

Plant Breeding and disease

Resistant Plants.

1. 'Hybridisation is a modern breeding method for the development of crop plants with desired characters as well as hybrid vigour.' Justify this statement by describing various steps of hybridisation procedure in plants.

(1+3=4 marks) (2019)

Steps involved in process of hybridization:

i. Selection:

- First step of hybridization in which the plants to be used

as parents are selected.

- Parental plants are selected on the basis of following characters:

a. Plant must have a large number of desired characters.

b. Plant must be healthy.

c. Plant must be homozygous or pure for a particular character.

ii) Emasculation:

- Process of removal of stamens from the female parent before they burst and shed their pollens.

- Done to prevent self-pollination.

iii) Bagging:

- To prevent the foreign grains to come in contact with stigma, flowers of female parents are enclosed by plastic bag.

iv) Crossing/ Pollination:

- When stigma of emasculated flower is mature, plastic bag is temporarily removed and pollen grains are carefully brought from the male plant.

- Pollen grains are dusted on the stigma.

- Pollinated flowers are properly tagged, labelled and bagged.

i) Harvesting hybrid seeds and raising plants:

- After maturation of crossed plants, hybrid seeds are collected and these seeds are sown for production of F_2 seeds.

ii) Trial, multiplication and distribution:

- Hybrid seeds are subjected to testing by scientists at different regional research stations.

- Tested for yield and resistance to disease.

- Continued till the desired combination becomes homozygous and true breeding types

are obtained.

- Seeds are multiplied in the farms and distributed to farmers for regular cultivation.