

Plant Tissue Culture Summary

- ❖ Tissue culture is the in vitro aseptic culture of cells, tissues or organs into whole plants under controlled nutritional and environmental conditions.
- ❖ A German physiologist Gottlieb Haberlandt in 1902 for the first time attempted to culture plant cells in artificial medium, hence he was regarded as father of Tissue culture.
- ❖ Tissue culture mainly based on the concepts totipotency, differentiation, redifferentiation and dedifferentiation.
- ❖ Plant tissue culture technique involves selection of explants, sterilization, media preparation, maintaining culture condition, callus formation, embryogenesis or organogenesis and hardening.
- ❖ Based on the explants chosen the types of tissue culture are organ culture, meristem culture, protoplast culture and cell suspension culture. From the explants, plants can be regenerated by somatic embryogenesis or organogenesis is said to be plant regeneration pathway.
- ❖ Some of the main applications of tissue culture are production of somatic hybrids, artificial seeds, disease resistant and stress resistant plants, germplasm conservation, micropropagation and production of secondary metabolites.

- ❖ Intellectual Property Right (IPR) is primarily aimed at patents, copyrights, trade secret and trademark given to the discoverer / inventor for the commercial production of transformed micro organisms or plants.
- ❖ Biosafety is the prevention mechanism to protect harmful incidents due to biohazards or pathogens. Bioethics dealt with ethical issue emerging from biotechnological advancement.
- ❖ ELSI program addresses issues related to genenomic research. GEAC (Genetic Engineering Appraisal Committee) is a regulatory authority for release of genetically modified products or organisms into the environment.