

## MASS SELECTION

It is the earliest method of selection. Man has always practiced mass selection consciously or unconsciously from the time of domestication. In its most basic form mass selection consists of selecting individuals on the basis of phenotypic superiority and mixing the seeds for using as planting material for next season.

### Procedure for evolving variety by mass selection

**First year :** Large number of phenotypically similar plants having desirable characters are selected. The number may vary from few hundred to few thousand. The seeds from the selected plants are composited to raise the next generation.

**Second year :** composited seed planted in a preliminary field trial along with standard checks. The variety from which the selection was made should also be included as check. Phenotypic characteristics of the variety are critically examined and evaluated.

**Third to sixth year :** The variety is evaluated in coordinated yield trials at several locations. It is evaluated in an initial evaluation (IET) trial for one year. If found superior it is promoted to main yield trials for 2 or 3 years.

**Seventh year :** if the variety is proved superior in main yield trials it is multiplied and released after giving a suitable name.

### Schematic representation of mass selection in self-pollinated crops:



FIRST  
YEAR

(a) From a variable population, 200-2000 plants are selected with similar and desirable traits.

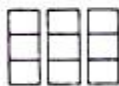
(b) Harvested seeds are mixed together.



SECOND  
YEAR

(c) The mixed seeds (composite) are planted along with standard checks and preliminary yield trial is done.

(d) Phenotype of the selected population is critically evaluated.



THIRD TO  
SIXTH YEAR

(e) Promising selections are evaluated in co-ordinated yield trial in several locations.



SEVENTH  
YEAR

(f) If the performance is satisfactory in each location then may be released as new variety.

(g) Seeds are multiplied for distribution.

### Modification of mass selection

Mass selection is used for improving a local variety. Large number of plants are selected (I year) and individual plant progenies are raised (II year). Inferior, segregating

progenies are reflected. Uniform, superior rows are selected and the seed is bulked. Preliminary yield trials are conducted in third year. Fourth to seventh year multilocation tests are conducted and seed is multiplied in eighth year and distributed in ninth year. Many other modifications also are followed depending on the availability of time and purpose for which it is used.

#### **Merits of Mass selection :**

1. Can be practiced both in self and cross pollinated crops
2. The varieties developed through mass selection are more widely adopted than pure lines.
3. It retains considerable variability and hence further improvement is possible in future by selection
4. Helps in preservation of land races
5. Useful for purification of pureline varieties
6. Improvement of characters governed by few genes with high heritability is possible.
7. Less time consuming and less expensive.

#### ***Demerits of mass selection***

1. Varieties are not uniform
2. Since no progeny test is done, the genotype of the selected plant is not known
3. Since selection is based on phenotype and no control over pollination the improvement brought about is not permanent. Hence, the process of mass selection has to be repeated not and then.
4. Characters which are governed by large number of genes with low heritability can not be improved.
5. It can not create any new genotype but utilizes existing genetic variability.

#### **Achievements**

Mass selection must have been used by pre historic man to develop present day cultivated cross from their wild parents. It was also used extensively before pureline selection came into existence.

Cotton : Dharwad American Cotton

Groundnut : TMV-1 & TMV-2

Bajra : pusa moti, Baja puri, Jamnagar gaint, AF3

Sorghum : R.S. 1

Rice : SLO 13, MTU