

# Macro-propagation for healthy planting material of banana and plantain

## TECHNOLOGY DESCRIPTION

Farmers depend on natural regeneration of suckers for their planting material. In SSA lack of access to good quality planting material results in low yields, hence the value of banana and plantain macro-propagation technology.

Corms are prepared by sheath removal and thus bud exposure. Thereafter the apical meristem is destroyed. Then corms are incubated in humidity chambers (below). Within 15 days, 8-15 new plants are produced per corm while secondary scarification of newly emerging buds increases this number by a factor of 2-3. A chamber measuring 1m<sup>2</sup> can produce over 1,000 plants per cycle and 3 cycles of production are feasible per year.

## Macro-propagation facility with humidity chamber and plants



## END USERS AND BENEFITS

With raising demand for improved elite pest and disease resistant banana and plantain varieties, macro-propagation provide a tool for rapid multiplication and dissemination of healthy planting material. The technology is low-cost and affordable by even those with limited access to resources such as women; therefore farmers can obtain additional income from the sale of plantlets (approximately USD 0.5 per plant). Plantlets from macro-propagation are uniform (similar to tissue culture plantlets) but survive much better. Macro-propagation is not gender restricted and minimal training is needed.

## SCALING STRATEGY

Important to identify varieties for which planting material is demanded by the market. In depth understanding of economic viability of different options as may differ across locations. Development of business plans to facilitate engagement with financial institutions. Ensure that women and youth are involved alongside men and proper benefit sharing with the household. Early engagement with extension staff can facilitate the spreading of the technology to surrounding communities and neighboring countries. Training of trainers workshop organized and communication materials developed to enhance capacity, skill and knowledge.

## LEVEL OF ADOPTION OR USE

Macro-propagation is promoted by Research institutions, NARS, NGOs and the Private sector. It has been in use since 1990 in over 15 countries as corm fragment and fine-tuned by RTB via meristem drilling and scarification of buds to increase sprouting. In Uganda, the technology has been piloted and validated by the RTB-ENDURE project in partnership with farmers using the PMCA approach. Varieties most demanded have been identified and the technology applied to rapidly propagate planting material. Farmers have also been linked to market and commercial chambers established by farmers to meet the raising demand for healthy planting material. The project has also proved the economic viability of different options (corm, decapitation and enhanced nutrition) and decapitation has resulted in the one with the highest return.

## CRITICAL GAPS AND NEXT STEPS

Macro-propagation requires technical training and a minimum investment to set up propagators and weaning facilities. Healthy suckers from tissue culture/mother garden and/or treatment of suckers to reduce the risks of transmitting diseases is needed. NARS, NGOs, the private sector and financial institutions are key partners for scaling and technology is best promoted for enterprising farmer, cooperatives and farmer/women associations to enable pooling of resources.

## Sprouting of shoots from prepared corm



## KEY PARTNERS FOR SCALING

**IITA and ITC:** Improved and Elite varieties  
**Private sector:** Tissue culture plants  
**IITA, Bioversity and RTB:** Technical backstopping, Training material, M&E  
**NARS and NGOs:** Capacity building and Technology dissemination including Financial institutions