



Mass Selection

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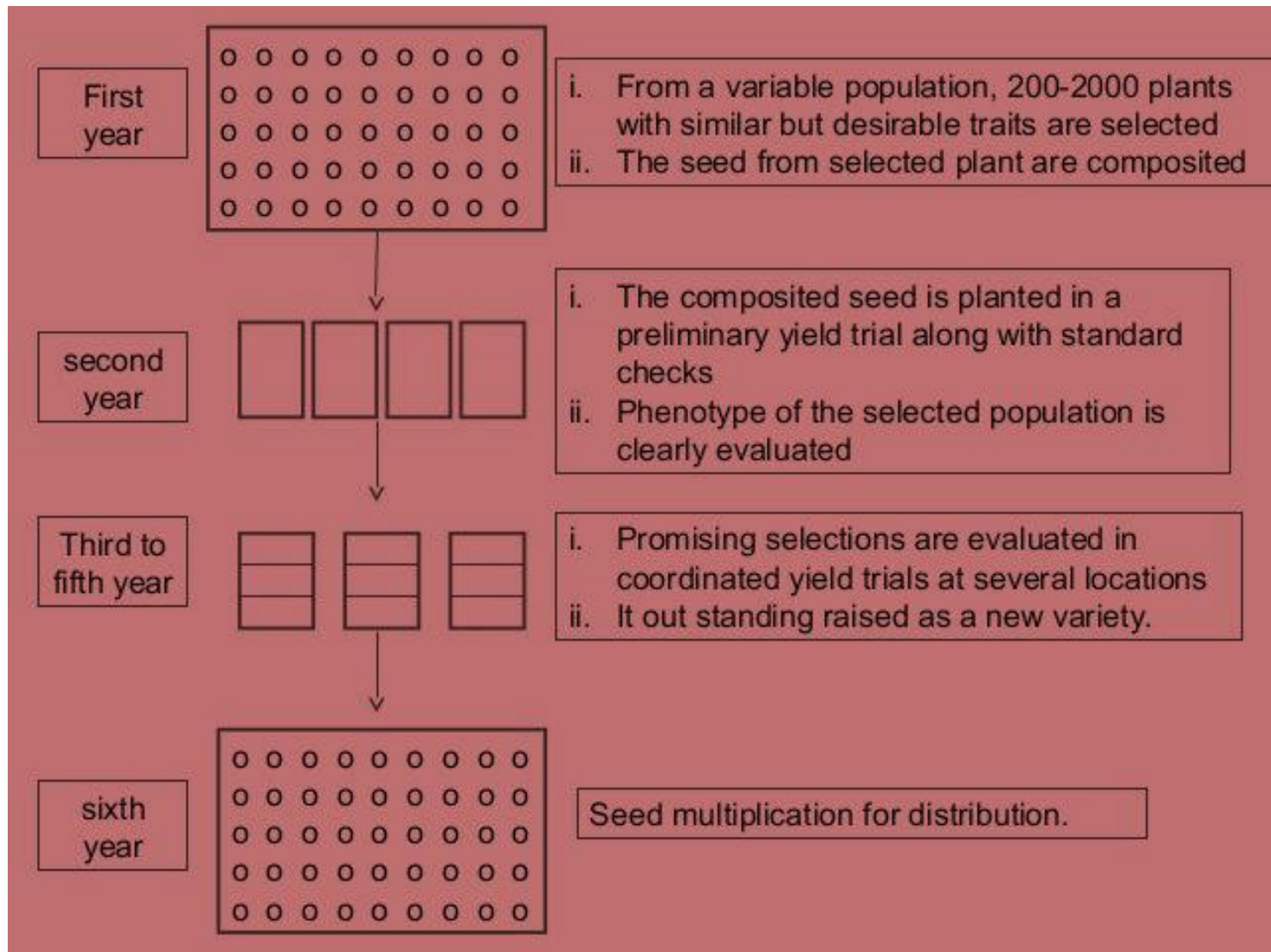
Mass selection

- Also known as *phenotypic selection* since its based on how each individual looks.
- *Simplest and oldest method.*
- Seeds are collected from phenotypically superior individuals from a population, seed is mixed and sown in the next generation.
- Employed to improve conventional varieties, i.e. those that have been passed from one generation of the cultivator to the next over wide time scale.

- A complementary method is to destroy the undesirable plants present in the field.
- Net Result: Phenotypically superior plants that look alike are preserved and inferior genotypes are eliminated.
- Genetic stock of these superior plants become the germplasm for the next season.

Steps in Mass selection

- Selection of base population.
- Selection of desirable plants from the base population.
- Mixing their seeds to raise next generation.
- Evaluation in field trials.
- Releasing as a new variety.



Mass selection

Different Methods of Mass selection

- **Hallets Mass selection 1869:-**

- In this case, the plants are raised in the most optimum environment and best performing plants from that population are selected.
- These selected plants are bulked and advanced for next generation.

- **Rimpai's (1867):-**

- Here the plants are grown either in the normal conditions or in stress conditions or in an unfavourable environment and from these stress conditions plants with desirable economic characters are selected and bulked for next generation.

- **Fanned method:-**

- The seeds are blown with wind and heavy seeds will be collected and raised in next generation.

S.No.	Particulars	Positive Mass Selection	Negative Mass Selection
1.	Selection Procedure	Selection of True to the type plants	Removal of off type plant
2.	Basis of Selection	Phenotype	Phenotype
3.	Progeny test	No conducted	Not conducted
4.	Applicable to	Both self and cross pollinated species	Pollinated species
5.	Genetic diversity	Retained	Retained
6.	Category of seed used	Nucleus/breeder seed	Nucleus/breeder seed
7.	Plants retained and bulked	Selected plants only	All plants after roguing.

Advantages and Disadvantages of Mass Selection

Advantages of Mass Selection

Merits of mass selection method of plant breeding are as given below:

- Varieties developed by mass selection have wide adaptability, broad genetic base and show great stability.
- Rapid, simple and cheapest method of plant-breeding.
- Retains considerable genetic variability.
- Of use for the improvement of land races.

Disadvantages of Mass Selection

- Variation exists in variety developed by mass selection. Phenotype of these varieties is not as uniform as pure line varieties.
- To test the homozygosity of plants progeny test is always required, as without progeny testing selected types will show segregation in next generation.
- Less improvement as compared to pure line selection.
- Limited use in improvement of self fertilizing crops.
- Varieties difficult to identify in seed certification program than pure lines.

- Only effective for traits displaying high heritability.
- Only those varieties that exhibit genetic variation can be improved by this method, as it utilizes the existing variability present in population.

Achievements of Mass Selection

- Bajra : Babapuri, Jamnagar giant, Pusa moti.
- Yellow Sarson : T-42, T-16.
- Brown Sarson : 17 dwarf, 17 medium, DS-1, DS-2.
- Maize : T-14, 19, Jaunpuri.
- Desi cotton : C-402, C-520.
- American cotton : 100F, 216F
- Castor : B-1, B-4.

Thank you