Plants
↑
Herbivores ← Carnivores

Human beings major food resource → Plants, Animals

The resources are not sufficient for growing population.

Need of improvement

15.1 Improvement in Crop Yields

Carbs, Necessary fats, proteins, vitamins 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.

Rajasthan → Rain ↓ ; Meghalaya → Rain ↑ — Diff plants

Sunlight ↑ — Flowers ↑
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.

~~Harvested crop from loss~~. 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

max 30°C → Max 35°C; better flavour; disease resistance → disease resistance + better flavour

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 → Genus same, species diff
intergeneric → Mule → (Male donkey + Female horse) — Genus diff, species different

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

Factors of crop variety improvement

- Higher yield: To increase the productivity of the crop per acre.
- Improved quality: Quality considerations of crop products vary from crop to crop. Baking quality is important in wheat, protein quality in pulses, oil quality in oilseeds and preserving quality in fruits and vegetables.
- Biotic and abiotic resistance: Crops production can go down due to biotic (diseases, insects and nematodes) and abiotic (drought, salinity, water logging, heat, cold and frost) 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 short durations allow farmers to grow multiple rounds of crops in a year. Short duration also reduces the cost of crop production. Uniform maturity makes the harvesting process easy and reduces losses during harvesting.
- Wider adaptability: Developing varieties for wider adaptability will help in stabilising the crop production under different environmental conditions. One variety can then be grown under different climatic conditions in different areas.

Pulses → Protein — Amino acids. Oil seeds → oil → Fatty acids.

Using hybridisation or genetically modification.

3-4 months, 3-4 mon; 2 → 3; 20°s / 14° → Kashmir — Apple is ...

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

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

Grown primarily as food for animals.

root