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# FACULTY OF AGRICULTURAL SCIENCES AND ALLIED INDUSTRIES


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## GPB 321, CROP IMPROVEMENT II (RABI CROPS)

# Objectives of Plant Breeding

The prime aim of plant breeding is to improve the characteristics of plants that they become more useful automatically and economically. Some of the objectives may be summarized as follows.

1. Higher Yield: Higher yield of grain, fodder, fibre, sugar, oil etc. developing hybrid varieties of Jawar, Maize, Bajara, etc.

2. Improved Quality: The quality characters may vary from one crop to another such as grain size, shape, colour, milling and backing quality of wheat, cooks quality in rice, malting in barley. Size shape and flavour in fruits and keeping quality of vegetables, protein contents in legumes, methionine and tryptophan contents in pulses etc.

3. Disease and Pest Resistance: Resistant varieties offer the cheapest and most convenient method of disease and pest control. They not only helps to increase the production but also stabilize the productivity e.g. Rust resistance in wheat.

4. Maturity Duration: It permits new crop rotation and extends crop area. Thus breeding for early maturing varieties suitable for different dates of planting. This enables the farmer to take two-three crops in a year.

5. Agronomic Characters: Three includes the characters such as dwarf, profuse tillering, branching erect resistance and fertilizer responsiveness.

6. Photo and Thermo Insensitivity: Development of photo and thermo insensitive varieties in rice and wheat will permit to extend their cultivation to new areas. E.g Cultivation of wheat in Kerala and West Bengal, Cultivation of rice in Punjab and Himachal Pradesh.

7. Synchronous Maturity: It is desirable in crops like mung (Vigna radiata) where several pickings are necessary.

8. Non-Shattering Characteristics: E.g. Mung, Black Gram, Horse Gram, etc.

9. Determinate Growth Habit: It is desirable in mung, pigeon pea and cotton, etc.

10. Dormancy: In some crops, seeds germinate even before harvesting if there are rains at the time of maturity. E.g Mung, barley, etc. A period of dormancy in such cases would check the loss due to germination while in other cases it may be removed it.

11. Varieties for a New Season: Breeding crops suitable for seasons. E.g Maize (Kharif) which is grown in Rabi and summer also.

12. Moisture Stress and Salt Tolerance: Development of varieties for a rainfed area and saline soils would help to increase crop production in India.

13. Elimination of Toxic Substance: It will help to make them safe for consumption E.g Khesari ( Lathyrus sativus) seeds have a neurotoxin causing paralysis.

14. Wider Adaptability: It helps in stabilizing the crop production over region and seasons.

15. Useful for Mechanical Cultivation: The variety developed should give response to application of fertilizers, manures and irrigation, suitable for mechanical cultivation etc.