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Method of Plant Breeding in Self Pollinated Plants

Single Seed Descent Method

Single Seed Descent Method: Single seed descent method is the modification of bulk method of breeding. But the modification is in such a way that it allows the equal survival of a segregates.

- The idea of this method was first suggested by Goulden (1941) and subsequently modified by Brim (1960).
- General principles involved in this method is that, only one (single) seed collected from each of the F₂ plants (10000 to 20000) and then bulked to grow the next (F₃) generation.
- Similar practised is continued till F₅ or F₆ generation, when the plant would become nearly homozygous.
- In F₅ and F₆ generation, when individual's plants are selected and harvested separately. Their progenies are also grown separately in next generation.
- Selection is done among the programme ad promising one is select to conduct replicated yield trails and quality test conducted in F₇- F₈ generation and coordinated yield trial in F₉- F₁₀ generation.

Breeding Procedure:

In this method, only one seed is selected randomly from each plant n F₂ and subsequent generations. The selected seed is bulked and is used to grow the newts generation. This process is continue upto F₅ generation. By this time desired level of homozygosity is achieved. In F₆, large number of single plant, 200-500 are selected and their progeny are grown separately. In F₇ and F₈, selections are practised between progeny and superior progeny and are isolated based on preliminary replicated trial. The superior progenies are then tested in multiplication trails and the best progeny is identified for release. The main objectives of single seed descent method is to rapidly advantage the generation of crosses and at the end of method a random sample of homozygous genotype is obtained.

Advantages:

1. Single seed descent method advantages the generations with possible speed in a conventional breeding method.
2. It requires very little space, effects and labours.
3. It makes the best use of green house and offseason nursery, facilitates because in that two to three generations can be raised in each year.
4. It ensures that the plants retained at the end population are random sample from F2 population.

Disadvantages:

1. It does not permit any form of selection in natural or artificial.
2. In each successive generation the population size between progressive smaller due to poor germination.