# In-Vitro Banana Tissue Culture Propagation

## A rapid quality plantlets delivery technology for banana

In-Vitro Tissue Culture Propagation involves a series of steps including initiation, multiplication, shooting and rooting, and hardening, all performed in controlled, sterile laboratory conditions to produce disease-free banana and plantain plantlets.

Steps of in-vitro tissue culture micro propagation: a) Removal of shoots, b) Separated corm, c) Disinfection and segmentation of corm, d) Transferred to sterile tubes with growth media tubes, e) Culturing in climatized chamber, f and g) Transferred propagules for proliferation of shoots by subculturing in jar, and h) Hunning of plantlets in greenhouse (Credit: B. Dhehy)

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This technology is TAAT1 validated.

8·8 Scaling readiness: idea maturity 8/9; level of use8/9

Inclusion assessment 4

Climate impact 7

## Problem

- Traditional crops were more susceptible to extreme weather conditions, leading to significant crop damage and reduced yields.
- Traditional propagation methods were more susceptible to diseases, resulting in widespread outbreaks
- Natural disasters and disease outbreaks often led to slow recovery in agricultural systems

## Solution

- In vitro micro-propagation eliminates all pests and diseases except for viruses.
- TC plants have the benefits of uniformity and fast propagation of large numbers of plantlets.
- These advantages enable marketing and more rapid recovery from broad-scale damage such as disease outbreak and extreme weather.

## Key points to design your program

This technology addresses the limited availability of quality planting materials by replacing diseased suckers with certified, disease-free tissue culture plantlets. Suitable for food security, agricultural modernization, and climate resilience programmes, it supports **SDGs 1 (No Poverty), 2 (Zero Hunger), 12 (Responsible Consumption and Production), and 13 (Climate Action)** while creating business opportunities for women and youth in nursery management and plantlet distribution. To successfully integrate this technology, consider the following key actions:

- Target banana-growing areas affected by disease pressure and limited access to quality planting materials.
- Establish partnerships with IITA, research institutions, certified laboratories, extension services, and nursery operators to support production, certification, and dissemination of disease-free plantlets.
- Invest in tissue culture laboratories, decentralized nurseries, and technical capacity to strengthen the production and distribution of certified planting materials.
- Combine tissue culture plantlets with improved banana varieties and climate-smart agronomic practices while strengthening certified nursery systems and quality assurance mechanisms to ensure long-term access to healthy planting materials.

**3000 Tissue Culture plantlets**

A nursery business can produce 3,000 TC plantlets per cycle

**IP**

No formal IP rights

Technology from

ProPAS

Commodities

Bananas & plantains

Sustainable Development Goals

2 ZERO HUNGER

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Categories

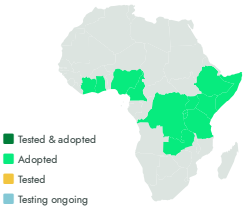
Pre-production, Practices, Pest control (excluding weeds), Yield improvement

Best used with

Improved Varieties of Plantain for Tropical Lowlands, Improved Varieties of Banana for the African Highlands, Propagation of Banana and Plantain Disease-Cleaned Suckers

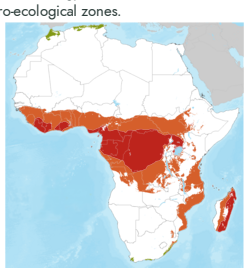
See all 3 technologies online

Tested/adopted in




Where it can be used

This technology can be used in the colored agro-ecological zones.



Target groups