

## 9. Demonstration of hybridization technique.

Date :     /     /

### Introduction :

Hybridization is one of the methods of crop improvement undertaken to combine the desired, useful characteristics from two different pure varieties of plants species, selected as male and female parents. The technique involves following steps

#### a. Collection of pollen grains (Anthesis):

Pollen grains from flower of selected male parent are collected in sterile paper bags and are stored in clean and dry vials at cool place. Collection is done in the early hours of morning. Day, date and time of Anthesis is recorded.

#### b. Emasculation :

It is the removal of young anthers of the stamens in the plant selected as female parent, having bisexual flowers, well before anthesis i.e formation of pollen grains. The bisexual flower of a female parent is emasculated. Buds are opened and stamens are removed mechanically by forceps or by giving hot water treatment. Emasculation is done to prevent self pollination. Emasculation is done in the early hours of morning. Day, date and time of emasculation is recorded.

#### c. Crossing :

Pollen grains are dusted on the mature stigma of emasculated flower by opening the bag temporarily. It can also be done by brushing the pollens or pollen grains from the male parents directly on stigma of emasculated flower. Date of crossing is recorded on the tag.

#### d. Bagging and Tagging :

Emasculated flowers are then bagged in polythene bags or sterile paper bags to prevent pollination by foreign pollens. This is called as bagging. A 'tag' is tied to the bag. The tag carries brief information about the names of selected parent varieties and the day, date and time of anthesis, emasculation and actual crossing.

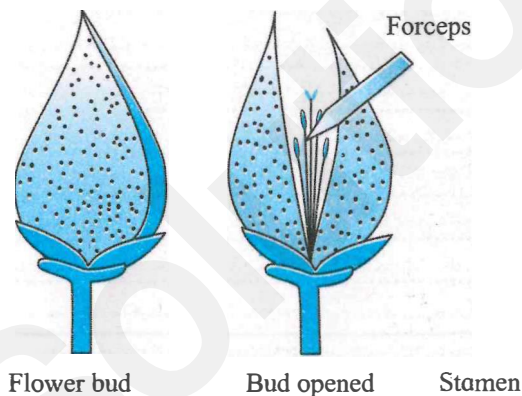


Fig. Emasculation

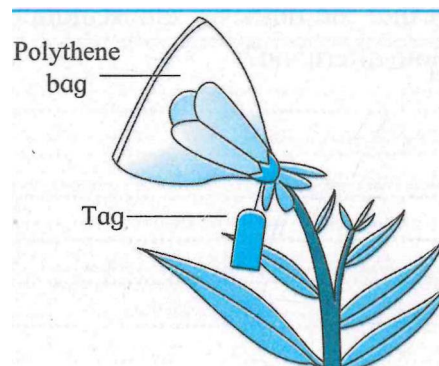


Fig. Bagging and tagging

## Questions

1. What is emasculation ?

Removal of anther before formation of pollen grain.

2. Enlist different methods of crop improvement.

Plant Introduction  
Selection  
Hybridization  
Mutation Breeding  
Polyploidy  
Tissue Culture  
Genetic Engineering.

3. What is hybridization ?

In reproductive biology for instance, hybridization refers to the process of producing offsprings by mating two parents from different varieties or species.

4. What is the purpose of bagging the emasculated flower prior to artificial pollination and after artificial pollination?

Bagging is done to prevent contamination of the stigma of the emasculated flower with any other unwanted pollen grains.

5. Why is it that the anthesis, emasculation and actual crossing are preferably done early in morning or late afternoon?

Practices of artificial pollination are generally performed early in the morning or late afternoon as at these times, flowers are generally open.

Remark and Signature of Teacher .....