



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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