From seed security to food security: validating 'Triple S' seed conservation technology in new contexts

SASHA
Sweetpotato Action for Security and Health in Africa

AUG 2015

The Triple S (Storage in Sand & Sprouting) technology is being validated in new contexts in sub-Saharan Africa. In the Southern Nations Nationalities and Peoples' Region (SNNPR), Ethiopia, a trial in four different *woredas* has proved that Triple S can be used for conservation and multiplication of sweetpotato planting material in areas with a five month long dry season.

Fig. 1 Harvesting of vines grown from transplanted roots at 45 days after planting in DoreBafana *woreda*. (credit M. Cherinet)

What is the problem?

Chronic food insecurity is a major problem in Ethiopia. Cyclical drought increases vulnerability and reduces households' capacity to store sufficient food from one season to the next. Sweetpotato plays a major food security role in the southern, eastern and north western parts of the country. However, lack of planting material at the start of planting season is ***the*** major constraint to sweetpotato production. During the prolonged dry season, the standing sweetpotato crop, a potential source of planting material, dries out so that farmers are unable to plant sweetpotato the following season. CIP and partners have shown that the Triple S technology works in Tanzania and Uganda where the dry season is 3-4 months. In SNNPR there is 3-5 months dry season and in Tigray region there is 8-9 months dry period; therefore it is important to assess whether the Triple S protocol works in these different contexts or can be adapted to do so.

What do we want to achieve and where are we working?

We want to validate and adapt the current Triple S protocol in new contexts to improve farmer access to increased quantities of quality planting material for root production. This will contribute to household food and income security in SNNPR and Tigray. On-farm validation trials are being conducted in Humbo, DoreBafana, Kedida Gamela and Mirab-Abaya woredas (districts) of SNNPR.

Who are we working with?

We are working with model farmers, the Southern Agricultural Research Institute and the offices of the *woreda* Bureau of Agriculture. The study is being implemented in close collaboration with USAID and Irish Aid funded projects which are promoting orange-fleshed sweetpotato (OFSP) in Ethiopia.

How are we making it happen?

In SNNPR, we started with discussions with the woreda Bureau of Agriculture experts, followed by selection of major sweetpotato producing farmers by the local development agent, sensitization meetings with farmers on the loss of planting material during the dry season, and formation of farmer research groups (FRGs). One volunteer farmer per group hosts the validation trial. Two conventional sweetpotato planting material conservation methods were selected by the participating farmers to compare with the Triple S technology. Therefore, farmers are comparing three techniques: Triple S; planting vines under shade; and burying the roots in wet soil.

CENTRO INTERNACIONAL DE LA PAPA
CIP
A member of the CGIAR Consortium

Partners:

- Bureau of Agriculture
- Southern Agricultural Research Institute (SARI)
- Better Potato Better Lives Project (CIP-USAID)
- Alleviation of Food Insecurity and Malnutrition in SNNPR & Tigray, Ethiopia, through promotion of potato and sweetpotato (CIP-IRISH AID)

Fig. 2 Farmer training in 'Triple S' technique. (credit M. Cherinet)

The trial was started in the first week of December, 2014 (Fig. 2). At the end of April, at the start of the rainy season, the roots were transplanted to the field. Forty-five days after transplanting the roots, sprouting vines, were harvested from each root (Fig. 3). The survival rate and amount of planting material produced from each of the different treatments was recorded. The members of each FRGs will replicate the best planting material conservation techniques in the upcoming dry season.

What have we learned so far?

- On average 82% of roots stored in sand could successfully sprout after four months of storage (Fig. 1). However, all the roots buried in wet soil and the vines planted under shade plants such as enset (false banana) had dried out during the extended dry period.
- There was no difference observed in sprouting potential between different sizes of roots.
- De-sprouting of roots at monthly intervals throughout storage period, did not affect the potential of roots to re-sprout again.
- The result confirmed that 'Triple S' technique is promising way of conserving sweetpotato planting material in SNNPR region of Ethiopia.

What next?

We are adapting the Triple S technology for Tigray region, which has an extended dry season of 8-9 months. A separate experiment was established in March, 2015. Large, medium and small root sizes are being stored in sand. Upon sprouting the roots are de-sprouted and stored in the sand container again. The cyclic sprouting and de-sprouting will continue for 8-9 months. At the end of the 9 months the number of roots survived will be assessed and planted out to evaluation the quantity of vines produced.

Fig. 3 Planting of vines harvested from Triple S plot for further multiplication. (credit M. Cherinet)

Storing sweetpotato roots in sand and sprouting (Triple S) is a simple, less intensive and less labour costly on-farm method of conserving and multiplying clean sweetpotato planting material at the on-set of the rains.

CONTACTS

Mihiretu Cherinet (CIP)
m.cherinet@cgiar.org

Debebe Gashawbeza (BoA)
gashdebebe@yahoo.com