

Breeding and biotechnology Points to Remember

- ❖ Crop improvement is the development of improved crop varieties possessing higher yield, better quality, resistance to diseases and shorter duration.
- ❖ When breeding takes place between animals of the same breed, it is called inbreeding. The cross between different breeds is called out breeding.
- ❖ The superiority of the hybrid obtained by cross breeding is called as heterosis or hybrid vigour.
- ❖ Genetic engineering is the manipulation and transfer of genes from one organism to another organism.
- ❖ Stem cells are undifferentiated or unspecialised mass of cells and can be used for the treatment known as stem cell therapy.
- ❖ Genetically Modified Plants and Animals

Genetically Modified Plants

Objective	Gene inserted	Achievement
Improved nutritional quality in Rice	Beta carotene gene (In humans, Beta carotene is required for the synthesis of Vitamin A)	Golden Rice (Genetically modified rice can produce beta carotene, that can prevent Vitamin A deficiency)
Increased crop production	Bt gene from bacteria <i>Bacillus thuringiensis</i> . (Bt gene produces a protein that is toxic to insects)	Insect resistant plants (These plants can produce the toxin protein that kills the insects which attack them)

Genetically Modified Animals

Objective	Gene inserted	Achievement
Improved wool quality and production	Genes for synthesis of amino acid, cysteine	Transgenic sheep (gene expressed)
Increased growth in fishes	Salmon or Rainbow trout or Tilapia growth hormone gene	Transgenic fish (gene expressed)