AGRICULTURE

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INTRODUCTION

Agriculture which is also known as primary activity is an important economic activity of man. It provides food and clothing to man. It serves as a base for all human activities. It started 12000 years back and not only includes the cultivation but also animal rearing, forestry and number of other activities. Ancient man first learnt to settle and grow some crops, then he started rearing animals which provided him with milk, meat, hides, skin and wool. At the beginning, it was all for subsistence purpose but with the passage of time, commercialisation of agriculture started. Today it has assumed a diversified form, that is, with the introduction of better farming techniques it has become more advanced.

MEANING AND DEFINITION

The term "Agriculture" has been derived from a Latin term **"agri"** meaning field and **"cultra"** meaning cultivation. Hence literal meaning of agriculture is cultivation of crops on the fields. But in the recent time, agriculture is not only confined to the growing of crops in the fields but it also includes growing of crops and domestication of animals not only for subsistence but for commercial purpose also.

Hence agriculture may be defined as a human activity involving planned utilisation of land or soil and water for the growth of plants and animals to meet the basic requirements of food and clothing

ECONOMIC ACTIVITIES

Some of the agricultural products cannot be consumed directly. Thus, they have to be

processed. Processing involves various types of economic activities. We can classify the economic activities into the following three categories:

The Primary Activities involve the extraction and production of resources provided by the nature. Agriculture, fishing, gathering' lumbering and mining are some of the primary activities.

The Secondary Activities involve the processing of the products of the primary activities. Baking of bread, making of cloth and processing of steel are some of the secondary activities.

The Tertiary Activities basically help the primary and secondary economic activities through service, transport, trade, insurance, and banking. These are some of the tertiary activities

➢ FACTORS AFFECTING AGRICULTURE

◈ Physical factors

- **Temperature :** It is one of the important factors affecting agriculture. Seed germination requires suitable temperature conditions. The earth is divided into various zones according to the temperature. Torrid Zone is hotter than other two and has high temperature conditions throughout the year. Crops usually require temperature of 30 to 35 ° C. If temperature dips down up to 10°C or less, the germination does not take place and the plant will die away. The crops growing in Temperate or Frigid Zone require temperature far less as compared to the tropical zone. Crops cannot withstand high temperature, hence crops have different growing characteristics according to different temperature conditions.

- **Rainfall :** Water is another important requirement for the growth and development of crops. Soil retains moisture for longer time. Hence roots of the crops take water for its growth from the soil. Without rainfall, there will be a substantial fall in the crop productivity of a region. Different crops have different water requirements; some need more water like rice (paddy) and some need less like Wheat. The places where rainfall is insufficient, the crops are irrigated with the help of artificial sources of water like tanks and canals.

- **Soil :** Soil refers to the topmost loose and unconsolidated layer which contains both organic and inorganic matter. Soil provides base for the growth of plants and crops. A good crop production is anticipated from the fertile soils. There are important nutrients present in the soil which are necessary for the growth of crops namely nitrogen, phosphorus, potassium, calcium and magnesium. Tropical regions usually have less nutrients present because of leaching due to heavy rainfall. In temperate regions soils have sufficient amount of nutrients and provide a good stand for the crops. Loamy soils are considered best for the growth of plants and crops because they are well drained and possess good amount of nutrients.

- **Relief :** Relief is the general slope of the land. As we know, steeper slopes do not support agricultural activities. It is so because on steep slopes soil erosion is a big problem. Soil is taken away by the running water and winds easily. Heavy machines like tractors and levelers cannot be used. Whereas gentler slopes are considered best for the agricultural activities.

◈ Non-physical factors

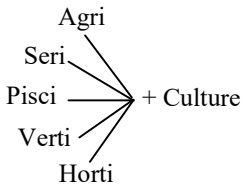
- **Irrigation :** Irrigation as a factor for agriculture is very old and workable. In modern times, agriculture has become more advanced, need for irrigation has become more important because rainfall has become more uncertain and uneven. So artificial way of providing water is important. In India, irrigation plays an eminent role in minimizing the adverse effect of scanty and unreliable rainfall. Such a role acquires an added significance in dry lands where it becomes impossible to grow crops without irrigation

- **Better Seeds:** The period of 1950's was a turning point for the larger part of the world. It was a time when one of the Canadians known as Norman Borlaug, introduced new variety of seeds for the first time primarily for wheat and barley and later on for rice and other crops. High yielding variety seeds breeding technology is a revolutionary transition from age old tradition to innovation. This has led to the self sufficiency in food as against usual shortages.

- **Agricultural Implements:** Agricultural implements play a significant role in crop production. Agricultural implements include plough, threshers, winnowers, axes, chaff-cutter machine, seed drills, etc. All these implements are used for performing various agricultural tasks which help in improving the efficiency and reduce the labour. In most of the developed countries, farmers use advanced agricultural implements like tractors. But even today in most of the developing and underdeveloped countries farmers are using outdated and crude farming implements.

- **Fertilisers :** Fertilisers help in adding the nutrients to the soil which in turn helps the crops to grow. Use of fertilisers is necessary for every country. Fertilisers are essential because every patch of land has its own capability but pressure and demand from soil leads to the depletion of important nutrients. Fertilisers boost crop production and also attempt to increase agricultural production.

➢ DIAGRAME



Agriculture

The science and art of cultivation on the soil, raising crops and rearing livestock. It is also called farming.

Sericulture

Commercial rearing of silk worms. It may supplement the income of the farmer.

Pisciculture

Breeding of fish in specially constructed tanks and ponds.

Viticulture

Cultivation of grapes

Horticulture

Growing vegetables, flowers and fruits for commercial use

➢ TYPES OF FARMING

Agriculture or farming can be looked at as a system. The important inputs are seeds, fertilisers, machinery and labour. Some of the operations Involved are ploughing, sowing, irrigation, weeding and harvesting. The outputs from the system include crops, wool, dairy and poultry products.

Types of farming :

Depending upon the geographical conditions, demand of produce, labour and level of technology, farming can be classified into two main types. These are :

(I) Subsistence farming

(II) Commercial farming.

(I) Subsistence Farming:

Subsistence farming is characterised by small and scattered land holdings and use of primitive tolls Farmers are poor, they do not use fertilisers and high yielding variety of seeds Facilities like electricity and Irrigation are generally not available to them. Most of the food production is consumed by the farmers and their families. Subsistence farming has two types.

(i) Intensive subsistence.

(ii) Primitive subsistence farming.

(i) Intensive subsistence agriculture:

The farmer cultivates a small plot of land using simple tools and more labour. Climate with large number of days with sunshine and fertile soils permit growing of more than one crop annually on the same plot. Rice is the main crop. Other crops include wheat, maize, pulses and oilseeds. Intensive subsistence agriculture is prevalent In the thickly populated areas of the monsoon regions of south, southeast and east Asia

(ii) Primitive subsistence agriculture :

It has two types :

(a) Shifting cultivation :

It is practised In the thickly forested areas of Amazon basin, tropical Africa, parts of southeast Asia and Northeast India. In this type of agriculture, first of all a piece of forest land is cleared by felling trees and burning of trunks and branches After the land is cleared, crops are grown for two to three years and then the land is abandoned as the fertility of the soil decreases The farmers then move to new areas and the process is repeated Dry paddy, maize, millets and vegetables are the crops commonly grown. Shifting cultivation is also known as **'slash and burn'** agriculture.

(b) Nomadic herding :

It is practised in the semi-arid and arid regions of Sahara, Central Asia and some parts of India like Rajasthan and Jammu and Kashmir In this type of farming, herdsmen move from place to place with their animals for fodder and water along defined routes. This type of movement arises in response to climatic constraints and terrain. Sheep, camel, yak and goats are most commonly reared. They provide milk meat, wool, hides and other products to the herders and their families

(II) Commercial Farming :

Crops are grown and animals are reared for sale In market. The area cultivated and the amount of capital used is large. Most of the work is done by machines. It has three types:

Commercial grain farming :

Is usually carried out on large, scientifically managed farms in areas of low population density. Crops are grown for commercially grown for commercial purpose Wheat and maize are common commercially grown grains. Major areas are temperate grasslands of North America, Europe and Asia. These areas are sparsely populated with large farms spreading over hundreds of hectares. Severe winters restrict the growing season and only a single crop can be grown

Mixed farming :

Crop cultivation and animal husbandry are practised on the same farm It is practised in Europe, eastern USA Argentina, southeast Australia New Zealand and South Africa.

Plantations :

Plantation farming is bush or tree farming It is a single crop farming of rubber, tea, coffee, cocoa, spices coconut and fruit crops like apples, grapes, oranges, etc. it is capital-Intensive and demands good managerial ability, technical know-how sophisticated machinery, fertilizers, irrigation and transport facilities. Some of the plantations like tea, coffee and rubber have a processing factory within the farm it self or close of it. Major plantations are found in the tropical regions or the world Rubber in Malaysia, coffee in Brazil, tea in India and Sri Lanka are some examples.

➢ MAJOR CROPS OF THE WORLD

◈ Food crops

Food crops are those crops which are grown for subsistence. They are consumed by people for survival. These include chiefly wheat, rice, corn and millets, etc. In India, some pulses and oilseeds are also included into major food crops

◆ **Rice :** Rice is a tropical and subtropical crop mostly cultivated in the monsoon lands of Asia. It is one of the important and dominant crops of intensive subsistence agriculture. In some parts of the world, it is grown twice or thrice a year

Conditions for growth :

- **Rainfall : 100-200** cm of rainfall is required for its growth. Areas receiving less rainfall grow paddy with the help of irrigation
- **Temperature :** Rice plant requires a minimum of 20ºC temperature at the time of germination and about 27 to 30ºC at the time of its growth.
- **Soil :** Fertile, riverine alluvial soils are best for rice cultivation. Loamy clay soil is also considered good for rice production.
- **Labour :** Rice cultivation is labour intensive. All the tasks from sowing of seeds till its harvest are done manually.
- **Producing Areas :** China, Indonesia, Bangladesh, Thailand, Myanmar and Japan are the main rice producing countries. In India, rice is grown mostly in West Bengal, Uttar Pradesh, Bihar and Assam.
- **Trade :** Some of the good quality of rice is also exported in the international market like India Basmati.

◆ **Wheat :** Wheat is another important food crop consumed in the large part of the world. It is more nutritive and dietful than rice. It contains protein, carbohydrates and nutrients.

Conditions for growth :

- **Rainfall :** It grows well in the areas which receive annual rainfall **40-75** cm. Also grown with the help of irrigation facilities
- **Temperature :** It requires temperature of about 10°C at the time of sowing and **15-20°C** at the time of growth
- **Soil :** Although wheat can be grown in variety of soils but loamy soil is best suited for wheat cultivation
- **Relief:** Although wheat is grown in all parts of the world. It is grown on the hill slopes and in the plains. But it mostly and widely grown 'in the plain areas with the help of machines.
- **Labour :** It is grown manually on the hill slopes because of the harsh relief conditions as heavy machines cannot be used. But in the plains in most of the developed nations it is done with the help of machines.
- **Producing Areas :** Important producing areas are China, India, Russia, United States of America, Ukraine, Australia and Argentina. In India, wheat producing areas are Uttar Pradesh, Haryana, Punjab, Madhya Pradesh, Rajasthan, Bihar, Maharashtra and Gujarat.
- **Trade :** USA, Australia and France are the major wheat exporting countries.

◆ **Maize :** It is a third major food crop of the world. It originated in Central America from where it spread in whole of the world. It can be grown in variety of climatic conditions. It is used for both food and fodder

Conditions for growth :

- **Rainfall :** Rainfall varying from **50-100** cm is best suited for its cultivation. It cannot withstand area receiving more than **100 cm** rainfall.
- **Temperature :** Best grow in temperature **20-27ºC**.
- **Soil :** Maize is best grown in well drained plain soils.
- **Producing Areas :** Central America, South America, Africa, U.S.A, china, Brazil, France and Argentina are the major maize producing countries.

◆ **Millets :** Maize has drought resistant quality. But they have low nutritional value as compared to other food grains. Like maize it is also used for both food and fodder in some parts of the world like India and Africa. Millets are comprised of combination of a group of four crops namely- jowar, bajra, ragi and sorghum

Conditions for growth :

- **Rainfall : 20-100** cm of rainfall is sufficient for its growth.
- **Temperature : 27-32ºC** of temperature is needed for the growth. Although it requires short growing season.
- **Soil :** There is no particular type of soil in which it is grown. It can be grown in variety of soils; sandy, fertile and even in harsh terrain.
- **Producing Areas :** Millets are produced in India, Nigeria, Niger and China. India is the largest producer in the world. It is grown in Tamil Nadu, Maharashtra, and Western part of Andhra Pradesh, Rajasthan, Gujarat and Uttar Pradesh and USA is the most significant producer of sorghum in the world.

◈ Commercial Crops

◆ **Cotton :** Cotton is a fibre and clothes are prepared from it. It is also called as universal fibre. It comes under non food crop and is

produced for commercial purpose. It is a soft and fluffy staple fibre that tends to grow in a capsule shaped boll.

Conditions for growth :

- **Rainfall :** Cotton is mainly grown in dry climates. It require **50-100** cm of rainfall.
- **Temperature :** It requires temperature **20-27°C.** Frost is harmful for its growth. Hence it needs almost 210 frost free days for its growth.
- **Soil :** Fertile, saline soil with high water retention capacity is ideal for cotton cultivation. Loamy soil with higher calcium carbonate content is best suited for its cultivation. Volcanic, black and alluvial soils are suitable for its cultivation.
- **Producing Areas :** USA, China, India (Black soil region of Western India specifically Gujarat, Maharashtra), Uzbekistan are some of the major cotton producing countries in the world.

◆ **Juite :** It is also a fibrous crop as cotton. It is also a commercial crop grown for sale. It is used for making so many things like; ropes, mattresses, carpets and baskets, etc.

Conditions for growth :

- **Rainfall :** Not more than **150** cm
- **Temperature : 22-27ºC**
- **Soil :** Grows in loamy as well in alluvial soils.
- **Producing Areas :** India, Bangladesh and China are major producing areas in the world. In India, jute is grown in Ganga-Brahmaputra delta in West Bengal, Bihar, Assam and Odisha

◈ Beverage Crops

Other than water any drink is called as beverage. Hence there are mainly three crops which come under this category namely tea, coffee and cocoa.

◆ **Tea :** It is one of the important beverage crops in the world. No society is unaware of it. It is a labour intensive activity; it is derived from the bush which is evergreen in nature and mainly grown in the hill slopes. The tea plant requires a lot of maintenance, it needs to be pruned from time to time. Later on leaves are picked and processed in the factories and supplied in the markets for the use. It is one of the broad leaved evergreen shrubs

Conditions for growth :

- **Rainfall :** Humid climate is needed for its growth and it requires **125-250** cm rainfall.
- **Temperature :** It requires a temperature of about **25-30°C**.
- **Soil :** It grows well in soils which are well supplied with the humus content.
- **Producing Areas :** India is the major producer of tea in the world followed by China, Sri Lanka, Kenya, Japan, Indonesia and Bangladesh.

◆ **Coffee:** It is also a plantation crop like tea. It is obtained from the berry of sub-tropical bush. Its seeds are roasted, dried and then sold in the market.

Conditions for growth :

- **Rainfall : 150-250** cm of rain is needed for the growth of the coffee plant.
- **Temperature :** It requires a temperature ranging from **15** to **30°C**.
- **Soil :** It requires a deep, porous and good amount of humus mixed in soil
- **Producing Areas :** Brazil is the leading producer in the world followed by Columbia. In India, it is grown on the slopes of Western Ghats in Karnalaka, Kerala and Tamil Nadu.

CROPPING PATTERN IN INDIA

In India, agriculture is the mainstay of the economy. More than 60 per cent of the people are dependent on agriculture even today. People grow crops not only for subsistence but also for commercial purpose. In some parts of the country, the agriculture is very intensive. There are three cropping seasons in India which are as follows

Kharif

It starts from the onset of monsoon in June up to the beginning of winter in November and December. Major crops grown in this season are rice, maize, jowar, bajra, cotton, sesame, groundnut and some of pulses like moong, urad, etc.

Rabi

This cropping season starts from the beginning of winters and continues up to starting of summer season. Major crops grown in this season are wheat, barley, jowar, grams and oil seeds such as rape, mustard, linseed, etc.

Zaid

There is another cropping season which is zaid in which, along with some food crops, vegetables and fruits are grown. Major crops grown are rice, maize, groundnut as the main food crops and watermelon, muskmelon, cucumber, etc. as the fruits and vegetables.

AGRICULTURAL DEVELOPMENT IN INDIA

Agriculture is the backbone of India's economy. About two-third of its population are directly engaged in agriculture and allied activities. It also contributes a sizeable share in GDP. But in the recent time in India, agriculture has reached the stage of maturity and development. After India achieved independence, it is due to the five year plans that government started taking initiatives for the betterment of agriculture. But it was only after the **Green Revolution in 1956** which changed the face of agriculture totally. Now, India is self-sufficient in good grain production. Following are some of the developments which took place from time to time.

land Reforms

Before independence, zamindari and jagirdari systems were prevalent according to which the cultivators were not the real owner of the land. After independence, laws and rules were passed to abolish zamindari system, and lands were transferred to the actual tiller

Technological Measures

Under this, use of high yielding variety of seeds, fertilisers, pesticides and insecticides were included. Public distribution system played an effective role in transferring all the technological inputs to each and every farmer.

Consolidation of Land holdings

As a part of land reforms, the steps were taken but the government to recognize the fragmented land holdings. All the small pieces of land were consolidated and handed over to the owners.

◈ Cooperative Farming

Under this, small and marginal farmers pool their land in order to cultivate it and lastly benefits are shared on equal basis

◈ Crop Insurance Scheme

In the recent past, with the development of agricultural practices, a crop insurance scheme was launched in 1985 throughout the country for the following reasons -

- To provide financial support to farmers during crop failure
- To provide support to farmers up to the next cropping season

◈ In recent times, two specific programmes were introduced by government

- **Special rice production pragramme :** This programme was initiated in eastern region comprising Bihar, West Bengal, Assam, Odisha, Eastern U.P and Madhya Pradesh.
- **National watershed development programme:** This programme lays emphasis on land and water management in Eastern region through introduction of optimal cropping system, dry land horticulture, farm forestry, fodder production, etc.

➢ A FARM IN INDIA

(i) The size of an average farm is very small. This is chiefly due to the repeated division of a plot among the heirs of the cultivator generation after generation.

(ii) The land is intensively cultivated double cropping and multiple cropping are common

(iii) The farm produce is used mainly for self sustenance and there is very little surplus.

(iv) The use of machines is very limited. Most farmers are too poor to afford expensive farm machinery. As the density of population is high, manual labour is cheap and is widely used in farm operations

(v) There is limited use of chemical fertilisers pesticides, improved seeds and modern methods of farming. This is partly due to lack of awareness and partly due to poverty

(vi) There has been limited development of pastoral farming and mixed farming. The farm is used mainly for growing food. As the land is usually not used for growing fodder, farm animals are fed on farm wastes. No special provisions are made for housing these animals or caring for them.

(vii) The farm is usually managed by illiterate farmers. Schemes are now being Introduced to raise their level of awareness.

(viii) The yield of crops are generally low.

➢ A FARM IN THE USA

(i) The average size of a farm in the USA is much larger than that of an Indian farm. A typical farm size In the USA is about 250 hectares. This is because land is abundant and cheap.

(ii) The extensive type of agriculture is practiced. Single-cropping is the usual practice, with scope for growing fodder crops

(iii) Agriculture is commercial. Most of the produce is sold. As the local demand is small, there is a large surplus, which is exported.

(iv) Farms are highly mechanised most operations being performed by machines. As farms are large. the use of machines is a necessity Also manual labour is scarce and hence expensive.

(v) High-yielding varieties of seeds chemical fertilisers. pesticides and modern methods at farming are used. As the farmers are wealthy, they can easily afford these. However, due to the adverse effects of chemicals, farmers are now switching to eco-friendly methods.

(vi) Animals are reared using scientific methods both on ranches and on dairy farms. Mixed farming is common, which is a boon to farmers in the event of a crop failure. Fodder crops are grown to feed farm animals.

(vii) The farm is managed by well-educate" farmers who are aware of the latest techniques and developments in the field of agriculture and the conditions prevailing in the market

(viii) The yield per acre is lower than in many other countries, but the yield per worker is high.

(ix) The farmer in USA works like a businessman and not like a peasant farmer.