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# 19BT334 PLANT TISSUE CULTURE

## UNIT - I

**INTRODUCTION TO PLANT TISSUE CULTURE:** introduction to plant tissue culture- terms and definitions, historical background, laboratory organization, tools and techniques, methods of sterilization; laboratory contaminants- their control and measures; micropropagation- micropropagation and its applications, types, stages, establishment of propagated plants, micropropagation for large scale multiplication of crop plants, forest trees, medicinal plants and ornamentals.

## UNIT-II

**MEDIA AND CULTURE PREPARATION:** Role of micro and macro nutrients, vitamins and carbon source in tissue culture; Media preparation pH, temperature, solidifying agents and slant preparations, etc. Maintenance of cultures, environmental conditions and explants characteristics.

## UNIT - III

**CULTURE TECHNIQUES:** Explants selection, sterilization, and inoculation; Various media preparations- MS, B5, SH and PC-L2; Callus and cell suspension culture; Hardening- hardening stages, the role of polyhouse, net house, compost, chemical fertilizer, cocopit and soil in hardening.

## UNIT - IV

**ACCLIMATIZATION:** Role of ovary and ovule in *in vitro* fertilization in production of agricultural and horticultural crops; Techniques and significance of androgenesis and gynogenesis (ovary, ovule, egg and synergids culture); Propagation of commercial crops by tissue culture techniques such as banana, sugarcane, papaya, mango, some medicinal and aromatic plants.

## UNIT - V

**MICROPROPAGATION AND GERmplasm PRESERVATION:** Induction and growth parameters; Culture initiation, callus culture and micropropagation through various explants (leaf, stem, axillary bud, tuber, corms and bulbils); Floriculture - commercial floriculture, production of cut flowers and home floriculture; Disease and pest control in gardening-fungicides and pesticides; Germplasm preservation- definition, importance and methods, in-situ and ex-situ conservation, centers of germplasm presentation in India.