

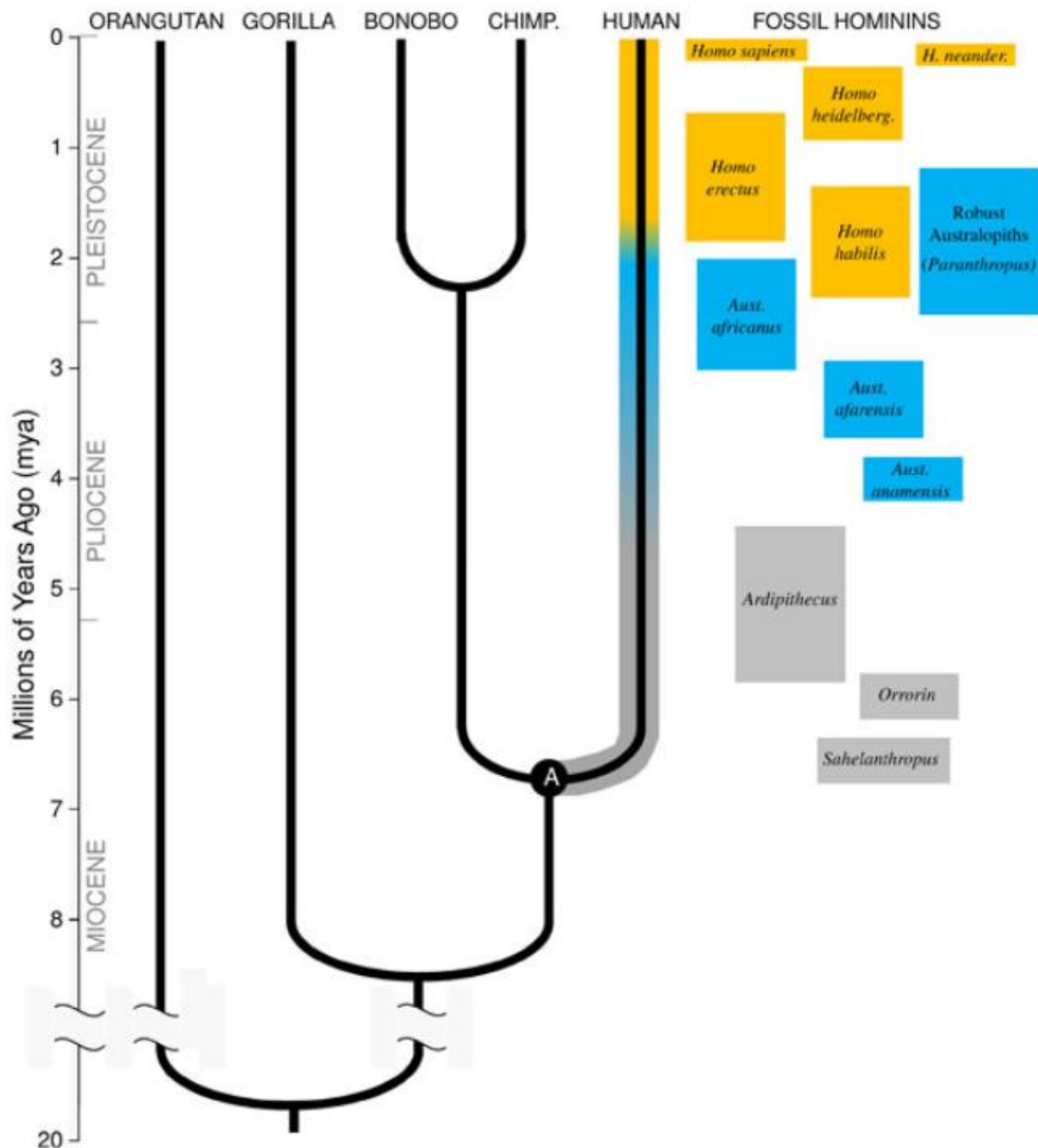
Unit-I: Livestock Based Livelihoods And Their Evolution

Syllabus: History of domestication and their social dimensions. Evolution and relationship between agriculture and animal husbandry. Farming and characteristics of farming in India. Classification of farming, types and systems.

Peasant farming/ Cooperative farming/ Collective farming/ Contract farming/ Estate farming/ Organic farming/ Capitalistic farming/ Small-scale farming/ Large-scale farming/ Intensive farming/ Extensive farming/ Specialized farming/

Diversified farming/ Mixed farming/ Integrated farming/ Dry land farming. Role of animals in the contemporary society.

Evolution and relationship between agriculture and animal husbandry.



History of domestication and their social dimensions

Domestication- It is a process in which human deliberately and with forethoughts assume control over domesticates' movement, feeding, protection, distribution and, above all, its breeding which is directed at achieving specific and clearly identified goals.

Our genus "homo" has been on earth for some two million years. Of this time span, almost 99.5 per cent is a history of subsistence on hunting of animals and gathering of plant food (99.5 percent of the 2.5 million years of human existence, only in the last ten thousand years or so that people began to domesticate and produce food in some areas).

About 10,000 years ago the transition from hunting and foraging for food to the domestication of plant and animals took place.

Palaeolithic Age- During evolution, Humans and their ancestors were hunter-gatherers. Many hunter-gatherer societies still exist today. Hunter-gatherer societies have strong gender roles with women predominantly the gatherers of plant foods (fruits, seeds, nuts, tubers, etc.) and men, the hunters. Palaeolithic hunter-gatherers domesticated dogs to aid in hunting and for protection from predators.

Neolithic Revolution- It is described by transition from hunter-gatherer to agricultural societies, initially growing crops followed by domesticated livestock. The Neolithic Revolution and the development of agriculture occurred independently in different part of world. The first agriculture appears to have developed at the closing of the last Pleistocene glacial period, or Ice Age. Domesticated animals were used for food and agricultural activities such as ploughing, pulling, and transportation. The wild ancestral species for some livestock species, such as sheep, goats, and cattle, are now extinct. Animal and agriculture spread by trading and migrations. One early form of animal agriculture was pastoralism.

The first domesticated plant was probably rice (Chinese farmer). The first domesticated animals were dogs. Livestock or farm animals like sheep and goats were probably domesticated next from the arid highlands of Persia and Anatolia. This was followed by cattle in low lands of Mesopotamia. Domestication of animals produced a dramatic change in the way people lived.

Civilizations which had relied on hunting and gathering as a means of subsistence now built permanent settlements and engaged in a pastoral existence relying on their cattle and crops.

Farming and characteristics of farming in India.

Farm: Farm is an area of land and its buildings which is used for growing crops and rearing animals. It is devoted primarily to agricultural processes with the primary objective of producing food and other crops.

Farming is an activity that involves the use of land for cultivation of crops, raising of animals etc.

Factors determining type of farming

- Physical factors
 - Climate
 - Soil
 - Topography
- Economic factors
 - Marketing cost
 - Changes in relative value of farm products
 - Availability of labour and capital
 - Land values
 - Cycles of over and under production
 - Competition between enterprises
 - Miscellaneous – Seasonal availability of raw material, diseases etc.
- Social factors
 - Type of community
 - Cooperative spirit

Classification of Farming

- Based on how income is derived from a farming enterprise
 - Specialised farming
 - Diversified farming
 - Mixed farming
- Based on mode of ownership and organization of farms

- Individually owned
- Co-operative farming
- Collective farming
- Based on scale of operations
 - Small scale farming
 - Large scale farming

Peasant farming: It refers to a type of small scale agriculture where farmer grow crops and often rear livestock on small scale. Livestock are used to perform various agricultural operations, transportation and meet family food requirements with a minimum/ negligible investment. Livestock provide manure for the crop field. In return, crop residues and by-products are utilized as animal feed. This system of farming is typical to rural India and predominant till today.

Cooperative farming: Co-operative farming is one in which agricultural / livestock producers co-operate with one another to secure advantages of co-operative buying of agricultural / livestock inputs and co-operative selling of agricultural/livestock produce or they may cooperate in order to obtain credit on easier terms.

Cooperative farming societies are-

- **Co-operative better farming society:** In this kind, independent land holding members “agree to follow a plan of cultivation / operation” laid down by the society
- **Co-operative tenant farming society:** The co-operative tenant farming society provides its members with facilities such as finance, implements, seed, etc. The society owns land or gets it on lease, but it does not undertake farming. Land is divided into blocks and each block is given on rent to a cultivator who cultivates according to the plan laid down by the society.
- **Co-operative joint farming society:** In this type, land owners pool their lands for joint cultivation. The ownership of each member in his holding continues and is recognized by the payment of dividend in proportion to the value of his land.

Collective farming: In collective farming societies, members do not have an individual land ownership right in the society’s land.

The society holds land in free hold or leasehold and undertakes joint cultivation. In Soviet Union peasantry were forced to give up their individual farms and join large collective farms (kolkhoz) to transform traditional agriculture and to encourage food production while freeing labor and capital for industrial development.

Types of collective farming societies are

- Type I Collective farming societies: It is marked by transfer of land ownership rights by members in return for shares of equivalent value.
- Type II Collective farming societies: It is marked by transfer of land ownership rights by members without any consideration.
- Type III Collective farming societies: It is marked by absence of the transfer of any prior land ownership rights by members, because members did not possess any ownership rights in society's land.

Contract farming: It is a system for the production and supply of agricultural produce under forward contracts between producers and buyers. Buyers provide the farmers necessary facilities and buy back the products with a rate specified in advance. The agreement is defined by the commitment of the farmer to provide agricultural commodity of a certain type at a time and a price and in the quantity required by committed buyer, mostly a large company. The model which is most popular in the country is the one in which the contractor supplies all the inputs required for cultivation/ production while the farmer supplies land and labour.

State farming: Land is owned by the state and is often used for growing crops or raising animals. The operation and management is done by government officials. The state performs the function of risk bearing and decision making, which cultivation is carried on with help of hired labour. All the labourers are hired on daily or monthly basis and they have no right in deciding the farm policy. Such farms are not very paying because of lack of incentive. There is no dearth of resources at such farms but sometimes it so happens that they are not available in time and utilized fully.

Organic farming: As per the definition of the United States Department of Agriculture (USDA) study team on organic farming “organic farming is a system which avoids or largely excludes the use of synthetic inputs (such as fertilizers, pesticides, hormones, feed additives etc.) and to the maximum extent feasible rely

upon crop rotations, crop residues, animal manures, off-farm organic waste, mineral grade rock additives and biological system of nutrient mobilization and plant protection”. Yield of organic crops have been found to be about 25 percent lower overall than conventionally grown crops depending on crops. It is counterbalanced by higher food costs for consumers.

Capitalistic farming: In capitalistic farming the investment of land and capital is done by big business person. Therefore farming activities are controlled and manipulated by capitalist. Wages are paid to the labourers employed. Improved methods of cultivation are adopted. This type of farming is predominated in South America, North America and Europe. Plantation is commonest example of capitalistic farming. Perennial crops are produced through plantation farming.

Large and Small Scale Farming

- There are different means of describing scale of livestock enterprise viz. depending on how much of the commodity is produced and marketed by the unit within a time period, number of animals / birds maintained or area of holding over which the livestock enterprise is based. The advantages of large-scale production over small-scale production are called the economies of scale.
- Economies of scale have been classified by Marshall into
 - **Internal Economies and**
 - **External Economies.**
- Internal economies are those advantages of production, which occur as a result of decrease in cost of production as the result of expansion of output. These economies are available to individual firms independent of other firms. Internal economies are caused by two factors viz.,
 - Indivisibilities and
 - Specialization.
- Some of the possible external economies are
 - Economies of concentration
 - Economies of information
 - Economies of specialization or disintegration

Comparison between Small and Large Scale Farming

S. No.	Aspects	Large scale	Small scale
1	Division of labour (Specialization)	Possible	Limited
2	Mechanization	Possible	Not possible
3	Quantity of the output	More	Less
4	Cost of production	Low	High
5	Cost of management	Low	High
6	Risk	More	Less
7	Marketing facilities	Better	Poor
8	Economy of buying and selling	More	Less
9	Possibility of using improved technology	More	Less
10	Danger of over production	More	Less
11	Supervision	Poor	Better
12	Flexibility	Inflexible	Flexible
13	Chances of unhealthy competition	More	Less

Intensive farming: It is the practice where a lot of labour and capital is employed to maximize agricultural produce or yield/area/time. It is characterised with the intensive use of pesticides, fertilizers and other production inputs for crops and medication as well as concentrated feeding for the animal stock. The practice concentrated more on getting the most output per unit by using high input strategies.

Extensive farming: It is an agricultural production system that uses small inputs as labour, fertilizers and capital relative to the land area being farmed.

Specialized farming: A specialized farm is one in which 50 per cent or more receipts / income are derived from one source.

Advantages of specialized farming are

- Best suited to particular soil, climate, topography and other physical conditions like market type.
- Work easily get reduced to routine.
- Better marketing.
- Better management.
- Less equipment and labour needed.

- Efficiency and skill of personnel increased.
- Costly and efficient machinery can be kept.
- Farmer can secure complete mastery over the conditions, problems of production, processing and sale.
- Under favourable and specific conditions extremely profitable.
- e.g. Commercial and large scale dairy and poultry farms

Diversified farming: When farming is organized to produce one main product but also has several other enterprises each of which itself is the direct source of income, it is called diversified farming. In diversified farming, no single enterprise contributes 50% of the total farms income.

E.g. Crop with dairy farming plus sheep & goat farming, fishery and poultry

Mixed farming: According to the 12th National Conference of Agricultural Economists (1960) a farm where *at least 10 per cent of its income is contributed by livestock* is called a mixed farm. The upper limit of gross income to be contributed by livestock activities was fixed at 49 per cent under Indian conditions.

- This conference *restricted the scope* of mixed farming to the livestock activities, which would largely *include milch cattle and buffaloes*.
- Any extension of mixed farming by supplementary enterprises like sheep and goat farming, fishery and poultry were classified under diversified farming.
- e.g. Crop with dairy farming, the most common type of farming in India
- *Advantages of mixed / diversified farming* are
 - Well suited for adoption round the year under Indian conditions.
 - Income obtained throughout the year.
 - Offers opportunity for better use of land, capital and labour.
 - Helps in maintaining soil fertility.
 - Reduces the risks due to failure, unfavourable market price etc.
 - Income is regular and quick.
 - Cost of transportation and sale of by-products can be reduced to minimum.
 - Offers opportunity for complete use of agricultural wastes.
 - Provides balanced and protective farming.

Integrated farming: It means to integrate crop production with not only livestock but with varied types of plants, birds, fish, and other aquatic flora in such a way that complement each other with a nice symbiotic relationship at the time in economically viable and profitable; environmentally suitable and benefit giver of diversification of production. . In this system, an inter-related set of enterprises is used so that the “waste” from one component becomes an input for another part of the system. This reduces costs and improves production and/or income.

E.g. Crop-Livestock Farming System

- Crop-Livestock-Fishery Farming System
- Crop-Poultry-Fishery-Mushroom Farming System

Dry land farming: Dry farming or dry-land farming may be defined as a practice of growing crops without irrigation in areas which receive an annual rainfall of 750 mm – 500 mm or even less. This is practiced in dried parts of Rajasthan, Gujarat and Madhya Pradesh etc.

Characteristics of farming in India/ Salient Features of Indian Agriculture

I. Subsistence in nature:

Most parts of India have subsistence agricultural practices. The farmer owns a small piece of land, grows crops and raises animals with the help of his family members and consumes almost the entire farm produce with little surplus to sell in the market.

This type of agriculture has been practised in India for the last several hundreds of years and still prevails in spite of the large scale changes in agricultural practices after independence.

II. Pressure of population on agriculture:

The population in India is increasing at a rapid pace and exerts heavy pressure on agriculture. Agriculture has to provide employment to a large section of work force and has to feed the teeming millions. While looking into the present need of food grains, we require an additional 12-15 million hectares of land to cope with the increasing demands by 2010 A.D. Moreover, there is rising trend in urbanization and other developmental activities. Over one-fourth of the Indian population lived in urban areas in 2001 and it is estimated that over one-third of

the total population of India would be living in urban areas by 2010 A.D. This requires more land for urban settlements which will ultimately encroach upon agricultural land. It is now estimated that about 4 lakh hectares of farm land is now being diverted to non-agricultural uses each year.

III. **Importance of animals:**

Animal force has always played a significant role in agricultural operations such as ploughing, irrigation, threshing, transporting and in nutritional security through milk, meat, egg, etc.

IV. **Technology and mechanisation:**

There is less use of technology and mechanisation in Indian agricultural operations. Complete mechanisation of Indian agriculture is still a distant goal and animals will continue to dominate the agricultural scene in India for several years to come.

V. **Dependent upon Monsoon:**

Indian agriculture is mainly dependent upon monsoon which is uncertain, unreliable and irregular. In spite of the large scale expansion of irrigation facilities since Independence, only one-third of the cropped area is provided by perennial irrigation and the remaining two-third of the cropped area has to bear the brunt of the vagaries of the monsoons.

VI. **Variety of crops:**

India is a vast country with varied types of relief, climate and soil conditions. Therefore, there is a large variety of crops grown in India. Both the tropical and temperate crops are successfully grown in India. Very few countries in the world have a variety of crops comparable to that produced in India.

VII. **Predominance of food crops:**

Since Indian agriculture has to feed a large population, production of food crops is the first priority of the farmers almost everywhere in the country. More than two-thirds of the total cropped area is devoted to the cultivation of food crops. However, with the change in cropping pattern, the relative share of food crops came down in recent years (from 76.7 per cent in 1950-51 to 58.8 per cent in 2002-03).

VIII. **Insignificant place to given fodder crops:**

Although India has the largest population of livestock in the world, fodder crops are given a very insignificant place in our cropping pattern. Only four per cent of the reporting area is devoted to permanent pastures and other grazing lands. This is due to pressing demand of land for food crops. The result is that the domestic animals are not properly fed and their productivity is very low compared to international standards.

IX. **Seasonal pattern:**

India has three major crop seasons.

- i. **Kharif** season starts with the onset of monsoons and continues till the beginning of winter. Major crops of this season are rice, maize, jowar, bajra, cotton, sesamum, groundnut and pulses such as moong, urad, etc.
- ii. **Rabi** season starts at the beginning of winter and continues till the end of winter or beginning of summer. Major crops of this season are wheat, barley, jowar, gram and oil seeds such as linseed, rape and mustard.
- iii. **Zaid** is summer cropping season in which crops like Seasonal fruits, vegetables, fodder crops, etc. are grown. Now some varieties of pulses have been evolved which can be successfully grown in summer.

Role of animals in the contemporary society

In our contemporary society, animals continue to coexist with human in numerous ways-

- I. **Food, skin and fiber (wool and hair) source:** It is still a major source of food, skin and fiber. In developing countries, many of the communities still rely heavily on animals to fulfil their necessities for food and nutrition.
- II. **Employment and Income:** The livestock sector contributes significantly in supplementing family income and in generating gainful employment to the small and marginal farmers and landless labourers in the rural India.
- III. **Draught purpose:** Bullocks and buffaloes are the main draught animals used in different agricultural operations likes ploughing, thrashing, transportation and so no.

- IV. **Social value:** livestock provides prestige value and considered as an asset to the rural family (economically strong- cattle and buffaloes, weaker- sheep and goat).
- V. **Companion and sport animals:** Ever since man domesticated animals, they have been an integral part of its social and cultural life. A companion animal is an animal that helps a person enjoy life. For example, dogs, cats, birds, reptiles, and ornamental fish serve as pets for humans in today's society. A pleasure animal is an animal used for recreation or for sport. The horse are used for various sporting purpose like polo, trekking etc.
- VI. **Entertainment:** Animal-based tourism with free ranging wildlife-watching to zoos and aquariums have a significant social and economic impact on human society (also in movies).
- VII. **Defence and police services:** Sniffer dogs offer their senses of sight, hearing and smell to aid defence and police personnel in various investigation. Apart from dogs, camel and horses are also used in defence services.
- VIII. **Fuel and fertilizer:** Buffalo and cattle dung are used as fuel and fertilizers.
- IX. **Research purpose:** Different animals are used for research purposes. E.g. Rabbit, Guinea Pig, etc.