

IMPROVEMENT IN FOOD RESOURCES



Human beings major food resource



The resources are not sufficient for growing population.

Need of improvement

15.1 Improvement in Crop Yields

Grains. Necessary fats, proteins. Vitamin and minerals

Cereals such as wheat, rice, maize, millets and sorghum provide us carbohydrate for energy requirement.

Plant's basic requirement:

↑ Sunlight, water, air, nutrients etc.

Rain ↓
Monsoon → Rain ↑
Diff. plants

Sunlight ↑ Flower ↑
Sunlight ↓ Vegetative growth ↑

Different crops require different climatic conditions, temperature and photoperiods for their growth and completion of their life cycle. Photoperiods are related to the duration of sunlight. Growth of plants and flowering are dependent on sunlight. As we all know, plants manufacture their food in sunlight by the process of photosynthesis. There are some

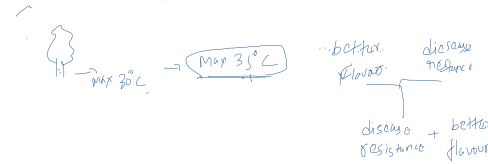
Kharif Season → Rainy season → June to October
ex - Rice, Soyabean, Sugarcane etc.

Rabi Season → winter season → Nov to April
ex - Wheat, Potato, Mustard etc.

Basic and advanced crop groups. Thus, the major groups of activities for improving crop yields can be classified as:

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

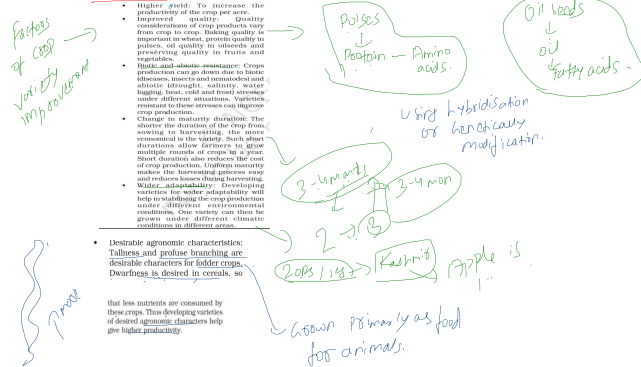
Crop Variety Improvement



varieties is by hybridisation. Hybridisation refers to crossing between genetically dissimilar plants. This crossing may be intervarietal (between different varieties), interspecific (between two different species of the same genus) or intergeneric (between different genera). Another way of improving

intervarietal → Wheat + Rice
interspecific → Mango → Diff species → 40% same species diff
intgeneric → Male → (Male donkey + Female horse) → 2 Genus diff species different

→ Another way of improving the crop is by introducing a gene that would provide the desired characteristics.



- Higher yield: To increase the productivity of the crop per acre.
- Improved quality: Quality consideration of crop products are very important in wheat, protein quality in pulses, oil quality in oilseeds and preserving quality in fruits and vegetables.
- High-drought tolerance: Crop production can go down due to insect diseases, insects and nematodes and abiotic drought, salinity, water logging, frost, cold and flood stresses under different situations. Varieties resistant to these stresses can improve crop production.
- Change in maturity duration: The shorter the duration of the crop from sowing to harvesting, the more economical is the variety. Such shorter durations allow farmers to grow multiple rounds of crops in a year. Short duration also reduces the cost of crop production. Earlier maturity makes the harvesting process easy and reduces losses during harvesting.
- Market adaptability: Developing varieties for water adaptability will help in widening the crop production under different environmental conditions. One variety can then be grown under different climatic conditions in different areas.

- Desirable agronomic characteristics: Tallness and profuse branching are desirable characters for fodder crops. Dwarfiness is desired in cereals, so

that less nutrients are consumed by these crops. Thus developing varieties of desired agronomic characters help give higher productivity.