

BIOLOGY

CLASS NOTES FOR CBSE

Chapter 05. Improvement in Food Resources

01. Introduction

There is a need to introduce production efficiency of crops and livestock because

- (i) Rapid increase in population
- (ii) No major scope of increasing area of land under cultivation.

Increase in food production without degrading out environments and disturbing the ecological balance i.e. Sustainable Practices are required in agriculture and animal husbandry.

02. Types of Crops

Cereals : Wheat, rice, maize and sorghum. Provide carbohydrates for energy requirements.

Pulses : Pea, gram, black gram, green gram, pigeon pea and lentil. Provide proteins

Oilseeds : Soya bean, ground nut, sesame, castor, mustard, linseed

Sun Flower : Provide necessary fats.

Vegetables, spices and fruits provide vitamins and minerals.

Different crop require different climatic conditions, temperature and photoperiods for their growth and completion of life cycle. Crops which grown in rainy season are called kharif crops and those which grown in winter season are called rabi crops.

Kharif crops: paddy, soya bean, pigeon pea, cotton, green gram etc.

Rabi crops: wheat, gram, peas, mustard, linseed etc.

Difference between kharif and rabi crops

| Kharif Crop | Rabi Crop |
|---|--|
| <ul style="list-style-type: none">• Sown in the months of june-july. | <ul style="list-style-type: none">• Sown in the months of October-November. |
| <ul style="list-style-type: none">• Crops grow in hot and wet conditions | <ul style="list-style-type: none">• Crops grow in cold and dry conditions. |
| <ul style="list-style-type: none">• Crops are harvested during September-October. | <ul style="list-style-type: none">• 1Crops are harvested during march-april. |

03. Improving Crop Yield

The practices involved in farming are divided into three stages. They are

- (a) Choice of seeds for planting
- (b) Nurturing of the crop plants
- (c) Protection of the growing and harvested crops from loss.



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Hence the major activities for improving crop yields can be classified as

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

Crop Variety Improvement :

This approach depends on finding a crop that can give a good yield. Some of the factors for which variety improvement is done are:

Higher Yield : For increasing the productivity per acre.

Improved Quality : Quality considerations vary from crop to crop as per the requirements.

Biotic and Abiotic Resistance : crops should have sufficient resistance to biotic factors (diseases, insects and nematodes) and abiotic stresses (heat, cold, frost etc.)

Change in Maturity Duration : the shorter the duration, the more economical is the variety.

Wider Adaptability : it can be grown in different climatic conditions.

Desirable Agronomic Characteristics : tallness and profuse branching for fodder crops. Dwarfness is desired for cereals.

This can be achieved by two methods; hybridisation and genetically modified crops.

- (i) **Hybridisation :** In genetics, hybridisation is the process of combining different varieties or species of organisms which are genetically dissimilar to create a hybrid. It can be inter varietal, inter specific, intergeneric.
- (ii) **Genetically Modified Crops :** Here the crop is improved by introducing a gene that would provide desired characteristics.

Crop Production :

It involves different practices carried out by farmer to achieve higher standards of crop production.

It includes the following :

- (i) Nutrient Management (Manure, Fertilizers and Organic Farming)
- (ii) Irrigation
- (iii) Cropping Pattern

Nutrient Management :

There are 16 nutrients which are essential for plants as deficiency of these nutrients will affect the physiological processes of plants such as growth, reproduction etc. Out of these nutrients 13 nutrients are supplied by soil; oxygen and carbon by air; hydrogen by water. Out of 13 nutrients 6 are classified as macronutrients and rest as micronutrients.

Micronutrients : They are needed in only very small (micro) quantities. They are also called as minor elements or trace elements. These include elements like boron, zinc etc.

Macronutrients : They are required by plants in relatively large amounts. The major macronutrients are nitrogen (N), phosphorous (P), potassium (K), Calcium (Ca), magnesium (Mg), and sulfur (S).



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