

**CLASS – IX**

**Chapter 15**

**Improvement in food resources**

**Module - 1/4**

## Introduction

- All organisms require food for their survival and existence. Only green plants are autotrophs and other animals depend on green plants directly or indirectly.

Our country ranks second in population growth around the world and it is increasing day by day. To feed such huge population, we require millions of tons of grains. It is necessary to increase the production efficiency of crops and livestock.

# Improvement of crop yield

## Types of crops:-

**Cereals:** rice, wheat, maize, millets ,sorghum etc. provide carbohydrate.

**Pulses :** lentils, gram, peas, beans etc. provide us proteins.

**Oilseeds :** Sesame, mustard, linseed, groundnut, sunflower etc. provide us fats.

**Vegetables & fruits** and provide us vitamins and minerals.

**Spices :** Black pepper, cardamom, fennel, cinnamon, cloves etc.

**Fodder crop:** Food for livestock- , oats, sudan grass, sorghum etc.

Different types of crops require different climatic conditions , temperature and duration of light.

# Crop season

Different crops require different conditions, temperature and photoperiod for growth and maturity.

- a) **Kharif crop** : These crops are grown during the rainy season from June to October. Paddy, soyabean, black gram, moong, maize, cotton, groundnut etc.
- b) **Rabi crops** : These crops are grown during winter season from November to April. eg. Wheat, gram, mustard, linseed, barley etc.

## ***Improvement in crop yield***

- Crop yield can be improved by three main activities:-
  - i) Crop variety improvement
  - ii) Crop production improvement
  - iii) Crop protection improvement

## **I) CROP VARIETY IMPROVEMENT**

Crop variety improvement can be done by selecting good varieties of crops. This can be done by a process called **hybridization** in which genetically dissimilar plants are crossed to obtain crop having useful/ desirable characters like disease resistance, good quality and high yields.

Hybridization may be

**Intervarietal** ( between different varieties)

**Interspecific** ( between different species)

**Intergeneric** ( between different genera)

Another way of improving crop variety is by introducing a gene to obtain the desired characters. These are called **genetically modified crops**.

**Crop variety improvement is done for the following reasons:**

a) **Higher yield:** To increase productivity

- b) Biotic and abiotic resistance** : To increase resistance of crops for biotic factors ( insects , diseases, pests) and abiotic factors ( heat, cold, salinity and frost)
- c) Change in maturity duration**: To reduce the duration between sowing and harvesting so that farmers can grow multiple crops in a year.
- d) Wider adaptability**: To grow crops in different climatic conditions
- e) Desirable agronomic character** : Tallness and more branches for fodder crops, Dwarfness for cereal crops.
- f) Improved quality**: Baking quality of wheat, preserving quality of fruits and vegetables, oil quality of oilseeds etc.

## **II. CROP PRODUCTION MANAGEMENT**

This includes

- a) Nutrient management
- b) Irrigation

c) Cropping patterns

**a) Nutrient management:**

Nutrient management means controlling the selection, time and amount of nutrient supply to the crops.

Plants get nutrients from air, water and soil. There are **sixteen** nutrients required by the plants.

- Air supplies – Oxygen and carbon
- Water supplies – Hydrogen
- Soil supplies – remaining thirteen nutrients

There are two types of nutrients:-

**Macronutrients:** These nutrients are required in a large quantities by the plants .They are:

Carbon, Oxygen ( from air)

Hydrogen ( from water)

Nitrogen, phosphorus, potassium, calcium, magnesium, sulphur (from soil)

**Micronutrients:** These nutrients are required in a small quantity by the plants They are:

Iron, Manganese, Boron, Zinc, copper, molybdenum, chlorine ( from soil)

## **MANURE**

Manure is prepared by the decomposition of plant and animal waste. It contains organic matter and nutrients. It helps to increase soil fertility.

There are mainly two types of manure:-

**a) Compost:** It is prepared by decomposition of plant and animal waste in a compost pit.

Composting done by using red worms or earth worms is called **vermicomposting**.

**b) Green manure :** Before sowing seeds, some green plants like sun hemp, gaur etc. are mixed in the soil by ploughing. These

plants turn into green manure. They make the soil rich in nitrogen and phosphorus.

## ***FERTILISERS***

They are the chemical substances made commercially. They supply nitrogen, potassium, phosphorus and help to increase the fertility of soil and crop yield.

## ***Difference between manure and fertilizer***

### **Manure**

- a) It is a natural organic substance obtained by decomposition of animal and plant waste.
- b) Contains small amount of nutrients.
- c) Adds humus to the soil



d) It are absorbed slowly by the plants.

e) It is not nutrient specific.

f) It is bulky, so inconvenient to store , transport and handle.

g)They are cheap and affordable.

### **Fertilizer**

a) It a man- made substance and inorganic in nature.

b)It is rich in plant nutrients

c) Does not add humus to the soil.

d)It is absorbed readily by the plants.

e)It is nutrient specific.

f) It is not bulky so convenient to store, transport and handle.

g)They are costly.

\*\*\*\*\*































