

Sweetpotato and Cassava Seed Requirement Estimates (SRE)

Workshop at Geita, Tanzania

Marzo 2024



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Workshop Date: 27-Mar-2024, started at 9:00 am, ended at 2.30 pm

Venue: Katoma Hill Hotel, Geita- TANZANIA

Attendance: *Physical attendance:*

1. Srinivasulu Rajendran (CIP), 2. Kwame Ogero (CIP), 3. Saadan Edson (CIP), 4. Hadija M. Ally (TARI), 5. Ogwal Martin (MOOD TECHNOLOGIES), 6. Deusdedit P. Mlay (TARI), 7. Shukuru Juma Seseme (TARI), 8. Masanja Luhende Nzinga (Seed Multiplier), 9. Hamka Shaka (Geita DC), 10. Benson Mturi (Bunda DC), 11. Kija Kayenze (Simiyu extension officer/ RAA), 12. Damian Sanka (World Vision), 13. Amos Z. Mshiwa (Chairman MMB), 14. Sylvester Njange (Shinyanga Seed Multiplier), 15. Maliselina A. Magezi (Missenyi district / Kagera Seed Multiplier), 16. Daniel Opanga (Geita farmer), 17. Halima Ally Manyika (TARI), 18. Jackson Mahongo (Kagera Extension Officer / RS/ RAA), 19. Mwanjia Hassani (TARI), 20. Hemed A. Kihimba (TARI), 21. Erick V. Chang'a (TARI), 22. Bududi J. Zephania (TARI)

Virtual attendance: (none)

Absent with apology: None

Agenda

1. Introduction
2. Registration of participants for Online SRE tool access
3. Overview of the SRE tools
4. Presentation of an online version of the SRE tools (National Level)
5. Parameter formulation for SRE (Sweetpotato and Cassava) for Tanzania
6. Presentation of online version of the SRE tools (Enterprise Level)
7. Action Points
8. AOB

Preamble

This workshop was organised jointly by the International Potato Center (CIP) and Tanzania Agricultural Research Institute (TARI). The workshop started with a discussion on Market Segmentation for data collection (25th - 26th March 2024) followed by the Seed Requirements Estimates (SRE) workshop (27th March 2024).

During the market segmentation workshop, chaired by George Sonda (TARI), the participants were able to provide inputs on market segmentation information categorised into;

- a. Geographical (regions, districts, agro-ecology, population, productivity, etc.),
- b. Demographics (gender, age, education, marital status, etc.),
- c. Behavioural (purchasing behaviours, purchasing frequencies, quantities, monetary values, varieties, prices, payment methods, modes of communication, etc.)
- d. Psychological (beliefs, values, perspectives, lifestyles, etc.).

Workshop participants were also able to provide detailed information for each area and focused on; types of market segments, Total Available Markets (TAM), Serviceable Available Markets (SAM), actual Serviceable Obtainable Market (SOM), market characteristics, market sizes, etc.

Some of the participants from the Market segmentation workshop were selected to participate in the Seed Requirement Estimation (SRE) workshop, which was held at the same venue. The purpose of the SRE workshop was to demonstrate the features of the SRE tools under development as well as get inputs from participants on parameters required for Tanzania projections. The discussion on SRE were conducted as seen in the agenda items below.

AGENDA 1 : Introduction (KWAME)

The session was chaired by Kwame Ogero and each participant made a self-introduction. The participants were free to use either English or Swahili during the introduction. For those participants who preferred to use Swahili, a translation was made by Kwame into English.

AGENDA 2: Registering participants for online access (MARTIN & HADIJA)

The registration process for users of the SRE tool was headed by Martin Ogwal (MOOD TECHNOLOGIES) with support of Hadija Ally (TARI). During this process, all participants who had email addresses were registered on the platform using the link https://mt.co.ug/access_request_form. Some of the members self registered and were granted access to the platform.

AGENDA 3: Overview of the SRE Tools (SRINI)

During the SRE overview, Srini (CIP) highlighted the importance of developing a tool that will help all seed actors starting from breeders, governments, researchers, seed enterprises to the last farmer producing Sweetpotato or Cassava for consumption or value addition.

Participants were presented with the six (6) stages involved in seed production, which were categorised into seed classes. He pointed out that, vegetatively propagated crops go through a long process in order to get quality seed; it starts from laboratories, to screen houses and then to the open fields before being sold as QDS.

The problem to be addressed are;

- Seed producers and government usually do not know how much seed is required for production
- How to price the seed produced in order to recover the cost invested in production
- Which business model is appropriate for investment by seed enterprises
- How to determine if the seed business is being profitable.

He cited that, it is expensive to produce TC materials (approx. USD 1 per TC) and if the planning is not done in a proper manner, there are many financial implications due to wastages. Because the seed estimates are not known, government institutions like TARI continually increase production of TC materials which in the end becomes very expensive when seed enterprises do not purchase them. To resolve this, there is need to understand the seed requirement at National Level which helps to backwardly calculate what should be produced in the laboratories (TC plantlets). The same problem applies to seed enterprises; they also need to estimate the quantity of seed (basic, certified or QDS) they produce as well as get an insight of the production calendar.

To estimate the area under sweetpotato and cassava, we looked into extracting data from FAOSTAT which harmonises annual data for each country. The [FAOSTAT](#) data comes from governments (extension officers, etc.) and its always having a 2 year lag e.g. the latest data as of now is for 2022. He demonstrated to the participants on how to extract data from the FAOSTAT website. The team developing SRE tools therefore looks into at least the last 20 years data as a basis to forecast seed requirements (linear forecast). Some of the parameters used in the projection came from willingness-to-pay studies, literatures and seed stakeholder meetings.

In order to make the tools useable, the CGIAR Centers, especially CIP, partnered with a digital firm called [MOOD TECHNOLOGIES](#) to provide a user friendly platform for the SRE tools; both online tools (https://mt.co.ug/bid_tools) and improved excel versions.

Srini pointed out that, the SRE tool will be useful for many RTB crops, not only Sweetpotato and Cassava and it will go beyond RTBs.

He mentioned that, RTB seed system is progressively transitioning to become formal but it is still characterised by general lack of adequate information on seed projections to guide production at different seed levels. This calls for a lot of collaboration between different stakeholders to build a strong seed system.

He pointed out that, development of the Seed Requirement Estimation (SRE) tools builds on previous seed initiatives implemented by CIP and collaborating partners during the SASHA I and II projects. The parameters which will be formulated during this workshop will take the tool to a more useable version.

The following keywords were explained to the participants;

1. Adoption Rate: is the percentage of farmers who take on growing improved varieties.
2. Seed Replenishment rate: the number of years a farmer take before going back to buy new planting material of the same variety.

Srini also mentioned that; there is a future thought on selecting part of the participants to become the owners of the tool who will have several benefits example; ability to update parameters online, ability to download complete datasets, recognition on all platforms by displaying their names, etc.

AGENDA 4: Presentation of online version of SRE Toll (NATIONAL LEVEL)

The online version of the Sweetpotato and Cassava SRE tool at National Level (https://mt.co.ug/bid_tools) was presented to the participants by Srini. It was pointed out that, part of the data used for the projections came from Tanzania historical [FAOSTAT](#) data (areas harvested) and it spanned for the last 22 years (2000-2022); more than adequate for making projections. The data was focused on Tanzania and some of the assumptions used in the projection were also based on Uganda stakeholder meetings. It was pointed out that, after the presentation, the participants will review the parameters so as to adjust to the current and actual situations in Tanzania. The tool is able to make projections for next 3 years e.g. 2024-2026

The following were presented as part of the demonstration of the SRE tool at National Level:

- a. How to access the online tool (https://mt.co.ug/bid_tools)
- b. How to set or change parameters for projections (standard or custom parameters)
- c. Overview of the SRE projection summary reports (3 year projection) e.g. total crop area under local and improved varieties, areas dedicated to improved varieties, replenishment rates for improved seed, area projected for improved seed production, quantity of improved seed required to meet demand of farmers (QDS), etc.
- d. Overview of SRE projection parameters (adoption rates, seed replenishment rates, seed purchase rates, seed requirement per hectare, and quantity of seed per package (bags).

The presentation of the SRE tool enlightened participants on how the seed requirements projection will work when the modules are rolled out. It also enabled participants to clearly visualise the importance of their input into formulating parameters for projection. Srimi emphasised that, the projections were done using Linear Forecasting; however, a better forecasting will be developed by an expert (statistician) who will be coming on board soon. This will enable fine-tuning the forecast so that it is a lot more precise and possibly overcome some limitations of the linear forecasts.

Adoption rate discussion: Some of the participants wanted clarifications on the approach of how the adoption rates of improved varieties were calculated. They enquired if the rates were a percentage of households producing the crop or the percentage of land which the households delegate to producing the sweetpotato or cassava. The participants were informed that, the current adoption rates were estimated based on percentage of households producing sweetpotato or cassava. It was also highlighted that, the focus of the workshop was to enable the participants to provide the average land area that farmers are actually dedicating for production of sweetpotato and cassava; this will enable a more efficient approach to calculating adoption rate using proportion of land instead of proportion of households.

Seed packaging units; according to the presentation, 500 cassava cuttings (25 cm each) were packaged in a bag and sold to farmers. However, the Tanzania team had a discussion that the packaging varies according to bag sizes but for transportation, the participants agreed to use a standard bag. There were suggestions of using 1,000 cuttings per bag. This might need a little bit of follow-up since the discussion was not conclusive.

Figure 1. Demonstration of Parameter Selection

LAND AND SEED REQUIREMENTS PROJECTION [CASSAVA - TANZANIA]										
CTY	CROP	YEAR	LOCAL & IMPROVED VAR (HA)	IMPROVED VARIETIES (HA)	SEED REPLENISHMENT RATE (HA/YR)	REQ. FOR PURCHASED SEED (HA)	REQ. SEED CLASS	REQUIRED SEED QTY	UNIT	NO. OF BAGS
TAN	Cassava	2024	1,077,000	163,704	54,568	15,486	QDS	154,863,970	Cuttings (25 cm)	309,728
TAN	Cassava	2025	1,076,980	173,501	57,834	17,269	QDS	172,691,809	Cuttings (25 cm)	345,384
TAN	Cassava	2026	1,071,959	182,448	60,816	18,652	QDS	186,522,164	Cuttings (25 cm)	373,044
PROJECTION PARAMETERS [CASSAVA - TANZANIA]										
CTY	CROP	YEAR	ADOPTION RATE (%)	REPLENISHMENT RATE (YEARS)	PURCHASE RATE (%)	SEED QTY PER HA	QTY PER BAG			
TAN	Cassava	2024	15.20	3.00	28.38	10,000 Cuttings (25 cm)	500			
TAN	Cassava	2025	16.11	3.00	29.86	10,000 Cuttings (25 cm)	500			
TAN	Cassava	2026	17.02	3.00	30.67	10,000 Cuttings (25 cm)	500			

Figure 2. Showing a demo of SRE report generated for next 3 years and the parameters used in projection.

AGENDA 5: Projection parameter formulation (NATIONAL LEVEL)

This session was headed by Srini (CIP) with support of Hadija (TARI), Kwame (CIP), Saadan (CIP) and Martin [MOOD TECHNOLOGIES]. During this session, participants were required to provide actual figures on both sweetpotato and cassava production for Tanzania based on 2023 experience. These included information such as; adoption rates of improved varieties, seed replenishment rates, seed purchase rates and amount of land dedicated by seed producers for the two crops.

The participants were categorised into three (3) major groups;

- National level; this assignment was given to Deusdedit Mlay to provide the parameters for Tanzania as a whole at National Level.
- Regional level; experts working at regional level were grouped into the various regions presented at the workshop and they were tasked to provide information at regional level.
- District level; seed producers and extension officers were grouped into various districts to provide district level information.



Figure 3. Workshop participants at Geita preparing parameters for seed requirement projections. Photo credit; Martin Ogwal.

The following are the extracts from the discussions held by each group;

National Level Parameters for SRE based on 2023 estimates;

Country	RTB Crops	Adoption Rate (%)	Seed Replenishment Rates (years)	Seed Purchase Rates (%)	Average farm size per household
Tanzania data by Deusdedit Mlay	Sweetpotato				
	Cassava				

Regional Level Parameters for SRE based on 2023 estimates;

Region	RTB Crops	Adoption Rate (%)	Seed Replenishment Rates (years)	Seed Purchase Rates (%)	Average farm size per household
1. Simiyu Region: by Kija Kayenze (Agric Officer) +255 755 442865	Sweetpotato	10	3	10	1.0 acre
	Cassava	5	4	3	1.0 acre
2. Kagera Region: by Jackson Mahongo (Agric Officer) +255 756 948714	Sweetpotato	3	3	6	0.25 acre
	Cassava	5	3	3	1.00 acre
3. Tabora Region: by Erick Chang'a (TARI Agric Field Officer) +255 789 470787	Sweetpotato	20	2	10	0.5 acre
	Cassava	40	1	25	1.0 acre

District Level Parameters for SRE based on 2023 estimates;

District	RTB Crops	Adoption Rate (%)	Seed Replenishment Rates (years)	Seed Purchase Rates (%)	Average farm size per household
1. Bunda District, Mara Region: by Benson Mturi (Agric Officer) +255 755 881300	Sweetpotato	3.38	2.5	79.17	1.0 acre
	Cassava	48.52	3.0	49.70	1.0 acre
2. Geita District, Geita Region: by Hamka Shaka (Agric Officer) +255 715 930811	Sweetpotato	25	3	15	1.0 acre
	Cassava	60	3	60	0.5 acres
3. Shinyanga District, Shinyanga Region: by Sylvester Nyange (Sweetpotato Seed multiplier) +255 676 926347	Sweetpotato	20	3	15	4.0 acres
	Cassava	30	4	25	2.0 acres
4. Sengerema District, Mwanza Region: by Amos Mshina (Cassava Seed Multiplier) +255 759 863725	Sweetpotato	20	3	15	1.5 acres
	Cassava	45	3	30	2.5 acres
5. Ngeza District, Tabora Region: by Damian Sanka (Marketing Officer World Vision) +255 756 362055	Sweetpotato	30	2	15	0.25 acre
	Cassava	30	3	15	0.50 acre

Some of the participants pointed out that, besides the above averages, some farmers actually replenish their seeds every year; however, such farmers are not many.

AGENDA 6: Presentation of online version of SRE Tool (ENTERPRISE LEVEL)

The online version of the Sweetpotato SRE tool (https://mt.co.ug/bid_tools) was presented to the participants by Srini with support of Martin Ogwal. The presentation included:

- a. How to access the online tool (https://mt.co.ug/bid_tools)
- b. How to set or change parameters for projections (standard or custom parameters)
- c. Overview of the production summary reports e.g. seed class, land requirements, expected quantities of seed production, etc.
- d. Overview of seed production calendar.
- e. Review of seed business models (entry and exit points)

Generally, the draft SRE tool presented provided insights to participants to conceptualise and synthesise the connection between the national level SRE and enterprise level SRE.

There was also a general discussion on whether basic seed are only produced in screen house environment or also in open field. The team from TARI mentioned that, they handle the production of basic seed in all the two environment (Screen house and Open Field) and outputs are marked as certified seed. Seed producers also mentioned that, they produce basic seed in open field in order to cut costs since screen house production is quite expensive.

Accordingly, participants' reviewed and suggested that, there is need to separate cost of production for basic seed when the production environment is screen house and/or open field. This is to be considered when considering cost of production into the SRE tool.

AGENDA 7: Action points

The following were the action points agreed upon during the workshop

- a. Update of Seed Requirement Estimation (SRE) tools by fine-tuning seed classes (Srini, & Martin)
- b. Review of SRE projection parameters for Sweetpotato (Srini, Kwame, Martin, Saadan, Hadija, Sam Namanda, & Prof. Mukasa)
- c. Organising review meeting for fine-tuning SRE projection parameters for Cassava (Srini, Kwame, Juma*, Kiddo, & Martin)
- d. Organising of tool pre-test and follow-up meetings in Uganda and Tanzania (Srini, Kwame, Hadija)

AOB

The workshop was closed at 2:30 pm.

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