

Plant Tissue Culture

(In-Vitro culture or sterile culture or Aseptic culture)

DEFINITION:

“Plant tissue culture is a collection of techniques used to maintain or grow plant cells, tissues or organs on a nutrient culture medium of known composition under sterile conditions”

OR

“Plant tissue culture is a method or technique to isolate parts of plants (protoplasm, cells, tissues, and organs) and grow them on artificial media in aseptic conditions in a controlled space so that parts of these plants can grow and develop into complete plants”

ADVANTAGES:

1. Availability of Raw material.
2. To quickly produce mature plants.
3. Easy purification of the compound.
4. The production of exact copies of plants.
5. Disease free and desired propagules in limited space.
6. Crop improvement by somatic hybridization or by production of hybrids.
7. The production of multiples of plants in the absence of seeds or necessary pollinators to produce seeds.
8. Tissue culture can be used for tracing the biosynthetic pathways of secondary metabolites using labeled precursor in the culture medium.
9. PTC can be used for plants preservation by immobilization of cell further facilitating transportation and biotransformation.
10. The regeneration of whole plants from plant cells that have been genetically modified.
11. The production of plants from seeds that otherwise have very low chances of germinating and growing, i.e.: orchids and *Nepenthes*.
12. To clean particular plants of viral and other infections and to quickly multiply these plants as 'cleaned stock' for horticulture and agriculture.