# Improvement in Food Resources

**The following activities can lead to an improvement in crop production:**

- Crop variety improvement
- Crop production improvement
- Crop protection management

**Crop variety improvement methods**

- Hybridization- It is a method by which two characteristics present in different organisms can be brought together into one organism
- Changing maturity time- By growing a plant that grows and yields faster, the crop cycle is reduced to increase profit
- Other agronomical factors- short plants are beneficial in cereals so that nutrition is not consumed by plants to grow taller.

**Factors affecting the yield and quality of crops**

- Rainfall
- Soil quality
- Diseases
- Weeds and Pests

**Traits to be improved in a crop-**

- High yield
- Biotic and abiotic stress resistance like drought, floods, weeds and pests
- Wider adaptability
- Desired agronomic characteristics
- High nutritional value

- **Nutrient management**

- There are 16 nutrients that are essential for plants
- Carbon, hydrogen and oxygen are called the framework elements
- The nutrients required in relatively large quantity for growth and development of plants are called **macro nutrients.** These are nitrogen, phosphorous, potassium, calcium, magnesium and sulphur
- The nutrients required in low quantity are called **micro nutrients.** These are iron, manganese, boron, zinc, copper, molybdenum and chlorine.

- **Manure**

- **Manure** is prepared by the decomposition of animal excreta and plant waste.
- Manure is known to have a large quantity of organic materials and little amount of plant nutrients.
- Manure helps in enriching the soil with organic matter and nutrients.
- Cow dung, animal waste, domestic wastes, etc. is decomposed to form manure.
- Two types of manures- compost and green manure

- **Fertilizers**
- **Fertilisers** are commercially-available plant nutrients.
- They can be organic or inorganic in nature. They ensure the healthy growth and development of plants by providing nitrogen, phosphorus, potassium, etc.
- Urea, Potash, Ammonium nitrate etc are some examples of fertilisers.

- **Composting**
- **Composting** is a process in which farm waste materials such as livestock excreta (e.g., cow dung), vegetable wastes, domestic wastes, and sewage wastes are decomposed in pits to release the organic matter and nutrients.
- When composting is done using earthworms to hasten the process of decomposition, it is called **vermi composting**.

**Other methods of providing nutrients to plants**

- **Organic Farming**- It involves a limited use of chemicals such as fertilizers, pesticides, herbicides, genetically-modified organisms, etc.

Water scarcity is one of the major causes of decrease in the crop yield. So, there is a great need to manage oue water resources.

The process in which water requirement, usually for agricultural activities, is met from sources other than rain water is known as irrigation

**Methods developed to improve the water availability for crop production**

- **Dug wells** and **tube wells** are used to supply water in crop fields. Tube wells are used to pump up the ground water and to release it in fields as per the requirement.
- **Canals** are man-made water channel systems, which are used to deliver adequate water to the fields. Canals are connected with water reservoirs, or rivers to distribute water in the fields.

- In a **river lift system**, river water is directly drawn from the river and is supplied to irrigate fields closer to the river. This is because in some regions, canals are irregular and insufficient because of low water levels in the river.
- **Tanks** are small, water storage reservoirs. These are helpful in delivering water in smaller areas.

**Advantages of Improved Irrigation Systems-**

- Increases crop productivity
- Ensures continuous supply of water to fields
- Dams stop the flowing water and reduce soil erosion
- Increases agricultural practice in regions with low rainfall
- Controls flood by diverting excessive rain water into storage reservoirs

The net crop yield can also be increased by adopting better cropping pattern(s) such as inter-cropping, mixed cropping, and crop rotation.

- **Mixed cropping** is growing two or more crops simultaneously on the same piece of land
- **Inter cropping** is growing two or more crops simultaneously on the same field in such a way that a few rows of one crop alternate with a few rows of other crop and both the crops have different nutritional requirements.
- The growing of different crops on a piece of land in a pre planned succession is called **crop rotation.**
- Once the soil becomes exhausted with excessive farming it left uncultivated for one or two seasons, so that it can regain its fertility.

**Crop protection-Uncontrolled growth of weeds and pests affect the crop and reduce the productivity. After harvesting , crop is at high risk of getting spoilt by different biotic and abiotic factors. So it should be properly stored.**

**Methods to protect crops**

- Use of pesticides is the most common method of eradicating weeds, pests, and infectious diseases.
- Pesticides are commercially available as herbicides, fungicides, insecticides, etc.
- Excessive use of these chemicals can cause health hazards and environmental problems so should not be overused

**Some other methods to remove weeds from the field-**

- Mechanical removal
- Proper soil and seed preparation

# CLASS24

- Timely sowing of crops, intercropping ,and crop rotation
- Use of resistance variety of crops, which resist the attack of pathogens
- Summer ploughing, which includes deep ploughing to destroy weeds and pests

**Storage of Grains-** It is important to protect the harvested crop from the various biotic factos (like- insects, rodents) and abiotic factors (like-water, wind etc) as these factors can make a big harm to grains.

**Control measures used before storage are-**

- Proper cleaning of harvested crop before storage
- Complete drying, first in sunlight, then in shade
- Fumigation

**Animal Husbandry -** It deals with the scientific management of livestock. These include cattle farming, poultry farming, fish culture, and bee culture.

- **Cattle farming-** It is done to obtain milk and draught labour cattle's for agricultural purposes. This can be achieved by producing hybrid breeds and by providing proper shelter and cleaning facilities to animals. Hybrid cattle breeds are produced by crossing the two superior breeds, in which both the characteristics (milk pro

- **Poultry farming-** It is undertaken to obtain egg production and meat. objectives of poultry farming is to improve following traits- Number and quality of chicks,tolerance to high temperatures,dwarf broiler parent for commercial chick production and diseases resistance) are available.

- **Fish Farming-**Fish is a cheap source of animal protein for our food. Therefore, fish culture is an important part of animal husbandry. The two ways of obtaining fish are - Capture fishing and Culture fishery. Farming can be done in both fresh water (such as rivers, ponds etc.) and marine ecosystems.

- **Apiculture-** It is the practice of bee keeping. Bee farms are also known as apiaries.The quality of honey produced does not depend upon the variety of bees used. The quality of honey is greatly affected by both the quantity and quality of the available flowers, from which bees collect nectar and pollen.

  - Local varieties of bees used commonly for honey production are Apis cerana, Apis dorsata, A. florae.

  - An Italian bee variety A. mellifera is used for commercial production of honey.

Animals and their Products

- Milk and Flesh Yielding Animals - cattle goat, poultry, pig, sheep, etc.

- Draught Animals – horse, donkey, mule, etc.
- Fibre, Hide and Skin Yielding Animals - sheep, goat, cattle, camel, etc.
  Some important animals
- Cattle – we obtain milk, cow dung (for gobar gas and manure) from them. Also used to plough fields.
- Sheep and goat – provide meat, wool and hide
- Pig – provides pork and hide
- Poultry – provide meat and eggs
- Fishes – act as nutritious food.
  - Freshwater fishes – Catla, Rohu
  - Marine fishes – Hilsa, salmon
- Honeybees – Reared to obtain honey and beeswax. Queen bee lays eggs which are fertilized by drones. The worker bee looks after larvae and collects nectar from the flowers to produce honey. Rearing honeybees on commercial scale is called apiculture.
- Silk moth – provides silk. Larvae develop into cocoon whose body is covered with silk threads. The commercial rearing of silk moths is called sericulture.
- Food from animals
- Milk obtained from cow, buffalo, goat, and camel
- Meat obtained from chicken, goat, and sheep
- Eggs obtained from chicken and ducks

Some common diseases of useful animals

- Cattle
  - Diarrhoea
  - smallpox
  - Necrosis
  - anthrax
  - haemorrhagic septicaemia
  - pinkeye
  - Mad cow disease
- Poultry

- fowl pox
- cholera
- tuberculosis
- diarrhoea