

Chapter 12 Improvement in Food Resources

- All living organisms need food for health, growth and development.
- Food provides nutrients like carbohydrates, fats, protein, vitamins and minerals.
- Both plants and animals are major sources of food.
- India has a high population of more than one billion and is still growing.
- To feed this growing population we need more than a quarter of a billion tonnes of grain per year.
- This can be done by farming on more land but India is already intensively cultivated. Hence, it is necessary to increase the efficiency of production for both crops and livestock

Green Revolution

Green revolution is a programme introduced in many countries to increase food production by use of modern technology, proper irrigation, improved seeds etc.

White Revolution

White revolution is a programme in India to increase production of milk in India. This programme made India self-sufficient in production of milk.

Improvement in Crop Yields

Types of Crops:

- a) Cereals: They include crops like wheat, rice, maize, barley etc. They provide us carbohydrates.
- b) Seeds: Not all seeds of plants are edible like seeds of apple or cherries. Edible seeds include cereals, pulses, oil seeds and nuts. They provide us fats.
- c) Pulses: They include legumes such as gram, pea, black gram, green gram, lentil. They provide us proteins.
- d) Vegetables, spices and fruits: They provide us vitamins & minerals. They include apple, mango, cherry, banana, water-melon etc. Vegetables like spinach, leafy vegetables, carrot etc. Spices like chilly, black pepper, fodder crops, oats etc.

Crop Season:

Different crops require different conditions (temperature, moisture, etc.), different photo-periods (duration of sunlight) for their growth and completing life cycle.

The two types of crops seasons are:

- a) **Kharif Season:** These crops grow during rainy season (June to October). E.g., of Kharif crops are black gram, green gram, pigeon pea, rice, paddy, soyabean.
- b) **Rabi Season:** These crops are grown during November to April. Rabi crops are known as winter crops. E.g., wheat, gram, peas, mustard, linseed etc.

Approaches which enhance the crop yield are as following:

- (i) Crop variety improvement
- (ii) Crop production improvement
- (iii) Crop protection improvement

Crop Variety Improvement

Factors by which variety improvement can be done are:

- Good and healthy seeds
- **Hybridization:** It is the process of crossing between two or more genetically dissimilar plants to produce a new variety with good properties of both the crops.

Properties to be possessed by improved seeds

Or

Factors for which variety improvement in crops is done

- a) Higher yield: To increase the productivity of the crop per acre.
- b) Improved quality: Quality of crop products vary from crop to crop.
- c) Biotic & Abiotic resistances: Crop production reduces due to biotic and abiotic factors. Varieties resistant to these factors can improve crop production.
- d) Wider adaptability: Crops which can grow in different conditions, will help in setting high production.
- e) Desired agronomic traits: Crops which contain desired agronomic traits (height, branching, leaves), sets high production.

Crop Production Improvement

It involves different practices carried out by farmers to achieve higher standards of crop production. They are:

- i. Nutrient management
- ii. Irrigation
- iii. Cropping patterns

Nutrient Management:

Like other organisms, plants also require some elements for their growth. These elements are called nutrients.

sources	Nutrients
air	Carbon, oxygen
water	Hydrogen, oxygen
soil	<ol style="list-style-type: none"> i. Macro nutrients - Nitrogen – required by plants in large amount, phosphorus, potassium, calcium, magnesium, sulphure. ii. Micro nutrients - Iron, Mn – required in small amount, boron, Zn, copper, molybdenum, chlorine.

Manure and Fertilizers

To increase the yield, the soil can be enriched by supplying nutrients in the form of manure and fertilizers.

Manure

- It is a source of organic matter.
- It supplies small quantities of nutrient to the soil.
- It is prepared by the decomposition of animal excreta and plant waste.

Various forms of Manures:

- A. **Compost:** The process in which animal excreta (like cow dung), kitchen waste, plant remains, waste food, sewage waste etc. are decomposed in pits is known as composting.
- B. **Vermicompost:** Compost prepared by using earthworms to hasten the process of decomposition of plants and animals refuse is called vermicompost.
- C. **Green manure:** Some plants like sun hemp, guar etc. are grown and after sometime mulched by ploughing in the field. These green plants turn into green manures. They are rich in nitrogen and phosphorus.

Fertilizers:

Fertilizers are prepared in factories. They are made up of chemical substances. They have large amount of nutrients like nitrogen, phosphorus and potassium. Fertilizers are easily absorbed by the plants since they are soluble in water. It is costly.

Difference between Manures and Fertilizers

Manures	Fertilizers
i. These are organic substances.	i. These are inorganic substances.
ii. These are made up of natural substance (decomposition of plant and animal waste).	ii. These are made of chemical substances.
iii. These have less amount of nutrient.	iii. These have less amount of nutrient.
iv. These are cheap and are prepared in rural homes or fields	iv. These are costly and are prepared in factories.
v. Manures are slowly absorbed by the plants since they are insoluble in water.	v. Fertilizers are easily absorbed by the plants since they are soluble in water.
vi. It is difficult to store and transport.	vi. Their storage and transportation are easy.

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