



ROHINI COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS INSTITUTION

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CROP PRODUCTION
TECHNOLOGY

UNIT – 1
AGRICULTURE AND CROP
PRODUCTION

Unit 1

AGRICULTURE AND CROP PRODUCTION

Agriculture: The term agriculture is derived from two Latin words *ager* or *agri* meaning soil and *cultura* meaning cultivation. Agriculture is a broad term encompassing all aspects of crop production, livestock farming, fisheries, forestry etc.

Agriculture is an intervention into the natural ecosystems for the betterment and livelihood of humans to produce food crops of their choice by suitably modifying the environment by effectively utilizing the available natural resources under the solar system by following all the principles of maintaining the soil fertility and productivity intact.

Agriculture is defined in the Agriculture ACT, 1947, as including ‘horticulture, fruit growing, seed growing, dairy farming and livestock breeding and keeping, the use of land as grazing land, meadow land, osier land, market gardens and nursery grounds, and the use of land for woodlands where that use ancillary to the farming of land for Agricultural purposes’.

Agriculture is a productive unit where the gifts of nature like land, light, water and temperature are integrated into a single primary unit i.e. crop plant which is indispensable for human beings. The secondary productive units of agriculture are animals including livestock, birds and insects which feed on the primary units and provide concentrated products such as meat, milk, wool, eggs, honey, silk and lac.

These are used to maximize the productivity per unit time, water, land, labour and money invested. Agriculture implies the effective use of land, water, light and other resources of environment through the production of field crops, forage crops, farm animals, fisheries and forestry.

AGRICULTURE AS AN ART, SCIENCE AND BUSINESS CROP AND ANIMAL PRODUCTION

Agriculture as an ‘ART’

Art is learning by doing and gaining experience. Art is concerned with skill and experience. It is inherited by seeing parents or elders through experience. E.g. art of walking of a child.

- Skill may be physical skill, ornamental or a balance of both the forms.

- Agriculture primarily requires physical skill and secondarily mental skill. Physical skill is inherited by doing physical work with perfect execution.

E.g. opening a straight furrow, levelling the field

- Art of agricultural requires secondarily mental skill. Mental skill, Decision making
 - o E.g. Selection of crops for a particular area and more specific to the season is a mental skill

Agriculture as a ‘SCIENCE’

Science is systematic study of happenings of anything. A technology is an application of the science by suitably modifying the science to suit the situation in order to get maximum output. Science helps to select a crop and varieties methodology suitable to the season and the location.

- Part of science is inherited by farmers by doing themselves and involving with the principles involved in that practice.
- Science of agricultural tries to give reasons. Yield increase is due to application of manures. Yield reduction also results due to pest and disease attack
- Farmers will become scientists if more sophisticated methods are given. Experience makes them scientists
- Science of agriculture requires primarily mental skill and secondarily physical skill

Agriculture as ‘BUSINESS’

Business is always aim at profit rather than the physical output. Nowadays the farmers are also acting as businessmen. They weigh the balance of input and output of their farm production through economic value rather than the physical out. A farm may be suitable to produce a particular crop for its maximum potential output, but its economic output may be less when compared to an alternate crop. Hence the choice of the farmer is to go for which fetch him more profit.

1.2. IMPORTANCE OF AGRICULTURE

1. Agriculture provides food, fuel and shelter to all living organisms, more specifically to human beings.

o History of human evolution says that real development of humanity occurred only after the human being came out of the forest and also from nomadic life and only when started to settle near rivers and river basins.

o Till then the humanity fully depended for their food from the fruits, nuts, grains and animals which were available naturally in the forest.

2. **Civilization began with agriculture.** When our nomadic ancestors began to settle and grow their own food, human society was forever changed. Not only did villages, towns and cities begin to flourish, but so did knowledge, the arts and the technological sciences

3. **To sustain and to support the further growth of human population agriculture is the only way in this mother Earth because:**

- The land area available to live and to produce the food grains is very limited, only 30% is land area compared to 70% by sea. Out of which less than 30% area is available for crop production. The total food need has to come from that area. Hence agriculture becomes more important.

4. **Agriculture is the major occupation in India.** It is not only in India even in developed countries like USA. The people depending on agriculture and the income from agriculture are all very high in many counties of the world.

5. Many agro based industries are depending directly on agriculture

o **Agriculture provides employment to majority of the population.** The sector provides employment to 56.7 per cent of country's work force and is the single largest private sector occupation.

o Agriculture accounts for about 14.7 per cent of the total export earnings and provides raw material to a large number of Industries (textiles, silk, sugar, rice, flour mills, milk products).

6. The agriculture sector acts as a bulwark in maintaining food security and, in the process, national security as well.

7. Agriculture ensures peace and communal harmony: Agriculture helps to elevate the community consisting of different castes and communities to a better social, cultural, political and economical life.
 - o Agriculture maintains a biological equilibrium in nature.
8. Satisfactory agricultural production brings peace, prosperity, harmony, health and wealth to individuals of a nation by driving away distrust, discord and anarchy.
9. Agriculture is primary producer and agriculturist is free to decide on crop production and even he may not independent others if he or his family supports whereas it is not possible in other sectors.
10. Development in science and technologies placed the agriculture under industrial sector since this sector, nowadays is depending on labour from outside, mechanized machineries for the production and higher investment. Yet there are many differences between an industry and the agriculture as seen in the comparison given in the table below.

DEVELOPMENTS IN THE FIELD OF AGRICULTURE IN INDIA:

Food grain production increased from 50 MT to 260MT now. Productivity/ha increased from 522 kg/ha to 1500 kg/ha. Per capita availability of food grains increased from 395 g/day to 510 g/day. Achieving Growth rate in food grain production 2.7% meets the population growth of 2.2%. Cotton production increased from 3 million bales to 13.5 million bales. Sugarcane production increased from 57 MT to 297 MT. Egg productions increased from 2 billion to 28 billion. Vegetable production increased 20 MT to 90 MT.

Achievements in Agriculture-in brief

- Milk production quadrupled from 17MT at independence to 69MT (1997-98).
- Fish production rose from 0.75 MT to nearly 5.0 MT during the last five decades.
- Oil seed production increased 5 times (from 5 MT to 25MT) since independence.
- Similarly, the egg production increased from 2 billion at independence to 28 billion,
- Sugarcane production from 57 MT to 276 MT, cotton production from 3 million bales to 14 MT which shows our sign of progress.
- India is the largest producer of fruits in the world. India is the second largest producer of milk and vegetable.

SCOPE FOR AGRICULTURE IN INDIA

Proverbially, India is known as “Land of Villages”. Near about 67% of India’s population live in villages. The occupation of villagers is agriculture. Agriculture is the dominant sector of our economy & contributes in various ways such as:

- a) **As a major contributor of national economy:** In 1990 –91, agriculture contributed 31.6% of the National Income of India, while manufacturing sector contributed 17.6%. It is substantial than other countries for example in 1982 it was 34.9% in India against 2% in UK, 3% in USA, 4 % in the Canada.
- b) **Providing Employment:** Around 65% population is working & depends on agriculture and allied activities. Nearly 70% of the rural population earns its livelihood from agriculture and other occupation allied to agriculture. Incities also, a considerable part of labor force is engaged in jobs depending on processing & marketing of agricultural products.
- c) **Supplying inputs to industries:** Most of the industries depend on the raw material produced by agriculture, so agriculture is the principal source of raw material to the industries.
- d) **Ensuring Food Security and as well national security:** During this year targeted food production was 198 million tons & which is to be increased 225 million tons by the end of this century to feed the growing population of India.
- e) **Enhancing the State Revenue:** The agriculture is contributing the revenue by agriculture taxation includes direct tax and indirect tax. Direct tax includes land revenue, cess and surcharge on land revenue, cess on crops & agriculture income tax.
- f) **To improve the Trade:** Agriculture plays an important role in foreign trade attracting valuable foreign exchange, necessary for our economic development. The product from agriculture based industries such as jute, cloth, tinned food, etc.
- g) **To produce large technical manpower:** being agricultural country India is paying more attention to produce scientific man power to enhance the productivity of food grains and also to solve the intensive crop production related field problem by establishing many National Agricultural Research Institutes for State Agricultural Universities, International Agricultural Research Institutes.
- h) Development of many agro based industries provides job opportunity for many in addition considerable foreign exchange collection to the nation