



## Tissue Culture Plants

**For Prelims:** APEDA, DBT, Tissue Culture.

**For Mains:** Tissue Culture Plants and their significance.

### Why in News?

Recently, the Centre through the [Agricultural and Processed Food Products Export Development Authority \(APEDA\)](#) conducted a webinar on “**Export Promotion of Tissue Culture Plants**” such as Foliage, Live Plants, Cut Flowers, and Planting Material” with [Department of Biotechnology \(DBT\)](#) accredited tissue culture laboratories spread across India.

- The aim is to boost exports of tissue culture plants.

### What is Tissue Culture?

- It is the **production of new plants from a small piece of plant tissue or cells** removed from the growing tips of a plant in a suitable growth medium.
- In this process the **growth medium or culture solution is very important** as it is used for growing plant tissue because it contains various plant nutrients in the form of ‘jelly’ known as agar and plant hormones which are necessary for the growth of plants.

### What are the Applications of Plant Tissue Culture?

- To **study the respiration and metabolism** of plants.
- For the **evaluation of organ functions in plants.**
- To **study the various plant diseases** and work out methods-for their elimination.
- **Single cell clones are useful for genetic**, morphological and pathological studies.
- Embryonic cell suspensions can be used for large scale clonal propagation.
- Somatic embryos from cell suspensions can be stored for long term in germplasm banks.
- In the production of **variant clones with new characteristics**, a phenomenon referred to as somaclonal variations.
- **Production of haploids** (with a single set of chromosomes) for improving crops.
- **Mutant cells can be selected from cultures** and used for crop improvement.
- **Immature embryos can be cultured in vitro to produce hybrids**, a process referred to as embryo rescue.

### What is the Scope of Tissue Culture in India?

- India is **bestowed with knowledge, biotech experts with vast tissue culture experience** as well as with a **low-cost labour force** to help produce export-oriented quality planting material.
- All these factors make **India a potential global supplier of an extended and diversified range of quality flora** to the international market and, in turn, earn foreign exchange.
- APEDA is running a **Financial Assistance Scheme (FAS) to help laboratories upgrade**

**themselves** so as to produce export quality tissue culture planting material.

- It also **facilitates exports of tissue culture planting material to diversified countries** through market development, market analysis and promotion and exhibition of tissue culture plants at international exhibitions and by participating in buyer-seller meets at different international forums.
- The **top ten countries importing tissue culture plants from India are:**
  - Netherlands, USA, Italy, Australia, Canada, Japan, Kenya, Senegal, Ethiopia and Nepal.
- In 2020-2021, **India's exports of tissue culture plants stood at USD17.17 million**, with the Netherlands accounting for around 50% of the shipments.

### **What are the Issues Faced by Tissue Culture Exporters in India?**

- Increasing power costs
- Low efficiency levels of the skilled workforce in the laboratories
- Contamination issues in the laboratories
- Cost of transportation of micro-propagated planting material
- Lack of harmonization in the HS code of Indian planting material with other nations
- Objections raised by the forest and quarantine departments

[Source: PIB](#)

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