Community-based multiplication of sweet potato vines and cuttings

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Summary

The availability, access and quality of life sweet potato planting material in rural communities can be enhanced by organizing community-based multiplication of vines and cuttings at medium to large scale. Strong linkages between multipliers and sellers formed under this strategy are further giving rise to more reliable and cost-effective supply of vines and cuttings to farmers. Improving the multiplication of planting material through multi-stakeholder collaboration can offer major gains in the yield and resilience of sweet potato crops, if strategies are properly aligned with agro-ecological and socio-economic factors.

Technical Description

The advantages of community-based multiplication strategies for sweet potato are that they allow to make substantial improvements in the quality control of planting materials and also lower its retail prices, particularly in smallholder farmer landscapes with limited infrastructures and access to markets. Multiplication of vines and cuttings at medium to large scale through joint investments enables specialists to be engaged, better maintenance of hybrid and resistant varieties, better protection against pests and diseases, and keeping sufficient reserve stocks. Community-based approaches can result in marked cost savings for production of planting materials through economies of scale.

Uses

Community-based multiplication enables farmers to obtain hardened planting materials closer to the fields, and particularly effective for releasing and maintaining improved varieties, and controlling pest and disease infestations. The improvement in availability, access and quality of life sweet potato planting material that can be realized through the collaborative approach make it possible to distribute large amounts in a short period of time at the start of rainy seasons.

Composition

Multiplication of sweet potato through community-based organization can be done using basic materials that can be found locally, including tent-style greenhouse, fertilizers and

disease control agents. Advanced multiplier set-ups involve assets like drip irrigation and other mechanized tools that reduce labor costs.

Means of application

Public and private sector breeders produce tissue culture plantlets from improved varieties inside the laboratory that are subsequently cut into more than 15 mother plants. Community-based multipliers obtain a small number of the certified cuttings or seed potato from breeders which they subsequently use to grow rooted cuttings and vines in the screen house, altogether taking just over 14 days. Sweet potato multipliers are organized across a community based on the cultivation area and road connectivity, usually having sites for planting material multiplication dispersed at distances of 1 to 20 km.

Agroecologies	All Agroecologies.
Regions	Africa.
Developed in Countries	Kenya, Mozambique.
Available in	Kenya, Mozambique.
Solution Forms	Management.
Solution Applications	Seed system.
Agricultural Commodities	Sweet Potato.
Target Beneficiaries	Small-scale farmers, Commercial farmers.

Commercialization

Commercialization Category

Commercially available

Startup Requirements

1) Dissemination of advantages from community-based multiplication to stakeholders, 2) Planning of multiplier sites according to material costs and transport distances, 3) Formation of joint enterprises and contracting among farmers and sellers, and 4) Constructing multiplication sites and acquiring rooted cuttings or seed potato from improved varieties

Production Costs

Capital investments for a screen house, irrigation system, fertilizers and disease control agents to set up a sweet potato multiplication site are amounting to USD 10,000 per acre (= 0.4 ha) in the United States. Labour costs for land preparation, planting and harvesting in that part of the world are costing farmers another USD 20,000 per acre. When land rent and overhead costs are included the total cost of producing 1,000 cuttings for multipliers in the United States is coming to USD 33.

Customer Segmentation

Small-scale farmers, Commercial farmers, Public sector, ???

Potential Profitability

Community-based multiplication of sweet potato reduces labour and input costs by increasing the scale of operations and offsetting various risks. By establishing multiplier sites close to farmer fields the collaborative approach will decrease costs of transportation for cuttings and vines, which is proportionally large. The shorter supply chain for planting materials makes that these are delivered to farmers in better shape which will lead to greater survival rate of cuttings and vines, and consequently a greater the return on investment and harvested tuber yield.

Licensing Requirements

No license needed???

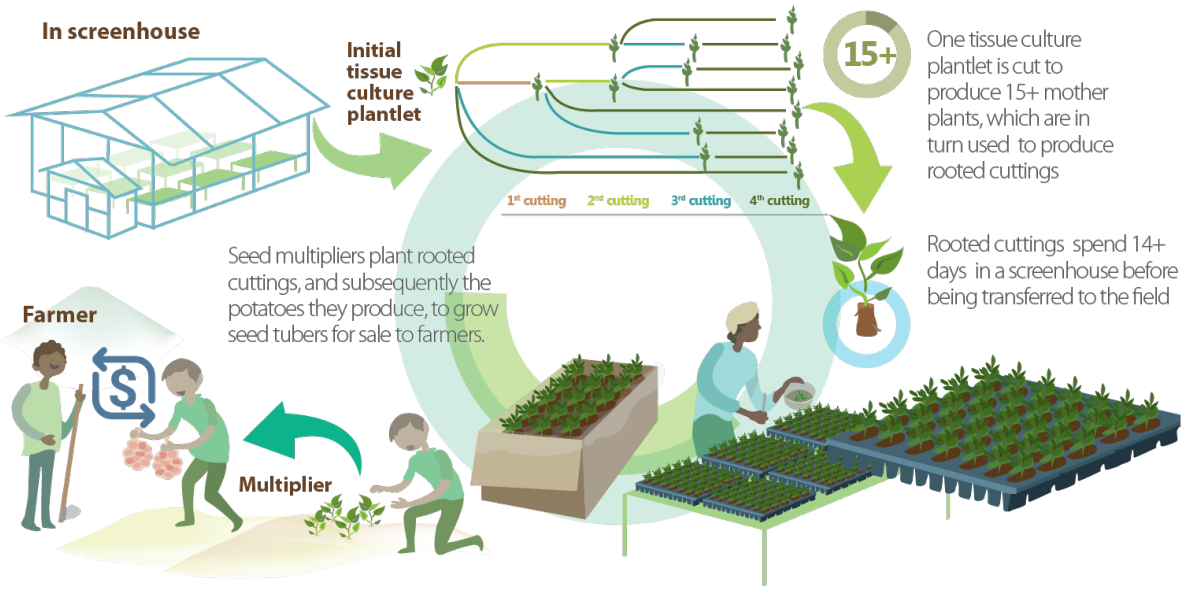
Innovation as Public Good

Regional public good, International Potato Center is responsible for breeding.

Solution Images







Institutions

CIP
INTERNATIONAL POTATO CENTER
A CGIAR RESEARCH CENTER

Accompanying Solutions

Orange-fleshed sweet potato (Bio-fortified, Drought and virus tolerant), Tent-style greenhouse production of vines and cuttings, Specialty blended fertilizers (high potassium),