

**CORE COURSE X - PLANT BIOTECHNOLOGY**

**UNIT -I**

Conventional methods of crop improvement- Selection, mutation, polyploidy and clonal selection; Plant tissue culture- Callus culture, organogenesis, meristem culture, anther, pollen, embryo culture and their applications. Somatic hybridization Somatic embryogenesis, cybrids.

**UNIT -II**

Plant genome organization. Organisation of chloroplast genome, organization of mitochondrial genome, cytoplasmic male sterility. Genomic interaction – Protoplasmic fusion.

**UNIT -III**

Genetic engineering in plants, Genetic engineering of plants for pest resistance, Herbicide resistance. Resistance to fungi and Bacteria, Delay of fruit ripening. Regulation of gene expression in plant development. Plant hormones and phytohormone. Seed storage proteins.

**UNIT- IV**

Molecular Biology of plant – pathogen interactions (an overview) - Importance of RFLP in plant Breeding.- Ti plasmid vectors for plant transformation,. Classification of plant viruses- management aspects of plant genetic engineering- tagging and cloning of plant genes.

**UNIT -V**

Biochemistry and molecular biology of Nitrogen fixation in legumes by Rhizobium. Molecular biology of plant stress response (abiotic). Agrobacterium and crown gall tumour. Synthetic seed.

**REFERENCES:**

1. Grierson, D., and S.N. Covey. 1988. Plant Molecular Biology. Blackie & Sons. Ltd. Glasgow.
2. Lycett, G.W. and D. Grierson (Eds) .1990. Genetic Engineering of Crop Plants. Heinemann, London.
3. Chrispeeds, M.J. and D.F. Sadava .1994. Plants, Genes and Agriculture.. Jones and Bartlett, Boston.
4. Mantel. S. H, Mathews. J. A, Mickee. R.A. 1985. An Introduction to Genetic Engineering in Plants. Blackwell Scientific Publishers, London.
5. Marks. J.L. (Ed.). 1989. A Revolution on Biotechnology. Cambridge Univ. Press, Cambridge.
6. Dodds J.H. 1985. Plant Genetic Engineering. Cambridge Univ. Press, Cambridge.
7. Bernard R Glick. and J.J. Pasternak. 2002. Molecular biotechnology, Principle and Applications of Recombinant DNA. ASM Press, Washington, D.C.

9. Monica A. Hughes. 1996. *Plant Molecular Genetics*. Addison Wesley Longman, Harlow, England.