

TRIPLE S: Why participatory testing and local adaptation is critical – learning from Ethiopia

The Triple S (Storage in Sand and Sprouting) method of sweetpotato planting material conservation has been validated in unimodal and bimodal rainfall areas in Ethiopia. In addition to ensuring a supply of planting material at the start of the rains, Triple S significantly reduces incidence of sweetpotato weevil compared to traditional practices of conserving planting material in dry areas. Participatory testing ensures that farmers develop calendars to best fit the Triple S steps for areas with 3-5 month, 6 month and 9 month dry periods.



Fig. 1 The effect of large (left), medium (middle) and small (right) size roots on the number of roots that survive after storing ten roots for 7 months under Triple S. (credit M. Cherinet)

➤ What is the problem?

The length of the dry season varies across the agro-ecologies of Ethiopia where orange-fleshed sweetpotato (OFSP) is being promoted. Tigray region is unimodal with a nine-month dry season; whereas Southern Nations, Nationalities and Peoples' Region (SNNPR) is bimodal with a three to six-month dry season. There are also differences in farming systems within Ethiopia underlining the importance of validating the technology with farmers before recommending Triple S for wider use.

➤ What do we want to achieve?

We would like to test, validate and develop context specific protocols for Triple S for the different lengths of dry seasons in Ethiopia.

➤ Where are we working?

Participatory validation of the Triple S protocol

has been completed in two woredas (districts) of Tigray region (Enderta and Hawzen) and four woredas of SNNPR (Hawassa Zuria, Mirab Abaya, Humbo and Kedida Gamela).

➤ Who are we working with?

We are working with model farmers, the regional Agricultural Research Institutes and the offices of the woreda Bureau of Agriculture and Natural Resource Department (BoANRD) in Tigray and SNNPR. The results from the study are being taken up and implemented by other projects which are promoting OFSP in Ethiopia.

➤ How did we make it happen?

In SNNPR where there is a three to six-month dry period; a participatory evaluation of the original Triple S protocol and two traditional vine conservation methods were conducted under farmer conditions.

In Tigray region where the dry period is nine months, an on station trial was first conducted to test the effect of root sizes and de-sprouting on the survival rate of the OFSP variety "Kulfo" over different lengths of storage. Then the results from the on-station experiment were validated with farmers. However, there was no local conservation method in Tigray to compare with Triple S so farmers evaluated the use of large, medium and small roots for sprouting and quantity of vines produced (Fig. 1).

We started with discussions with the woreda BoANRD experts, followed by selection of farmers, sensitization meetings with farmers on the loss of planting material during the dry season and formation of farmer research groups (FRGs) (Fig. 2). One volunteer farmer from each FRG hosted the validation trial.



Partners:

- Southern Agriculture Research Institute (SARI), Hawassa, SNNPR
- Tigray Agricultural Research Institute (TARI), Mekelle, Tigray Region
- Bureau of Agriculture and Natural Resource Department (BoANRD) for SNNPR and Tigray



Fig. 2 A Women farmers' research group setting up Triple S validation trials at Jara Dado Kebele in SNNPR Ethiopia. (credit M. Cherinet)

➤ What have we learned so far?

- In SNNPR, 87% of roots sprouted successfully after 3-5 months of storage in Triple S. In comparison, all the roots buried in wet soil and the vines planted under shade plants such as ensete, the dominant traditional method, did not survive the dry period (Fig. 3).
- The Triple S method also showed the lowest weevil infestation compared to the two traditional methods of conservation practiced in SNNPR (Fig. 3).
- Large-sized roots (at least 250 grams) are more effective for Triple S in areas with a nine-month dry period i.e. Tigray. However, large roots require a larger container which should be taken into consideration when planning Triple S.
- To minimize weevil infestation, in SNNPR it is recommended to use roots for Triple S storage that are planted in the rainy months (June) and harvested just at the end of the rainy season (end of October).
- It is important to plant out roots stored under Triple S, 6-8 weeks before the onset of rain in Tigray and water the vine multiplication plots. However, farmers in SNNPR with bimodal

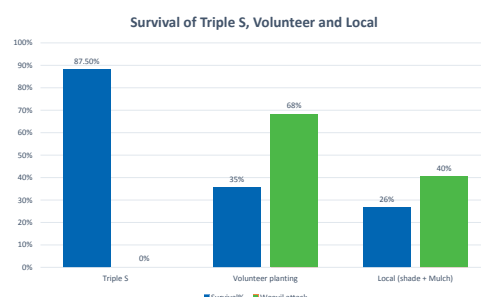


Fig. 3 Rate of survival in Triple S, volunteer and shade (mulch) treatments in SNNPR after 3-5 months.

rainfall can plant out roots just at the beginning of the first rain and still get an adequate supply of cuttings in time for good production.

- An assessment carried out in June 2017 found that in Hawassa Zuria 83% (25 out of 30) and 33% (10 out of 30) in Mirab Abaya of farmers had continued to use the Triple S technology in the following season. Note that farmers in Mirab Abaya had no follow-up visits, but those in Zuria did. This indicates the need for 2-3 seasons of assistance to get uptake of the practice.

➤ What is next?

- Advocacy and awareness raising with actors working on sweetpotato in Ethiopia to plan scaling out strategy in areas with similar conditions.
- Translation of training of trainers' resource materials into Tigrinya and Amharic and training of BoANRD experts and model farmers, through development projects.
- Inclusion of indicators for Triple S uptake in baseline and endline surveys of new sweetpotato project in SNNPR and training of 15,000 households on its use.

Table 2: Recommended Calendar for Triple S Activities in under different lengths of dry season in Ethiopia

Triple S activity	SNNPR (bimodal: dry 3-5 months)	SNNPR (unimodal: dry 6 months)	Tigray (unimodal: dry 7-8 month)
• Triple S awareness raising	• July	• July	• August
• Advanced preparation and pegging of healthy plants in the field	• August	• August	• August
• Harvesting, root selection and loading of Triple S container	• November	• November	• October
• Monitoring and de-sprouting during Triple S storage	• December-January	• December-March	• November-April (6 months)
• Planting out roots in irrigated seed beds	• Early February	• March	• Early May
• Management of vine multiplication plots (watering and weeding)	• February-March	• April-May	• May-June
• Vine harvesting and planting out for root production	• End of March-early April	• End of May-June	• End of June-July
• Harvesting roots from Triple S sourced planting material	• July-October	• September-October	• October-December

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