

# AMB19 PLANT BIOLOGY

## UNIT-1 INTRODUCTION

Definition, Classical vs modern approach

## UNIT-2 PRODUCTION OF DISEASE FREE PLANTS

Explant, shoot tip culture, shoot tip grafting, viricidal compounds

## UNIT-3 MICROPROPAGATION

Basic technique, Automation in the area scope as a commercial venture.

## UNIT-4 TISSUE CULTURE AS SOME OF GENETIC VARIABILITY

Somaclonal and gametoclonal variation, Selection, Sources and causes of variation, Application in crop improvement.

## UNIT-5 PROTOPLAST RELATED TECHNIQUES

Protoplast, Isolation, Culture and fusion, Selection of hybrid cells, regeneration of hybrid plants, somatic hybridization and cybridization, Applications in crop improvement.

## UNIT-6 PLANT AS BIOFATORIES

Concept, Production of Chemicals, Pigments, Perfume, Flavors, Insecticides, anticancer agents and other important compounds.

## UNIT-7 TRANSFORMATION TECHNIQUES

Physical methods, Agro bacterium, Mediated transformation

## UNIT-8 TRANSGENICS

Basic concept and essential steps of the process, Some examples of transgenic plants, Use of suitable promoters, Gene silencing and measures to overcome it, Commercial aspects of the technology.

## UNIT-9 NITROGEN FIXATION

Basic concepts, nif genes and their regulation, potential scope in crop improvement

## UNIT-10 TRANSFORMATION OF ORGANELLES

Methods and success, advantages of organelle transformation.

## UNIT-11 MOLECULAR MARKERS

Concept, SNPs, RAPD, RFLP, ISSR, STMS, role in crop improvement and genome mapping.

### Reference Book:

1. Plant Tissue Culture: Applications and Limitations. S.S. Bhojwani (1990), Elsevier, Amsterdam.