

# HYBRIDIZATION TECHNIQUE

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There are seven steps involved in [hybridization](#).

## Choice of parents

- It mainly depends upon the objective of breeding programme. In addition to other [objectives](#), increased yield is always an objective for the breeder.

## Evaluation of parents

- If the performance of parents used for breeding is known, evaluation is not necessary. But if their performance is not known, it should be evaluated, particularly for the characters to which they are expected to contribute.

## Emasculation

- The removal of the stamens or anthers or the killing of pollen grains of a flower without disturbing the female reproductive organs is known as emasculation. The purpose of emasculation is to prevent self fertilization

in the flowers of female parent.

### Type of emasculation

4. Hand emasculation
5. Suction emasculation
6. Hot water emasculation
7. Alcohol treatment
8. Cold treatment
9. Genetic emasculation e.g. [male sterility](#)

### Bagging

- o Immediately after emasculation, the flowers of the inflorescence are closed in suitable bags of appropriate size to prevent random cross pollination.

### Tagging

Emasculated flowers are tagged just after bagging. The following information is recorded on the tags with a carbon pencil:

- o Date of emasculation
- o Date of pollination

- o Name of the female and male parents. The name of female parent written first, and then the male parent

## Pollination

- o Pollination refers to transferring the mature and fertile pollen from the male parent to the stigma of the female parent. This is done with the help of brush delicately with out disturbing the stigma and female flower.
- o The pollinated flower is enclosed in a butter –paper bag or muslin cloth bag to avoid contamination from outside pollen and labeled. Few days after pollination, when the fruitset is conspicuous, the bag is removed. The seeds extracted from such crossed fruits are the F0 seeds to raise F1 or hybrid plants.

## Selection procedures with hybridization

- o Two selection procedures are commonly followed after hybridization to isolate the desirable genotypes from the segregating progeny
- o **The pedigree method:** This is widely followed by the plant breeders now, who maintain a detailed record of relationships between the selected plants and their progenies. It consists of the selection of individuals plants with the desired combination of characters in the F2 generation and reselection of the progenies of each selected F2 plant in succeeding

generations until genetic purity is reached.

- o **The bulk method:** This method differs from the pedigree method in that the [hybrids](#) are grown in bulk till the F5 or F6 generation. Desirable individual plants are selected only in the F5 or F6 generation and these are then carried forward as families, which are evaluated in the same way as in the case of pedigree method.