

IMPROVEMENT IN FOOD RESOURCES

- The two major source of our food are plants and animals.

Types of crops

- There are three categories of crops: Food crops, Fodder crops and Commercial crops. The food crops give us carbohydrates, proteins, fats, vitamins and minerals.

- On the basis of seasonal variations, the crops of India can be classified as :

(i) Rabi

It is winter crop grown from November to April. Examples are wheat, gram, peas, etc.

(ii) Kharif

It is a rainy season crop grown from June to October. Paddy, soyabean, maize, cotton, etc.

(iii) Zaid

It is a summer season crop grown from April to June. Cucumbers, melons, etc are zaid crops.

- The science of improvement in genotype of plants by improving their genetic potentialities is called plant breeding.
- The methods of improving plants by breeding are introduction, selection, hybridisation and genetic engineering (Recombinant DNA Technology).

Manures and Fertilizers

- There are sixteen nutrients, which are essential for plants. Carbon and Oxygen are supplied by air; Hydrogen is supplied by water and remaining 13 elements are supplied by soil.
- Out of 13 essential elements supplied by soil, 6 are required in larger amounts. They are called macronutrients. The remaining 7 are required in minor amounts. They are called micronutrients.
- The major materials which are added into the soil to improve and maintain its fertility are grouped under two categories: 1. Manures and 2. Fertilizers.

Differentiate between manure and fertilizer

S. No.	Manure	Fertilizer
1.	Manure is a natural substance. It is obtained by the decomposition of animal wastes such as dung (gobar) of cattle and buffaloes and plant residues.	A fertilizer is a man made substance. It is an inorganic salt or an organic compound.

2.	A manure contains small amounts of essential plant nutrients such as nitrogen, phosphorus, K, Na, Fe, etc.	Fertilizers are very rich in plant nutrients such as nitrogen, phosphorus and potassium.
3.	A manure adds a great amount of organic matter in the form of humus in the soil	A fertilizer does not add any humus to the soil.
4.	Manure is voluminous and bulky so it is inconvenient to store, transport, handle and apply to the crop.	A fertilizer is compact and concentrated so it is easy to store, transport and apply to the crop.

- Organic farming is a kind of farming in which the harmful chemicals such as herbicides, pesticides and fertilizers are either not used or used only in minimum amounts. This farming recommends the use of organic manures, biofertilizers, biopesticides, resistant varieties, crop rotation and intercropping.

Irrigation

- Irrigation is the application of water to the soil for the purpose of supplying moisture essential for plant growth especially during stress periods.
- Some common irrigation systems are: (i) Irrigation from wells; (ii) Canal system; (iii) River lift system; and (iv) Tanks.

Cropping Patterns

- In order to get maximum benefit from the piece of land, operated as a unit for the production of agricultural products, different patterns of growing crops are followed.
- Practice of cultivating two or more crops simultaneously on the same piece of land is called **mixed cropping**.
- In **inter-cropping** pattern, two or more crops are grown simultaneously on the same field but they are not mixed.
- The practice of growing two or more different kinds of crops on a piece of land in a pre-planned succession is called **crop rotation**.
- There are three major biological enemies of crops plants: weeds, insect pests and disease causing agents (such as bacteria, fungi, viruses, etc.).
- Proper storage of grains is the most important economic issue of agriculture. Irregularities may spoil the entire agriculture produce.

Animal Husbandry

- Animal husbandry is the farming or management of animal livestock, which includes various aspects such as animal's shelter, feeding, breeding, health and disease control.
- Cattle farming are done mainly for two purposes:
 - Dairy (for obtaining milk)
 - Draught (animals used in agriculture and transport purposes).
- Poultry farming includes housing, rearing, sanitation, disease-control and marketing of poultry birds (chickens, turkeys, ducks, geese, guinea-fowls, pigeons, etc.).

Layers	Broilers
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1. Layers are egg-laying birds, managed for the purpose of getting eggs. 2. Layers start producing eggs at the age of 20 weeks. So they are kept for longer period depending upon laying period (approx. 500 days). 3. They require enough space and adequate lighting. 4. They need restricted and calculated feed with vitamins, minerals and micronutrients.	1. Broilers are maintained for getting meat. 2. They are raised upto 6-7 weeks in poultry farms and then sent to market for meat purposes. 3. They require conditions to grow fast and to have low mortality. 4. The daily food requirement (ration) for broilers is rich in protein and vitamins A and K. The fat contents should also be adequate.
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- Fish serves as the common man's food and a cheap source of animal protein that is easily digestible.
- There are two different sources of obtaining fish: Natural resources (i.e., oceans, seas, inland water bodies) and Fish farming (culture fishery).
- Fish farming is concerned with feeding, breeding and production of fish.
- Fish farming is generally done by using composite fish culture and integrated fish culture.
- Bee-keeping or apiculture is done to get honey, wax, propolis and poison.