



## Implementing banana macropropagation in Kenya - potential and challenges

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### Abstract

Banana farming can be a highly profitable undertaking if organized and carried out as a business. In addition to providing additional food and income resources, bananas play an important role in stabilizing the environment, protecting soil from erosion, providing habitats for biodiversity, feeding animals and increasing aesthetic appeal of landscapes. In Kenya, the major traditional markets have attracted dessert bananas but cooking varieties are increasingly being sought after. The major constraints to productivity are germplasm of poor quality, pests and diseases, poor soil fertility and agronomic practices, restricted market access and price instability. Another major limiting factor is access to healthy and affordable banana seedlings.

To expand or establish new farms, farmers have traditionally relied on suckers that are harvested from their existing farms. These suckers are not only inadequate but they are also associated with higher risks of pests and disease spread between farms or regions. In the last decade businesses supplying tissue cultured (TC) banana plantlets

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have entered the market in the East African region. Tissue cultured plantlets have the advantage of being disease free, they are of assured genetic purity, and have uniform growth. However, due to the large capital investments required for TC capacity, the plantlets produced are priced above what would be affordable levels for many small-scale farmers. TC plantlets have therefore not spread as widely as desired to reach all who might want to venture into banana farming. In Kenya, the high costs of TC plantlets could partly be linked to low participation of private sector entrepreneurs. Among the key players, one imports the banana seedlings from South Africa while a few others are affiliated with quasi-government research or training institutions. The situation is similar in most African countries.

To address the gap in provision of affordable healthy planting bananas, a cheaper seedling production technology has been introduced in Africa. The pioneering trials and validation of the macropropagation technology have been done largely in Cameroon and Nigeria, and recently spread to other West African countries including Ghana and Ivory Coast, and to Uganda, Rwanda and Tanzania in East Africa. Macropropagation relies on simple cost effective methodology that could be easily implemented with good training and few resources. Since 2007, FaCT Limited (a private company) has been implementing the macropropagation technology on a pilot basis in Kenya. Initial activities have focused on assessing the potential and challenges to implementation as well as to gauge market response. Banana seedlings produced by macropropagation in Kenya have been availed to the market since early 2008 with marketing intensified during the long rain season commencing March 2008.

The uptake of banana seedlings has been high in all locations where the seedlings are sold. Due to the low cost

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involved in production, the seedlings are priced at 40- 50% less than the cost of competing products produced through tissue culture. This price can be easily sustained or even lowered especially if the production nurseries are located near the marketing areas, thus eliminating transportation and other marketing costs. Although there is variation in the types of varieties that farmers would wish to grow, there is evidence that farmers are increasingly valuing bananas as a source of food and income. Women farmers are particularly eager to grow cooking varieties. However, presently, majority of tissue culture seedling providers in Kenya concentrate on dessert varieties.



Figure1: Three-month-old banana suckers produced by macropropagation, hardened and ready for transplanting.

Typically, majority of farmers purchase few seedlings at any one time, a likely indicator of the increasing involvement of small-scale growers in the banana sector. In addition to further opening up access to healthy high quality seedlings,

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macropropagation nurseries, being the point of production or sale of seedlings should also act as an information dissemination point to educate farmers on good agronomic practices, market trends, or new threats. Opportunities for further spread and uptake of this technology could be through training of micro entrepreneurs, NGO technical staff as well as community groups. Groups are an especially important avenue since members could pool resources or jointly access credit to initiate macropropagation activities to produce seedlings for their own farms or for sale.



Figure 2: When suckers are harvested from existing plantation there is a high risk of transferring pests, e.g. weevils (seen in picture) and pathogens. Diseased corms and suckers have low growth rate and may not survive.

To effectively roll out the macropropagation technology, resources will be needed to support training of interested entrepreneurs, community groups etc. Training is not only important to understand the mechanics of the technology but

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also to ensure quality assurance protocols are followed throughout the process. As more farmers engage in banana production, especially of improved and more productive varieties, and using better agronomic practices, it is expected that more produce will be available for markets. To address the anticipated marketing challenges, policies that support expansion of markets as well as value addition to banana products to increase returns need to be developed.



Figure 3: Banana macropropagation structures can be constructed on a low budget using affordable and locally available materials.

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