FACULTY OF ENGINEERING & TECHNOLOGY
DEPARTMENT OF BIOTECHNOLOGY

Back Cross and Test Cross

Back cross :

•A cross between F1 individuals with any one of its parents is called back cross.

•In a cross between homozygous tall pea plant (TT) and dwarf pea plant tt, F1 generation shows all hybrid tall (Tt)

• When this Heterozygous tall crossed with its dominant parent is called dominant back cross

Significance of back cross :

- i. It is used to obtain pure lines.

- ii. It is used to determine the genotypes of plants whether they are homozygous or heterozygous including parents and F1 individual.

- iii. It is easier and rapid method of crop improvement.

- iv. It explains the law of segregation and independent assortment.

- v. Desirable characters are introduced by successive back crossing.

Test cross :

• A cross between F1 offspring and its homozygous recessive parent in called a test cross

The result of a F2 generation shows 50% tall and 50% dwarf plants in ratio 1 : 1.

Significance of test cross :

• i. The test cross is a great significance in determining the genetic constitution of an organism.

• ii. The test cross an easier and rapid method for obtaining desirable character in homozygous condition.

• iii. The test cross is very useful to breeders and geneticists.

• iv. It helps in determining the genetic constitution of an organism. • Explain the statement test cross is a back cross but back cross is not necessarily a test cross.

Ans. • i. The cross between F1 hybrid and homozygous tall plant is also a back cross (as it is with one of the parent) but this will produce all tall (unlike the result of test cross) plants. • ii. Hence back cross is not necessarily a test cross.