems mainly governed by three basic questions viz. who is the owner of land, whether the resources are pooled or used individually, and who makes the marginal decisions.

For instance, the type of farming in a situation where most of the farm resources are allocated to the production of a single product will be different from the type of farming in the situation where several products having almost equal importance in terms of resources consumption and contribution to farm income are produced. Similarly, another two situations showing different type of farming may be undertaking only one enterprise and a combination of enterprises such as crop raising and milk production on the farm. Under system of farming there may be situation where an individual is the owner of land and he himself makes the managerial decisions as: what should be produced, how should-be produced, where to market etc.
This is different from another situation where land belongs to a group of persons, these persons collectively do the farming operations and a board of management or executive committee is formed to make necessary decisions. Still another system may be found where the landlord gives his land to a tenant farmer on share basis. Here, the tenant decides about the activities to be carried out on the farm, provides his labour and other inputs except land, and whatever output he gets half of that goes to the landlord.

II. Classification of Farming

Farming may be classified as follows.

A. Types of farming

Natural, economic and to some extent social factors determine the type of farming in a area. Within the restraining influence of natural factors, economic factors relative prices of farm products, resources of the farmer, transport facility, farm size, land values and technological developments influence the type of farming practised in a region and set the proportion of area under each enterprise. Religious beliefs and social background also have a role to some extent in following the type of farming on a farm.

I. Diversified farming

A farm on which no single product or source of income equals as much as 50% of the total receipt is called a diversified or general farm. On such a farm, the farmer depends on several sources of income.
a. Advantages
The advantages are as follows.
i. Better use of land, labour and capital: Better use of land through adoption of crop rotations, steady employment of farm and family labour and more profitable use of equipment are obtained in diversified farming.
ii. Business risk is reduced due to a crop failure or unfavourable market prices.
iii. Regular and quicker returns are obtained from various enterprises throughout the year.

b. Disadvantages
There are some disadvantages of diversified family.
I: Marketing is insufficient unless the producers arrange for the sale of their produce on cooperative basis.
ii. Because of various jobs in diversified farming a farmer can effectively supervise only limited number of workers.
iii. Better equipping of the farm is not possible because it is not economical to have expensive implements and machinery for each enterprise.
iv. There are chances when some of the leaks in farm business may remain undetected due to diversity of operations.

2. Specialized farming
Under specialized farming 50% or more income is derived from one single source (Fig. 2 and 3).
We may best consider specialization as the production of only one commodity for market, so that the farmer depends largely on a single source of income. A trend towards specialized farming is evident in areas where there are special market outputs and when economic conditions are fairly uniform for a long period.

According to the definition, a farm on which 50% or more of the receipts are from sugarcane would be classified as sugarcane farm, and the one yielding 50% or more of its income from vegetables would be called a vegetable farm.

In India, we find evidence of regional specialization of crops as given in table 1.

<table>
<thead>
<tr>
<th>Sl.No</th>
<th>Crop</th>
<th>Regions of specialization</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Wheat</td>
<td>Punjab, U.P., M.P., and eastern Rajasthan</td>
</tr>
<tr>
<td>2</td>
<td>Paddy</td>
<td>Assam, West Bengal, Bihar, Eastern U.P., Western Ghats and Coastal belts of Orissa and Madras</td>
</tr>
<tr>
<td>3</td>
<td>Cotton</td>
<td>Punjab, M.P., Karnataka, and some regions of Bombay and Gujarat</td>
</tr>
<tr>
<td>4</td>
<td>Sugarcane</td>
<td>Gangetic Plains of U.P. and Bihar, Punjab, Madras, Karnataka and Orissa</td>
</tr>
<tr>
<td>5</td>
<td>Jute</td>
<td>Assam, West Bengal, Cooch-Bihar, Bihar and coastal regions</td>
</tr>
</tbody>
</table>

**a. Advantages**

In specialized farming there are some beneficial aspects.

i. Better use of land - It is more profitable to grow a crop on a land best suited to it. For example, jute cultivation on a swampy land.

ii. Better marketing - Specialization allows better assembling, grading, processing, storing, transporting and financing of the produce.

iii. Better management - The fewer enterprise on a farm are liable to be less neglected and sources of wastage can easily be detected.

iv. Less equipment and labour are needed: A fruit farmer needs only special machinery and comparatively less labour for raising fruits.

v. Costly and efficient machinery can be kept: A wheat harvester and combine can be maintained on a highly specialized wheat farm.
vi. Efficiency and skillness is increased: specialization allows a man to be more efficient and expert at doing a few things.

**b. Disadvantages**
There are some disadvantages also
i. There is a greater risk of failure of crop and market which together may ruin the farmer.
ii. Productive resources like land, labour and capital are not fully utilized.
iii. Fertility of soil cannot be maintained properly for lack of suitable rotation.
iv. By products of the farm cannot be fully utilized for lack of sufficient livestock on the farm.
v. Farm returns in cash are not generally received more than once a year.
vi. General knowledge of farm enterprises becomes limited.

3. **Mixed farming**
Mixed farming is a combination of crop production with a sufficient amount of livestock raising. It refers to that type of diversified agriculture in which a farmer invariably devotes to livestock production as a complementary enterprise.

The most important reason for mixed farming is that it has been necessary in most of the regions to permit the use of a system of crop rotations combined with livestock enterprises, for getting draught animals for cultivation and also for maintaining and improving soil fertility. At least 10% of the gross income must be contributed by the livestock and the upper limit being 49% under Indian conditions. Bullocks are not considered as a part of the livestock enterprise, even then the farm can be called as mixed farming.

To differentiate mixed farming from diversified farming, the following standard has been laid down by agricultural economists in India to suit our farming conditions.

<table>
<thead>
<tr>
<th>Sl.No</th>
<th>Enterprises</th>
<th>Contribution</th>
<th>Type of farming</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cows &amp; Buffaloes only</td>
<td>10-49%</td>
<td>Mixed farming</td>
</tr>
<tr>
<td>2</td>
<td>Cows, buffaloes, poultry piggery, goats, sheep and crop</td>
<td>50% and above</td>
<td>Diversed farming</td>
</tr>
</tbody>
</table>

**a. Advantages**
The benefits of mixed farming are listed here.
i. It helps in maintaining soil fertility
ii. It tends to give balanced labour load throughout the year for the farmer and his family.
iii. It permits the proper use of farm by-products.
iv. It provides for greater chances of intensive cultivation.
v. It often get higher returns on farm business.

4. **Ranching**
The word ranching does not come under the specification provided for the farm, i.e. it is not in the control of any owner nor is it enclosed by any boundary. Ranching means practice of grazing animals specially sheep and goat, and is always on public land. Sometimes, such land is utilized for raising dairy stock. It is then known as dairy ranch. Ranching is very common in Australia and Tibet.
In India, ranching is not common and is gradually disappearing because of the increasing pressure on agricultural land. However, in dairy farming areas where other animals cannot be successfully reared for want of sufficient fodder and only sheep and goats can live, people have not left this profession. Some parts of Rajasthan, ravines of river Chambal, some portions of Agra division, etc. are the examples of this type of farming.

5. Dry land farming

Dry land farming generally refers to an area which receives less than 50 cm. of annual rainfall. Areas where rainfall is up to 75 cm but is in coincidence with high temperature and greater wind velocity, resulting into a heavy loss of water may also be considered under this category. The major farm management problem in these tracts, where crops are entirely dependent upon rainfall, is the conservation of soil moisture.

Farmers all over the world, where dry land farming is practised help plants to save enough of water to mature the crop. By good tillage they increase the infiltration of such rain as received by the fields. They remove weeds to prevent the transpiration of moisture through their leaves. They also keep their fields fallow so that they may save some of the water from one season for the growing of the crop in the next season.

6. Mechanized farming

The mechanical operation on a farm is called farm mechanization. It includes the use of manual implement, bullock drawn appliances and modern machines used in various farm operations like tractor ploughing, tubewell irrigation, harvesting and threshing by reapers and threshers, spraying by sprays and the like.

In post-harvest operations, mechanization includes processing of products such as wheat or rice milling, cold storage, oil expelling, cane crushing and so on. The Agro-industrial Corporations and some co-operative institutions provide custom service to farmers when needed.

7. Marginal farming

The marginal farmer does not always consider economic criterion in evaluating crop performance, because his first concern is food for the farm family. As such, he has nothing to market except on occasions when he has to make forced sale to get some cash. Marginal farming is characterized by the following factors:

a. The farms or holding are tiny with greater pressure of population of the land.
b. The resource structure is hopelessly poor with the result that the farmer cannot give a proper direction to the allocation and utilization of resources.
c. The products are consumed directly by the household and not exchanged in market.
d. The production factors are self-employed
e. The price elasticities of production are small.
f. There is a complementary relationship between enterprises as some of them will have to be raised for by-products for cattle maintenance without consideration for loss or profit.
g. Product price fluctuations have marginal effect on the production of such crops.

B. Factors determining the type of farming

Physical factors like climate, soil, topography etc. and economic factors affect the type of farming.

1. Physical factors
These are the factors which cause the type of farming to vary from area to area and result into a comparative advantage of producing a product in one region over the other. These factors do not change significantly from year to year.

a. Climate
   
   It is the most important factor which affects the scope of type of farming. It includes rainfall, length of growing season, temperature, sunshine, frost, storm, strong wind etc.

b. Soil
   
   Generally it is mentioned that prosperous agriculture is located on deep soils. These soils are generally well drained and suitable for most of the crops. Light or shallow soils lose the moisture rapidly and so a large number of crops cannot be grown on such soils. It is the size of soil particles (soil texture) which makes the soil heavy or shallow. If the soil particles are very small then the soil is clayey. Such soils are always slow do drain and become firm when dry. On the other hand, if the soil particles are very large (sandy) then its water retention capacity will be poor and it will not be suitable for most of the crops.

   Soil fertility is another important factor which determines the type of farming. In the case of fertile soils manurial cost will be less, thus reducing the cost of cultivation. Soil reaction means whether soils are alkaline or acidic. Slightly alkaline soils are always preferred for fodder crops.

c. Topography
   
   Topography generally refers to the slope or height of the place where the farm is situated. For instance different crop may be cultivated at different elevations in hill areas. Thus changes in elevation affect the cropping pattern. The temperature and growing season are generally shorter at higher elevations and thus are more suitable for orchards, tea plantations, potato cultivation etc. As the leveled land in such regions (hills) is scarce, and that too scattered, the farms are generally small in comparison to those of plains. The soil is rocky with different level of fertility. Heavy machinery cannot be utilized at high altitude because of the rough and slopy surface of the fields which happen to be small and scattered plots. It affects the type of farming.

2. Economic factors
   
   Economic factors determine the crop and livestock enterprises to be taken up in a particular region with in choice established by physical factors.

a. Marketing costs
   
   The cost of marketing farm products and the marketing problems determine what products will or should be produced. The producer's share in consumer's price will decide the method of sale and choice of products by the producers. A low share to the producers will cause little preference to what products in relation to high producers share.

b. Changes in relative value of farm products
   
   The response of the production of a particular product, is much influenced by the farm product-price fluctuations and profitability, determining in turn the type of farming. Especially, the area and production of cash crops like cotton, tobacco, sugarcane etc. are prone to change in a cyclical manner adjusting to the price fluctuation and profitability.

c. Availability of labour and capital
Farm enterprises requiring intensive operations require a good amount of labour involvement and capital investment. Labour and capital intensive farming in a region brings about migration of labour from one region to other region. For example, migration of labour on a large scale from Maharashtra to Gujarat sugarcane regions, and from Andhra Pradesh to Maharashtra sugarcane regions is a common feature.

d. **Land value**

Low land values attract the enterprising farmers from land value areas, to settle and develop a new type of farming in those areas. Due to this new type of farming, low land values will go up in the course of time. For example, farmers from coastal Andhra Pradesh purchasing low value land in parts of Karnataka and other parts of Andhra Pradesh where they had introduced cotton farming and rice farming on an intensive scale.

e. **Cycles of over and under-production**

Agricultural enterprises are frequently subject to cycle of over and under production resulting in surplus/scarcity of production and low/high prices. This results in speculation and uncertainty in the type of crops to be grown. As a result, farmers prefer to grow such crops whose prices are on the rise or stable. Frequent fluctuations in the production of cash crops like cotton, tobacco, etc. in a cyclical manner is a common feature in India.

f. **Competition between enterprises**

Specialization or diversification of farming is decided by the competition among the enterprises depending upon their relative profitability and resources use competition.

g. **Choice of farming group**

The type of farming or choice of products sometimes is determined by the personal preferences of the farmers, either due to traditional values or attachments they had in that particular crop.

h. **Prevalence of pests and diseases**

The occurrence of pests and diseases on an endemic fashion in a region will ruin or extinguish the entire type of farming and gives rise to new type of farming. In Guntur and Prakasam districts of Andhra Pradesh during 1984-95, 1985-86, the attack of white fly on cotton caused a 40% decrease in cotton farming area. The cultivation of pulse crops and oilseed crops emerged as a new type of farming in this cotton belt.

C. **Systems of farming**

The term systems of farming is generally referred to the methods of agriculture and the type of ownership of land. If the farming has been classified on the basis of economic and social functioning, it is called as systems of farming. These are of following types.

1. **Co-operative farming**

A cooperative farming society is one in which members pool their land voluntarily and manage it jointly under a democratic constitution. The seminar on cooperative farming convened by the Indian Society of Agricultural Economics at Poona, in May, 1958, came to this conclusion.

"It is an essential element of cooperative farming that its constituent members agree and surrender their individual rights and capacity to take major decisions in respect of farming enterprises to a common body constituted by them and accept its decision."
The chief distinction between individual farming on cooperative lines and cooperative farming is pointed out, thus "Under the former the individual farmer is in full possession of his land and himself carries on the basic operations of cultivation, he joins a cooperative body only for the sake of getting those services which are beyond his individual capacity while in the latter, the farmer transfer possession as well as owner- ship of his farm to a cooperative society".

The Indian Delegation to China on Agrarian cooperatives pointed out: "The term cooperative farming is intended to apply to joint farming and collective farming society."

The Planning Commission of India has also pointed out, "Cooperative Farming necessarily applies to the pooling of land and joint management." The working group on cooperative farming defines cooperative farming society "as a voluntary association of cultivators for better utilization of resources including manpower and land pooled and in which majority of the members the agricultural production employment and income." The working group further observed, "Four types of cooperative farming societies are working at present. Out of these better farming and tenant farming societies have developed in the form of service cooperatives. But, it should be distinguished from cooperative farming because there is no pooling of manpower and land in these societies and their members take this responsibility and risk of farm operations individually." The four types of cooperative farming societies prevalent in India are as follows.

a. Cooperative better farming

The farmers who have small holding or limited resources join to form a society for some specific purposes, e.g. use of heavy machinery, sale of products, etc. Profit is not distributed, the earnings of the members from his piece of land, after deducting the expenses, became his profit.

b. Co-operative joint farming

It means the pooling of land and other possible resources. The members form a general body which formulates the schemes and does the duties of administration. A member receives daily wages for his daily work and the profit in the end is distributed according to his share in land.

c. Cooperative tenant farming

In this system land belongs to the society. The tenants have no right on land but they carry on this business independently. A tenant (member) gets all the income after deducting the rent of land and charges for other services provided by the society.

d. Cooperative collective farming

Members do not have any right on land and they cannot take farming decisions independently but are guided by a general body which is supreme. Profit is distributed according to the labour and capital invested by the members.

In a nutshell, the ownership and operation of the above cooperative farming societies is given in table 3:

<table>
<thead>
<tr>
<th>Sl.No</th>
<th>Type of farming</th>
<th>Type of ownership</th>
<th>Kind of operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cooperative better farming</td>
<td>Individual</td>
<td>Individual</td>
</tr>
</tbody>
</table>
2. Peasant farming
This system of farming refers to the type of organization in which an individual cultivator is the owner, manager and organizer of the farm. He makes decisions and plans for his farm depending upon his resources which are generally meager in comparison to other systems of farming. The biggest advantages of this system is that the farmer himself is the owner and therefore to take all sorts of decisions. A general weakness of this system is that the resources. With the individual are less in comparison to those of the other systems. Another difficulty is because of the law of inheritance, an individual holding goes on reducing as all the members in the family have equal rights in that land.

3. State farming
State farming, as the name indicate, is managed by the government. Here the operation and management is done by the government officials. Suratgarh farm in Rajasthan and state farm at Bahraich in Uttar Pradesh are some of the examples of this system. But such farms are not many and they are generally attached either to some institution (SFCI) or they themselves are institutions for a particular work. Supervision is done by the farm manager or farm incharge who in turn is a government official. All the labourers are hired on daily or monthly basis and they have no right in deciding farm policy. Such farms are not very paying because of lack of incentive. Farm policy is usually planned at the top whereas farming is such a profession which requires immediate and at the spot decision. There is no dearth of resources at such farms but sometimes it so happens that they are not available in time and utilized fully.

4. Capitalistic farming or estate farming
The management and ownership of such farms is under rich persons or capitalists. The size of such farms is sufficiently large and the management is also quite efficient. These farms are owned by individuals or groups of individuals or shareholders. Resources are plenty, latest technical know how is used and hence they are efficient. Sugar factories farms, rubber, coffee and tea plantations are common examples of such a system. Management is paid and the general policies are decided by managing body or board of directors. These farms are not very common in India but in USA, Australia, Canada or newly developed agricultural countries they are very common. The advantages of such farming are good supervision, strong organizational setup, sufficient resources etc. Its weaknesses are that it creates socio-economic unbalances and the actual cultivator is not the owner of the farm.

5. Collective farming
The name collective farming implies the collective management of land wherein large number of families or villagers residing in the same village pool their resources, e.g. land livestock machinery, etc. A general body having highest power is formed which manages the farm. These resources then do not belong to any family or farmer but to the society or the collective. If any farmer wants to dissociate from it, he can do so, but he cannot go with his share (resource). Money is lieu of his share will be given to him. This system had started in Russia. The worst thing with this system is that the individual has no voice. Farming is done generally on large scale therefore is mostly mechanized. This system is not prevalent in India but common in communistic countries of the world.

6. Contract farming
One more farming system is emerging in India, that is contract farming. In this system, land is taken on long time lease base from individual owners. Land is remained under ownership of individuals but they have no role to play in farm policy. They are paid rental value of land. It is a good system in developed countries where holdings are large. But in India 75% farmers are small and marginal and if they leased out their land, they will be forced to migrate to cities in search of jobs. In long term, there are chances of landlessness also.

D. Factors affecting the system of farming

The major factors which have an impact on the selection of various systems of farming mainly relate to the size of holding, volume of business, availability of resources, capability of using the resources properly and utilizing the facilities given by the Government and other institutions.

1. Size of land holdings
   If the size of holding is such that it provides enough income to meet the requirements of the farmer and his family and also provide enough work for them, the peasant farming may be preferred. But in the case of very small size of holdings, it may be better to pool the land and work together in the form of a cooperative society or collective farming. It will enable the farmers community to undertake some side business to earn additional income. Very small holdings often result in an uneconomical use of resources as the resources which a farmer possess for farming operations may remain idle for most of the time. For example, bullock power may remain idle or surplus for most of the period during the year because of lack of work. Therefore, for proper and full utilization of bullock power, the bullocks should remain fully engaged and that is possible only when the size of the farm is adequate. If small holdings are pooled together, then the pooled land will give the advantage of large farms.

2. Volume of business
   Volume of business is a broad term than the size of holding. Besides, the size of holding, the volume of business also indicates the number of enterprises taken up in a year, the total output produced, requirement of man year and net income obtained. For making the business a success, it should be run in a proper way as to get advantage of large-scale production. Therefore, collective or cooperative system of farming may prove better if the individual farms do not provide a desirable volume of business.

3. Availability and use of resources
   Persons who have comparatively large amount of capital may adopt capitalistic system of farming making use of capital intensive practices of production. They may purchase costly implements which require more capital in the beginning but prove to be cheaper in terms of annual cost to be incurred on them due to the prompt and efficient service they provide.

4. Availing of facilities
   Some facilities such as credit facility, marketing facilities which individual farmers require but cannot avail of due to the small size of business, may be availed of by adopting a specific system of farming like cooperative farming.

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