Block 1 Poster 6

Use of low cost Net Tunnels for Management of Sweetpotato Viruses among Famer-multipliers

RESEARCH PROGRAM ON Roots, Tubers and Bananas

TECHNOLOGY DESCRIPTION

The net tunnel technology refers to small (3 m x 1.7 m) net tunnels constructed using locally available materials. The net tunnels are used to protect clean mother stock of sweetpotato planting material from attack by white flies and aphids – which are responsible for the spread of sweetpotato virus diseases. The net tunnels are targeted for use in high virus pressure areas, where use of infected planting material can result in root yield losses of up to 98%. After harvesting planting material from the net tunnels, one round of open field multiplication is done in order to increase the quantity of clean seed available for sale to farmers. Following initial testing, the materials recommended for construction of a net tunnel are:

- ¾ inch PVC pipes for the body frame.
- Zippers, PVC clothing lines or manila strings for closing depending on local availability and cost.
- Insect-proof nets equivalent to Optinet 50.
- PVC clothing lines for attaching the insect-proof net on the frame

Plate 1: Mrs. Edna Jonas, a multiplier in Bulyahilu village, standing next to her net tunnel. Mwanza, Tanzania.
Credit: K. Ogero.

END USERS AND BENEFITS

- The **primary end users** of the clean planting material from the net tunnel technology are male and female farmers. In high virus pressure areas farmers can obtain 50% - 100% increase in root yields if they use net tunnel sourced material (Fig. 1). This boosts food security and household incomes.

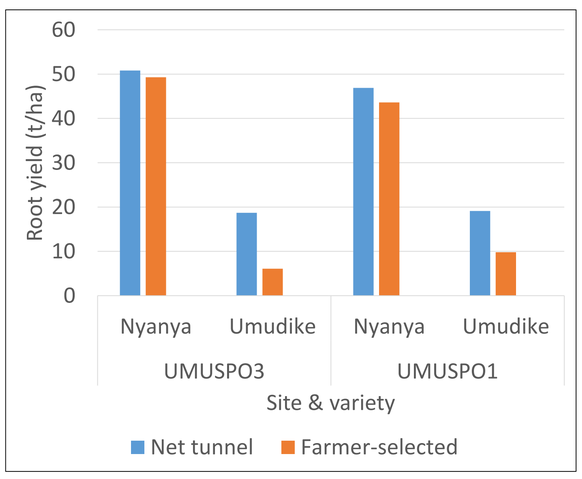

Fig.1: Average root yields for net tunnel and farmer-selected material planted in high (Umudike) and low (Nyanya) virus pressure areas in Nigeria.
Credit: J. Njoku.

- The **intermediary users** are multipliers who produce and sell basic and quality declared seed. With the net tunnel multipliers are able to: maintain a stock of healthy starter material for longer before replenishment; and sell high quality material to farmers for root production.
- Evidence from Kenya shows that over 33 months, an average benefit of US $839 can be realized from using planting material from net tunnels, rather than from open fields. This is the total value from both the effect of higher yields per unit area of planting material and increase in root yields. This benefit far outweighs the cost of construction which is about US $120 in Kenya and Tanzania.

SCALING STRATEGY

- The initial scaling efforts will focus on high virus pressure areas, where farmers already buy planting material.
- Extension partners will identify enterprising farmers with potential for irrigation and enough land.
- Agro-dealers will supply irrigation kits and act as root aggregators and brokers to link with traders, creating a pull effect on the seed system.
- District level platforms will be used to strengthen communication and coordination among local stakeholders and provide the link to national level seed traders, and farmers apex associations.
- Demo plots, field days, signboards, radio spots, and ICT apps e.g. SeedTracker, will be used to sensitize farmers on the benefits of using and where to obtain clean planting material.
- Local authorities will be engaged and champions identified to aid with promotion and awareness creation.

LEVEL OF ADOPTION OR USE

348 net tunnels are in use in Tanzania, 206 in Kenya, 83 in Rwanda and 48 in Uganda. Other countries using the technology are Ethiopia, Mozambique and Nigeria. Sweetpotato seed standards are being developed and officially gazetted in many countries; this increases awareness and demand for technologies to ensure clean seed. Therefore, this technology will become an essential component of seed system interventions.

CRITICAL GAPS AND NEXT STEPS

- Full costing for scaling up the net tunnel technology will be conducted in each country.
- Local sales agents for insect-proof netting will be identified.
- Farmer-multipliers will be trained in business planning and negotiating skills so that they can be able to apply for credit from local business development service providers.
- Links between existing national platforms for RTB crops and districts stakeholder initiatives will be strengthened. This will improve coordination with other segments in the value chain.

Plate 2: Harvesting quality vines from a net tunnel. Mwanza, Tanzania.
Credit: K. Ogero.

KEY PARTNERS FOR SCALING

- CIP, NARIs & NGOs: Technical backstopping.
- Business development services providers: Enterprise and marketing skills and credit packages.
- Seed certification agencies: Quality assurance.
- Ministries of Agriculture: Awareness creation and policy development.
- Governments and development partners: Financial investment.
- Mass media: Awareness creation.

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