

UNIT – I

Scope and Content of Agricultural Geography

Etymologically, agricultural geography deals with the art and science of domestication of plants and animals.

According to Hillman (1911) agricultural geography deals with a comparative study of agriculture of countries and continents.

Bernhard (1915) defines agricultural geography as the study of regional variation in agriculture and the factors responsible for them.

According to Coppock (1969), in agricultural geography agricultural facts are arranged in an orderly manner.

Symon (1970) defines agricultural geography as man's husbandry of the land.

Scope and Objectives of Agricultural Geography

1. To examine the spatial distribution of crops, livestock and other agricultural activities.
2. To ascertain the spatial concentration of agricultural phenomena.
3. Crop concentration and crop-livestock combinations change in space and time. The temporal change in cropping patterns deserves investigation and explanation.
4. The performance of various crops in a country or region is not uniform. The reasons why certain areas are lagging behind in agricultural productivity is also a fascinating ground of agricultural geography.
5. The agricultural geographers have to diagnose at the micro level the causes of existing agricultural backwardness, and then to suggest suitable strategies to enhance productivity.
6. The geographers should make attempt to identify the impediments which are coming in the way of making this occupation as an agribusiness.

Place of Agricultural Geography

Economic Geography- Primary Activities

Content of Agricultural Geography

Origin and development of Agriculture, types of agriculture in the world, different approaches, determinants of agriculture-physical, socio-economic, institutional and technological, different agricultural models, agricultural data sources and analysis methods, land use data, soil survey, agricultural regionalization-crop diversification, crop concentration, crop diversification, crop combination, degree of commercialization and agricultural productivity – agricultural productivity regions, land capability, green revolution, blue revolution, white revolution golden revolution etc, crop calendar, agricultural regions,

food security, sustainable agriculture, agricultural policies and planning, agricultural problems etc.

Approaches in Agricultural Geography

Two major approaches to the subject matter of agricultural geography are;

1. Empirical (Inductive) Approach

The empirical approach attempts to describe what actually exists in the agricultural landscape. It gives special privilege to empirical observations. According to empiricists, “the facts speak for themselves”. In this approach explanation of the patterns is sought by inductive methods and generalization of the patterns is sought by inductive methods and generalizations are made on the basis of results from numerous studies. For example, for the delineation of crop combinations of a given region, crop land use data is gathered from the farms and villages over a period of time. This data is processed and plotted on maps and then an explanation of the combination is made which ultimately lead to generalization and model building.

2. Normative (Deductive) Approach

The normative approach is more concerned with what the agricultural landscape should be like, given a certain set of assumptions. This approach leads to the derivation and testing of hypothesis and theoretically, to the development of an ideal model of agricultural location. Example the model of Von Thunen in which several assumptions, like isomorphic surface, economic farmer, isolated state, etc, have been made is based on deductive approach.

Different modes of explanation have been adopted by geographers to explain the agricultural processes and phenomena over the earth surface;

1. Environmental or deterministic approach
2. Commodity approach
3. Economic approach
4. Regional approach
5. Systematic approach
6. System analysis approach
7. Ecological approach
8. Behavioural approach and
9. Humanistic approach

Origin and Development of Agriculture

The science and art of cultivating soil, growing and harvesting of crops, domestication of animals and raising of livestock is known as agriculture.

According to Sauer (1952), the origin and development agriculture, propounded that;

1. Agriculture did not originate in communities desperately in short supply of food, but among communities where there was sufficiency of food resulting into relative freedom from want and need.
2. The hearths of domestication are to be sought in regions of marked diversity of plants and animals.
3. The primitive agriculture did not origin in the large river valleys, subject to the lengthy floods and requiring protective dams, drainage or irrigation, but in moist hill lands.
4. The agriculture began in forested lands which had soft soil easy to dig.
5. The pioneers of agriculture had previously required special skills but the hunters would be least inclined towards the domestication of plants.
6. The founders of agriculture were sedentary folks, because growing of crops requires constant attention and supervision and unless guarded properly, the crop will be lost.

Genecentres

The place of origin of plants and animals in the world is called genecentres. A genecentre is a geographical locale of wild ancestors of the modern cultivated plants.

Major Genecentres

A significant contribution to the modern knowledge of the main centres of origin of cultivated plants has been made by Vavilov (1949)- a Russian geographer. His researches, based on field investigations and archaeological findings, indicate the main areas of domestication of plants and animals. These areas form the primary breeding culture. Accumulated evidence since Vavilov's time has suggested the following eight major genecentres.

1. The Southwest Asian Genecentre

It stretches over Asia Minor, Levant coast, Anatolia, Palestine, Israel, Jordon, Syria, Iran, Iraq, Afghanistan, Arabian Peninsula, Egypt, Cyprus, Crete and Greece. Emmer and Cinkorn wheat, spelt and barley were the cereal crops, lentil and peas were the pulses, chickpea, broadbean, melon were the vegetables and flax was also domesticated in this region.

2. The Southeast Asian Genecentre

The Southeast genecentre spread over India, Pakistan, Bangladesh, Sri Lanka, Myanmar, Thailand, Laos, Cambodia, Vietnam, Malaysia, Indonesia and Philippines. A large number of plants like rice, sugarcane, legumes, sugarpalm, coconut, bamboo, taro, yam, turian, tropical fruits, mango, cucumber, eggplant and cowpea had their origin in this genecentre.

3. The China-Japan Genecentre

Soyabean, Kaoliang,(sorghum), millet, corn, sweet-potatoes, barley, peanuts, fruits and vegetables were domesticated. Cotton, tobacco, sugarcane, tea and sericulture have been important cash crops.

4. The Central Asian Genecentre

The Central Asian Genecentre of Vavilov includes the region sprawling over Afghanistan, Tajikistan, Uzbekistan, Kazakistan, Kirgiszistan, Turkmenistan and the area lying to west of the Tien Shan. They adopted mixed agriculture. Peas, flax, alfalfa, almond, walnut, pistachio, grapes, melons, carrots, onion, garlic, radish, spinach, berries and numerous fruits were domesticated.

5. The Mediterranean Genecentre

It extends from the Iberian peninsula (Portugal and Spain) in the west to Greece in the east. It also includes the coastal strips of Africa along the Mediterranean Sea. Oats, flax, olive, figs, vines, rutabagas, lupines, oak, and lavender were the crops cultivated in this region. Artichoke, asparagus, cabbage, celery, chicory, olive, cress, endive, leek, lettuce, onion, garlic, parsnip, peas and beans were the vegetables domesticated in this region.

6. The African Genecentre

Sheep, goat, and swine and cultivated wheat, barley, cotton and flax were cultivated in this region in 5000 BC. The Egyptian farmers kept deer, gazelles, sheep, goats and livestock. The wetter areas were exploited by domesticated ducks and geese. The marshes, swamps, wasteland and stubbles were grazed by numerous herds of cattle, sheep with kempy coats, goats and pigs. The major plants domesticated in tropical Africa are Yam and oil-palm trees. Root crops cultivated in West Africa. Tropical Africa is also the primary genecentre of sorghum, African rice, castor beans, cotton, water-melon, cowpea, coffee, oil-palm and kolanut.

7. The South American Genecentre

This extends over Peru, Brazil, Bolivia, Ecuador, Argentina and Chile. Here the first domesticated plants of tuberous species like the manioc, arrowroots, waternuts, sweet potatoes, yautia, sorrel, ulluco, ochira, beans and squash were vegetatively propagated. Later peanuts, groundnuts and pineapple were also domesticated in this genecentre.

8. The Central American Genecentre

The genecentre spreads over the area of Mexico, Guatemala, Costa Rica, Honduras, Nicaragua, El-Salvador and Panama. Corn Maize), cacao, tomatoes, avocados, potatoes, kidneybean, zapotea, pumpkin and cotton, red pepper, bean, sunflower and tobacco.

Domestication of Plants

<u>Plants species</u>	<u>Region of origin</u>
Wheat	Southwest Asia
Barley	Southwest Asia
Pea	Southwest Asia
Lentil	Southwest Asia
Flax	Southwest Asia
Rice	Southeast Asia
Sugarcane	Southeast Asia
Sorghum and Mulberry	North China
Soyabean	North China
Almond	North China
Olive, Fig, Vine	Mediterranean Europe
Sorghum and Cotton	Africa
Capsicaum, maize	Tropical America
Common bean, cotton,	Tropical America
arrow-root, groundnut, tomato	Tropical America

Domestication of Animals

<u>Animals</u>	<u>Place of Origin</u>
Dog	Southwest Asia
Sheep	Southwest Asia
Goat	Southwest Asia
Cattle	Southwest Asia

Pig	Southwest Asia
Horse	Southern Russia (Central Asia)
Camel	Arabian Peninsula (Southwest Asia)
Buffalo	South Asia
Chicken	India, Burma
Reindeer	Siberia
Wolf	Southwest Asia
Donkey	Egypt

Major Agricultural Types of the World (Whittlesley) or Agricultural Systems of the World

Whittlesley, in his paper 'Major Agricultural Regions of the earth' (published in 1936 in the Annals of Association of American geographers) delineated the agricultural systems of the earth on the following five characteristics of agriculture-

- i) The crop and livestock association
- ii) The methods used to grow the crops and produce the stock
- iii) The intensity of application to the land, labour, capital and organisation and out-turn of products which results
- iv) The dispersal of the products, for consumption
- v) The onsemble of structure used to house and facilitate the farming operations.

With the help of the above indicators, Whittlesley has identified the following thirteen types of agricultural systems-

1. Nomadic Herding

Nomadic herding is an ecological or near ecological system of agricultural. It is carried on mainly to produce food for the family and to fulfil the needs of of clothing, shelter and recreation. It is the most simple form of pastoralism. The nomadic herders are dependent on sheep, cattle, goats, camels, horses, reindeers etc. for their livelihood. The length of the stay of the nomads at one place and the direction of their movement are governed by the availability of water and natural forage. Nomads and herders house is generally a tent which can be transported easily.

Nomadic herding at present, is mainly concentrated in Saharan Africa (Mali, Chad, Sudan), the southwestern and central parts of Asia, the northern parts of Scandinavian countries (Norway, Sweden, Finland) and northern Canada.

2. Livestock Ranching

Livestock ranching is carried on in the regions with relatively flat and plains where natural grass grows luxuriously. It is mostly practised in the temperate and tropical grasslands. The areas of commercial grazing in the temperate grasslands includes the plains and plateau of North America, Australia, New Zealand, South Africa and Andes Moorland. The average annual rainfall varies between 25 to 75 cm and has the great seasonal fluctuations. The movements of stock are normally confined to the ranch although there may be **seasonal movement or transhumance to distant pastures**. The ranch is a permanent base. Cropping is limited to provision of fodder for periods when natural grazing is not available or is inadequate. The provision of better supplies of fodder, together with water control and improved care of stock, are the principle ways of increasing the yield of these farms.

3. Shifting Cultivation

It is a form of primitive agriculture. It represents first human attempts to grow food for their subsistence. It is generally practised in those areas where permanent agriculture is difficult. The regions are both sides of equator in Africa, north eastern part of India, Central and South America etc. Shifting cultivation is known with different names in different regions. Example Jhuming in North east India, Ladang in Malaysia, Chengin in Philippines, Milpa in Central America and Mexico, Knuko in Venezuela, Roka in Brazil, Masole in Zaire Basin and Kumari in Kerala.

The shifting cultivator clears a small piece of forest land by felling the trees and cutting the bushes and grasses. These are then burnt and hence it is known as slash and burn agriculture. The ash obtained by burning the vegetation is mixed with the help of a pointed branch or a sharp tool and seeds are sown in them. Ploughs are not used for tilling the soil. In this type of agriculture mainly food crops are grown because it is meant for subsistence. Maize, cassava, banana and sweet potato are the main crops which are deep rooted. The same process is repeated by the farmers who leave one patch of land due to the depletion of soil fertility and shift to the other piece of land.

4. Sedentary Agriculture

Agriculture is practised on one place by a settled farmer in which fields are not rotated is called sedentary agriculture. The tem was used ofr primitive agriculturists in tropical Africa who formed the same piece of land indefinitely in contrast to shifting cultivation.

Great attention is paid to the land and to the crop sown. The methods of tillage are intensive-ploughing and hoeing of the soil is done with crude, hand implements. The domesticated animals are used for draught purposes. Crops like millets, roo-crops, banana, tobacco etc are grown in this system.

5. Intensive Subsistence tillage with Rice Dominance

It is practised mostly in monsoon Asia. Here the intensity of agriculture and multiple cropping are directly governed by the pressure of the population. In this type of agriculture, the size of the holding is generally very small. Farm size are also very small and they through many generations, have been subdivided so that they become extremely small and often uneconomic to run.

In wet paddy agriculture, traditionally much manual and hand labour is required. Ploughing is done with the help of buffaloes, oxen, mules and horses. In this type of agriculture the cultivators concentrates on the cultivation of food crops, especially rice and vegetables. He buffaloes are kept as draught animals in many parts of the monsoon world.

6. Intensive Subsistence Tillage without Paddy Dominance

Owing to variation in terrain, soil, vegetation, temperature, length of growing season, moisture conditions, sunlight etc. it is neither practicable nor profitable to grow paddy in many parts of the monsoon world. The method cultivation is very intensive. In north China, Manchuria, North Korea, Punjab, Haryana and Western U.P, wheat, maize, millets, pulses, soyabean, and oilseeds are intensively grown. Multiple cropping, heavy use of manual labour, little use of farm machinery and use of a variety of manure and fertilizers are its other characteristics.

7. Commercial Plantation

Plantation term generally has emerged from British settlement in America and then to any large estate in North America, West Indies and South East Asia which was cultivated mainly by Negro or other coloured labour, living on the estate under the control of the proprietors or managers. It represents the development of agricultural resources of tropical countries in accordance with the methods of secondary occupation or western industrialism.

The plantation agriculture is practised mainly in the tropical areas to grow cash crops. It is a specialized commercial cultivation of cash crops on estates or plantations. Some of the important plantation crops are rubber, oil palm, cotton, and copra, beverages like tea, coffee, cocoa and fruits like banana, sugarcane, hemp and jute. The farming in plantation is executed with specialized skill and whenever, possible with the application of machinery, fertilizers, weedicides, insecticides and pesticides. It aims at high yields, high quality production and a large output, most of which is exported.

8. Mediterranean Agriculture

This type of agriculture is confined to the coastal areas of the Mediterranean sea in Europe, Asia minor and North African Coastal strips. Outside the Mediterranean coasts, this system is found in California, Central Chile, the south west of Cape province and south western Australia. The main characteristics of the Mediterranean climate are that winters are mild and wet and summers are hot and dry. The region is largely affected by long dry summers and occurrence of rains during the winter season. Figs, vine, laden trees, usually elm, poplars and ash, juicy citrus fruits etc. are important plants and products found in this type of climate. Typical village communities grow wheat and barley in the plain and graze

sheep and goats on the stubble, it also grows olives and grapes on the lower hills and vegetables where irrigational facilities are available.

9. Commercial Grain Farming

The main aim of commercial grain farming is to sell the produce in the market and therefore the crop specialisation is one of its characteristics. In most parts of the middle latitudes, specialisation in wheat production has been attained at a commercial level. Prairies in North America, Ukraine, Western Europe, Argentina in South America, Southern parts of Australia, and in Punjab, Haryana and plains of western U.P in South Asia, have attained such type of specialisation. Most of the operations in this type of agriculture are done by machines. In United States some farmers come from outside to these agricultural farms. Two terms, 'Sidewalk farmers' and 'Suitcase farmers' are often used to describe these farmers.

10. Commercial Livestock and Crop Farming

It is also called mixed farming. This type of agriculture involves both crops and livestock. It is found throughout Europe from Ireland in the west through Central Europe to Russia. It is also found in North America, east of 98⁰ meridian, in the Pampas of Argentina, south east Australia, South Africa and New Zealand. Mixed farming is generally associated with densely populated, urbanized and industrialized societies dependent upon high income for the sale of the products.

The main characteristics of the mixed farming are that farms produce both crops and livestock and two enterprises are interwoven and integrated. Grass is an important crop of mixed farming system. Wheat in Europe and maize in the United States dominate the land use pattern. Mixed farms are characterised by high expenditure on machinery and farm buildings, extensive use of manures and fertilizers.

11. Subsistence Crop and Stock Farming

This type of agriculture is organised by the farmers with the sole objective of sustaining their families. The specialisation of crops is not possible in this system as the farmers grow as many crops as are required for their household consumption. It is generally prevalent in parts of monsoon Asia. The high density of population has forced the people to use the land very intensively. Rice is the dominant crop of the region.

Intensive cultivation causes depletion of soil fertility and farmers attempt to maintain it by applying farm yard manure, compost, green manure and chemical fertilizers. In other parts where rainfall is low wheat, barley, maize, jowar, bajra etc. may be grown and in some cases livestock also accompany this process. For example, in parts of Rajasthan, some parts of peninsular India etc.

12. Commercial Dairy Farming

Cattle rearing particularly rearing of milk cows in order to meet demand of milk and milk products in urban areas is referred to as dairy farming. Dairy farming in its real form

developed in Europe in response to the demand of milk in industrial urban centres and in most of the places it is acquiring the commercial status. High yielding milk cows such as the Holstein-Friesian breed of Netherlands, Jersey from Channel Islands, Irishire of Scotland and Brown Swiss of Switzerland are some of the best breeds of milk cows used for commercialisation purpose. Besides above mentioned countries there are some other countries such as Canada, United States and New Zealand are the countries where commercial dairy farming is in full fashion.

Dairy farming requires large capital, elaborate buildings, machines for feeding, milking, cleaning, silos for fodder etc. Refrigeration and storage of milk are very expensive. Dairy farmers also grow fodder crops such as grasses, corn, oats and wheat.

13. Specialised Horticulture

Cultivation of fruits, flowers and vegetables is known as horticulture. These items are produced by the farmers for trade besides meeting their own requirements. In USA it is termed as **truck farming** as the vegetables and fruits grown far away from the urban and industrial centres are supplied to the markets through the truck and transport carriers. Horticulture is well developed in countries like Britain, Denmark, Germany, Netherland, France and Italy. Sine these countries are highly developed and urbanized and there is heavy demand for fresh fruits and vegetables.

In horticulture the farms are small. Such farms are located where communication links with the consumption centres are appreciably good. The land in fruits and vegetables gardening is very intensively cultivated. Soil fertility is maintained by the heavy application of manures and fertilizers. Quality seeds, insecticides, nurseries, artificial heating and speedy disposal of the commodities are generally made since these are perishable goods.