



**MUHOGO
BORA**
BETTER CASSAVA FOR ALL

STRENGTHENING THE CAPACITY OF AGRICULTURAL EXTENSION AGENTS TOWARDS SUPPORTING AN INCLUSIVE AND SUSTAINABLE CASSAVA SEED SYSTEM IN TANZANIA



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The author's views expressed in this report do not necessarily reflect the views of the anonymous donor.

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Abbreviations and Acronyms

CBB	Cassava Bacterial Blight
CBSD	Cassava Brown Streak Disease
CMD	Cassava Mosaic Disease
CSE	Cassava Seed Entrepreneur
CALS	College of Agricultural and Life Sciences
DAICO	District Agricultural Irrigation and Cooperative Officer
DALFO	District Agricultural Livestock and Fisheries Officer
EA	Extension Agent
GAP	Good Agronomic Practices
GBV	Gender Based Violence
GESI	Gender Equality and Social Inclusion
IITA	International Institute of Tropical Agriculture
LGA	Local Government Authority
OFSP	Orange Fleshed Sweet Potatoes
PO-RALG	President's Office Regional Administration and Local Government
RAA	Regional Agricultural Adviser
RAS	Regional Administrative Secretary
SAH	Semi-Autotrophic Hydroponics
SPVD	Sweet Potato Virus Disease
TARI	Tanzania Agriculture Research Institute
TARICASS	Tanzania Agriculture Research Institute Cassava Variety
TOSCI	Tanzania Official Seed Certification Institute
ULAC	Urambo Legal Availment and Charity
WAEO	Ward Agricultural Extension Officer



Executive Summary

The [Muhogo Bora \(MB\) project](#) is a six-year project that is implemented into two Phases: Phase I which ran from 2021 until 2024, while II runs from 2025-2027. The project is funded by anonymous donor through [Cornell University College of Agricultural and Life Sciences](#) (Cornell CALS), and is implemented by the [International Institute of Tropical Agriculture \(IITA\)](#) and the [Tanzania Agricultural Research Institute \(TARI\)](#) in the Western and Central Zones of Tanzania. The project envisions an integrated, inclusive and sustainable cassava seed system that enhances agricultural productivity, strengthens market linkages, and empowers farmers - especially women and youth - from geographically underserved regions to thrive as Cassava Seed Entrepreneurs (CSEs). The project team held a three-day training of extension officers from Katavi, Kigoma, Singida, Rukwa, and Tabora, aiming at building the capacity of extension officers who will support the CSEs in seed multiplication and business. The training took place from 22nd to 24th September 2025 in Tabora region. It was organized by TARI and IITA Tanzania project team. A total of 83 participants (64 males and 19 females) from Rukwa, Katavi, Tabora, Singida, and Kigoma regions were trained.

The project's objectives, key actors, achievements of Phase I (2021-2024) and Phase II (2025-2027) plans were highlighted. Over three the days, participants received comprehensive training covering sessions including: overview of the project; Good Agronomic Practices (GAP) in cassava and Orange Fleshed Sweet Potato (OFSP); seed Act, regulations and supply systems in Tanzania; recruitment and selection process of new CSEs; and identification and management of cassava pests and diseases. Training sessions on identification of the cassava varieties; cassava processing and utilization; business plan and entrepreneurship; use of digital tools such as Seed Tracker, Plant Village Nuru, AKILIMO and market linkages were also delivered. Nonetheless, participants also received a whole day training focused on Gender Equality and Social Inclusion (GESI), human rights and Gender-Based Violence (GBV); and gendered land rights awareness in CSE ecosystem. Pre- and post-training evaluations were conducted to measure knowledge gains across these topics.



Day 1 | Monday 22nd September 2025

Background to the training workshop

The [Muhogo Bora \(MB\) project](#) is a six-year project that is implemented into two Phases: Phase I which ran from 2021 until 2024, while II runs from 2025-2027. The project is funded by anonymous donor through [Cornell University College of Agricultural and Life Sciences](#) (Cornell CALS), and is implemented by the [International Institute of Tropical Agriculture \(IITA\)](#) and the [Tanzania Agricultural Research Institute \(TARI\)](#) in the Western and Central Zones of Tanzania. The project envisions an integrated, inclusive and sustainable cassava seed system that enhances agricultural productivity, strengthens market linkages, and empowers farmers - especially women and youth - from geographically underserved regions to thrive as Cassava Seed Entrepreneurs (CSEs).

The MB project team comprising of TARI and IITA convened a three-day training workshop aimed at equipping extension officers to support CSEs in seed multiplication, dissemination, and quality control, thereby enhancing cassava production and business and serving as a key link between CSEs and researchers. The training was held at George's Complex Hall in Tabora Region from 22nd to 24th September 2025. A total of 83 (19 women and 64 men) participants attended this training. They included five Regional Agricultural Advisers (RAAs), twenty District Agricultural, Irrigation and Cooperative Officers (DAICOs), and fifty-eight ward agricultural extension officers from Rukwa, Katavi, Tabora, Singida and Kigoma (Appendix 2). The training brought together key government stakeholders, including the Regional Administrative Secretary of Tabora, Dr. John R. Mboya, who served as the Guest of Honor and represented the Tabora Regional Commissioner. Also in attendance were scientists from IITA and TARI Headquarters, with the latter represented by the Director of Technology Transfer and Partnership, Dr. Sophia Kashenge, and the TARI-Ukiriguru center director, Dr. Shadrack Mbapila. Others were project implementers from TARI- Ukiriguru and TARI-Tumbi, and officials from the Tanzania Official Seed Certification Institute (TOSCI), and extension officers from the President's Office – Regional Administration and Local Government (PO-RALG), at region, district and ward level.

The project team carefully designed training modules to convey targeted training to agricultural officers (Appendix 1). These training modules covered sessions including: seed multiplication guidelines; cassava and sweet potato processing and marketing; Good Agronomic Practices (GAP) for cassava and sweet potato; seed Act, regulation, registration, inspection and seed business; disease identification, effect and management; identification of cassava varieties; processing and utilization of cassava and sweet potato; business plan and entrepreneurship; marketing and market linkages;



application of digital tools in monitoring and reporting; integration of Gender Equality and Social Inclusion (GESI) in CSE system, including, human rights, gender based violence and gendered land rights in the CSE ecosystem (Appendix 1).

Welcome remarks and highlights of Muhogo Bora project

Mr. Habai Masunga, the project coordinator under TARI, provided the welcome remarks. He highlighted the three project objectives being: Better understanding the needs of women and rural Tanzanians – farmers and consumers; expanding system capacity, while empowering women and rural farmers as seed entrepreneurs; as well as distributing cost-effective technologies to address hunger and drive prosperity. He then introduced Phase II, which has the same objectives as Phase I, but it includes the nutritional security component through the addition of two nutritious short-season crops (high iron and zinc rich beans and orange-fleshed sweet potato). He also highlighted that the project areas would be expanded into a new Region (Rukwa), districts (Sikonge, Ikungi, and Singida municipal), and wards in the previous project regions. Finally, he presented the theme of the training, which was building the capacity of extension officers to enable them to provide a support system for CSEs in seed production, dissemination and quality control, thereby enhancing cassava production and marketing and serving as GESI champions for CSE work. This led to brief insights about TARI from Dr. Sophia Kashenge, Director of Technology Transfer and Partnership who highlighted the bottlenecks in crop production in Tanzania, including use of poor seeds, climate change and soil health issues. She also spotted 300+ technologies innovated by TARI, including more than ten released resilient cassava varieties. Before welcoming the guest of honor for the opening remarks, she addressed all the trainees, noting, *“I encourage you to use this training as an opportunity to support farmers in overcoming challenges in the agricultural sector, thereby facilitating access to sufficient food and contributing to household economic growth.”*

Opening remarks

On behalf of the Tabora Regional Commissioner, the guest of honor, Dr. John R. Mboya, provided opening remarks, where he expressed his gratitude by complimenting TARI and IITA for choosing Tabora as the host region for the training. He highlighted that he was impressed by the partnership and the networking between researchers and the LGA, calling for further collaboration for other crops. He said: *“Broken chains cannot allow us to reach the goals; it is not easy to meet the target when a group works in silos”*. He commended the project for including a gender-inclusive component involving women and youth, which may not be a priority in other projects. Business knowledge and the use of



digital tools by extension officers are key to accelerating production for income generation. He noted that while cassava is a versatile crop with multiple uses across industries, it is prone to perishability. The guest of honor insisted on gaining more knowledge on processing so that farmers can minimize losses before marketing. Lastly, he also called upon the participants to make sure that they become good TARI and IITA ambassadors after the training by emphasizing that, *“Conducting a training is very expensive. I urge you to ensure that the knowledge you have acquired reaches farmers and impacts changes in the farming community in your respective areas as intended.”*



Figure 1A: Mr Habai Masunga, TARI project coordinator giving opening remark. J.Mwajombe/TARI



Figure 1B: Dr. John R. Mboya, Tabora Region Administration Secretary giving his opening remarks. Photo credit: J. Mwajombe/TARI.

Pre-training assessment

This session was led by Habai Masunga from TARI. Before commencing the training sessions on different topics, an assessment was conducted to evaluate participants' own understanding of seed multiplication; GAP in cassava and sweet potato; pests and diseases management; GESI issues related to cassava seed entrepreneurship; marketing and the use of digital tools for disease identification and reporting. All the 83 trainees, comprising of 19 women and 64 men, completed a 25-minute pre-test. The results showed that the average score was 48.3% with the highest score up to 85% and the lowest score of 21%. This indicated that trainees had different understandings of cassava seed multiplication and management, marketing aspects and GESI considerations in CSE work.



Overview of Muhogo Bora Project's Phase I (2021-2024) achievements

Mr. Ally Ng'adoa introduced the Muhogo Bora project, providing a brief background and outlining the project's goal to stakeholders. The goal is to make the seed value chain more inclusive by empowering women, rural farmers and marginalised groups to become successful cassava seed entrepreneurs which in turn attract young people to farming and build the next generation of cassava farmers in Tanzania. During his description of the project background, he highlighted that, throughout the implementation of this project in phase I (2021-2024), the project successfully recruited, trained and empowered 242 CSEs, of which 67% comprised of women and youth. He also mentioned that, an average annual revenue from seed sell was TZS 1.7 million per CSE, highlighting the income generating potential of the seed entrepreneurship model. Furthermore, he highlighted the two cassava seed systems projects namely Muhogo Mbegu Bingwa and BASICS II project which were implemented in the Lake zone, Southern and Eastern zone of Tanzania, although they were gender-blind with selection of CSEs culminating into more men participating and benefiting as CSEs, thus leaving behind women and youth. Lastly, he outlined the selection process for new CSEs, highlighting modified socially inclusive selection criteria and the role of LGAs in the recruitment of new CSEs.

Good agronomic practices for cassava seed and root production

Mr. Habai Masunga from TARI presented to participants good agronomic practices for cassava. He explained the key essential factors to consider when selecting land for cassava root and seed production, noting that altitude ranging from 0 to 1500 meters above sea level, loam soil free from stones with a PH ranging from 5.5 to 8, and an annual average temperature of 25 to 35 degrees centigrade. Apart from the mentioned factors, he also emphasized on the use of improved high-quality cassava seeds bred by TARI, which possess potential features such as tolerance to diseases like cassava mosaic and cassava brown streak, as well as high yields ranging from 19 to 35 tons/ha, ability to remain in the soil for a long time, high starch content, early to medium maturing (8 to 12 month after planting). He gave examples of the nine improved cassava varieties and encouraged them to promote the varieties to farmers. They included: Kizimbani, Kiroba, Mkuranga1, Mkumba, TARICASS1, TARICASS2, TARICASS3, TARICASS4 and TARICASS5.

Thereafter, Habai emphasized the importance of determining the optimal planting time for cassava, stressing that early planting is the most effective strategy for establishing the crop in the field. He noted that the timing of early planting depends on the specific agro-ecological zone, thus it is vital to prepare the land as early as possible to plant early upon the onset of the first rains. The subtopic on planting systems was also discussed, during which participants and the facilitator explained that cassava can be



grown as a sole crop (monocropping) or mixed with other crops, such as maize (intercropping). Another essential aspect discussed was weed management methods and the proper use of fertilizer in cassava production. Farmers often have a common misconception that there is no need to add fertilizer to cassava fields. Thus, Habai emphasized to the participants that a cassava crop, like other crops, requires nutrients for optimal growth and production. The crop requires both macronutrients, such as nitrogen (N), phosphorus (P), and potassium (K), and micronutrients, including zinc (Zn), boron (B), sulfur (S), and molybdenum (Mo). Cassava fields can be supplemented with those nutrients from organic manure, with 4 tons/acre at least required, depending on soil fertility. He also mentioned that, recently, due to technological advancements, various digital tools and applications are available to determine the amount of fertilizer required. One of the digital tools available is called AKILIMO, which can calculate the exact amount of fertilizer needed per designated area.

Box 1: Questions and comments raised by participants

Participants appreciated this session, as evidenced by their various remarks and questions, which helped them gain a deeper understanding. The questions raised during the session were as follows:

Question 1: *Mr. Daniel Ngereza from Nsimbo asked, “Why does the same cassava variety taste bitter in one area and non-bitter in another area?”*

Response: Habai explained that cyanide levels vary depending on the soil nutrients of a particular location. High levels of soil cyanide can make cassava poisonous to both humans and livestock. Ms. Francisca Gwandu described the chemical process by which cyanide is taken up from soil into cassava and the chemical reaction that occurs within the organism after consumption. She added climatic changes like water stress, but also the variety itself attributes to changes in cyanide levels resulting in root bitterness.

Question 2: *Mr. Msafiri asked, “What are the qualities of animal manure needed to be used for cassava production, because some farmers complained that application of this manure causes cassava cuttings to rot when planted? What is the right time for spraying herbicides in the field for weed management?”*

Response: Habai noted that animal manure should be composted well before being applied to the field, rather than using fresh animal manure as some farmers do. He also advised that the best time for herbicide application should be at least six weeks after planting for the best result and to reduce stress to cassava plants.

Cassava seed multiplication methods

Mr. Ngakwi Meibuko from TARI-Tumbi presented methods for cassava seed multiplication. Firstly, he introduced the cassava seed system used in Tanzania, starting from research (breeding) to the seed classes: pre-basic, basic, and certified seeds. He also highlighted the low multiplication ratio as a



significant challenge in cassava seed multiplication, providing an example: one maize seed can result in 300 seeds of maize in 90 to 120 days, whereas a single cassava seed (cutting) yields an average of 8 to 15 cuttings in 12 months. Due to this challenge, farmers are compelled to cultivate local varieties, which are susceptible to diseases, have low yields, and poor starch content. Even though numerous improved varieties have been bred and released for use by farmers, their planting materials are not readily available to them. This challenge led to the development of rapid multiplication methods to bridge the gap in the insufficient supply of planting materials. TARI and IITA have made efforts to initiate rapid cassava seed multiplication methods to supply farmers with enough improved cassava planting materials. Among other methods, Ngakwi first explained the use of the tissue culture method, a premium and well-known method for the rapid multiplication of cassava cuttings, thereby ensuring the availability of clean cassava planting materials. Secondly, he discussed Semi-Autotrophic Hydroponics (SAH), which involves the use of single-node, two-node, and three-node cuttings under specialized growth media for the sprouting of new plantlets, followed by further management in the screen house. After two to three months, the plantlets from this method are ready for field establishment. Thirdly, the green stem/mini stem and pencil stem cutting technique, which involves extracting plantlets from the upper part of the cassava plant branches, was introduced. The cuttings are planted in either well-prepared seed beds or in plastic tubes with well-prepared soil (forest soils). Fourthly, he highlighted the leaf bud/petiole bud or a chip bud technique, which utilizes the active buds present in all branches that are not in use when harvesting cuttings with farmers' practices. According to the research findings, this method can multiply the conventional method by 7 to 9 times, thereby presenting a viable and complementary approach to ensuring the availability of planting materials for improved varieties to farmers, which is the primary goal of the Muhogo Bora project. Just after the presentation, a participant asked a follow up question to deepen his knowledge and understanding of the topic. The question raised during the session was as follows:

Question: *Why did the session teach different techniques for cassava seed multiplication, while cassava propagation can be done simply by cuttings?"*

Answer: Ngakwi noted that it is true that cassava is a vegetative propagation plant; however, plants use different techniques for seed multiplication because we want to produce plantlets/seedlings that are free from disease and increase the multiplication ratio.

Seed Act, regulations and seed supply systems in Tanzania

Mr. Joseph Ngura, a facilitator from TOSCI, delivered a presentation of the Seed Act and seed production regulation to participants and insisted on the institute's slogan, which states that “a quality



seed does not cost, it pays”. He also pinpointed the rules governing the production of cassava seeds (cuttings), including the isolation distance depending on the intended seed class: basic or certified. Table 1 outlines the requirements for cassava seed production dealers, which were also explained clearly to participants during the training.

Table 1: Regulations and standards for the cassava seeds (cuttings) production for different seed categories (pre-basic, basic, certified 1 and 2) authorized by Tanzania Official Seed Certification Institute (TOSCI).

Factor	Class			
	Pre-basic	Basic	Certified 1	Certified 2
Land history				
Minimum rotation (years/seasons)	2	2	2	2
Minimum number of inspections	2	2	2	2
Minimum isolation (m)	300	200	100	100
Minimum distance between varieties	3	3	3	3
Maximum permitted ratoon	2	2	2	2
Maximum shoots per ratoon	3	3	3	3
Off-types (5 x 40 counts/ha) (%)	0	1	1	1
Diseases				
Cassava mosaic disease - Max incidence (%)	1	2	3	3
Cassava bacterial blight - Max mean severity	2.5	2.5	2.5	2.5
Cassava brown streak disease - Max incidence (%)	2	4	7	7
Cassava brown streak disease - Lab testing (Max %)	4	-	-	-
CBSD - Lab testing-tissue culture plantlets (Max %)	0	0	-	-
Pests				
Cassava mealybug - Max incidence (%)	1	2	4	4
Cassava green mites - Max mean severity	2.5	3	3.5	3.5
Scale insects - Max incidence (%)	1	2	4	4
Postharvest seed standard				
Harvesting age - new crop	8-18 mth	8-18 mth	8-18 mth	8-18 mth
Harvesting age - ratoon crop	6-12 mth	6-12 mth	6-12 mth	6-12 mth
Minimum length of cutting	20 cm	20 cm	20 cm	20 cm
Minimum diameter of cutting	2 cm	2 cm	2 cm	2 cm
Minimum number of nodes/cuttings	5	6	7	8
Maximum damaged nodes	20%	20%	20%	20%
Validity of certification	2	2	2	2

This topic drew a lot of attention from participants, including the need for them to ensure that farmers in their working localities use authorized seeds. Specific to the Muhogo Bora project, participants were requested to assist farmers in ensuring that they follow regulations during the establishment of cassava seed production fields, manage crops in the field, and help them meet the minimum and standard requirements for their fields to qualify during the inspection process. Participants raised a lot of very



important questions to enable them to comprehend and capture well information related to seed regulation, registration and quality control aspects as summarized in box 2 below.

Box 2: Questions and comments raised by participants

Question 1: *A participant from Katavi requested that the facilitator, Mr. Ngura, expand training at the regional and district levels on field inspections for seed production, especially for extension officers, since TOSCI staff are unable to cover all areas of production in the country.*

Response: Mr. Ngura highlighted that it is acceptable to train field inspectors at the regional and district levels to anchor TOSCI officers in undertaking their role in field inspection tasks. He advised the regional and district agricultural officers to identify the group to be trained and write to TOSCI management, requesting the training. However, he implied that a training fee would be charged to cover the costs of training and certification as seed inspectors.

Question 2: *A participant from Ikungi, Singida, enquired if they should get a certificate that will allow them to be seed inspectors after completion of the training program.*

Response: Ms. Francisca Gwandu, responded and insisted that all participants will be provided certificates at the end of the training program, but warned that, the certificate to be given will not authorize the participants to be seed dealers, because the training provided by Mr. Ngura are meant to capacitate the participants to know the rules and regulation guiding the cassava seed producers only. Mr. Ngura insisted that special training is provided for individuals to qualify as seed dealers, which involves paying fees and receiving certificates that authorize them to engage in the seed business.

Question 4: *Mr. Msafiri asked if the seeds being imported into our country are inspected by TOSCI.*

Response: Mr. Ngura responded by stating that all seed business activities in the country are controlled by TOSCI, including the import and export of seeds within and outside the country.

Question 5: *Another matter raised by participants is the challenge of the fake seed businesses.*

Response: Participants and facilitators engaged in a brief discussion. The conclusion drawn is that the role of controlling the sale of unauthorized seeds in the country is to ensure that all seeds present in the market are authorized. Despite TOSCI's efforts to regulate the seed business in the country by enforcing rules and regulations, unauthorized seeds continue to be sold.

Good agronomic practices for orange fleshed sweet potato

Dr. Hadija Musa from TARI-Ukiriguru took the participants through this session. She began by asking the participants to rank sweet potato production in their respective regions. A representative from the Singida region stated that sweet potatoes are the fifth most produced crop in his area, while in Katavi, they are the fourth, and for the Tabora region, they are the sixth. Through this question, the facilitator aimed to understand the production status in their localities and present them with real-life examples



of the importance of sweet potatoes as a primary source of food, with a short time to maturity of 3 to 4 months, grown in many areas of the country. She further explained the nutritional significance of the crop, highlighting the Vitamin A content in some of the released, Orange-Fleshed Sweet Potato (OFSP) varieties to help alleviate vitamin A deficiency in the country. Relatedly, she mentioned children under five years and pregnant women being at risk. Subsequently, she mentioned the factors to consider for sweet potato production, such as suitable soils (loam soil with a pH range of 5.6 to 6.6), as well as soil nutrients like potassium and nitrogen, which are crucial for facilitating rooting and vegetative growth. Average rainfall of 500 to 1000, average temperature of 15 - 30 degrees Celsius, and moisture content of between 50 and 60 after planting. Moreover, the crop production is constrained by some challenges, including pests and diseases, a lack of knowledge on GAP, the use of local varieties prone to sweet potato pests and diseases, small shelf life and climatic changes.

Furthermore, she mentioned the insect pests threatening sweet potato production, including the sweet potato weevil, flea beetles, wireworms, and white grubs, which cause damage to the roots or chew on the leaves. She insisted weevils are the most common insect pests of sweet potato, causing to up 100 percent yield loss if not controlled. She emphasized that farmers could control using clean seeds and timely management, while ensuring that sweet potato roots are well covered with soil and harvesting is done at the right time.

Dr. Hadija also mentioned the three diseases of OFSP, namely Sweet Potato Virus Diseases (SPVD), fungal infection such as Fusarium wilt and black rot, and bacterial diseases like bacterial wilt. Among the three diseases mentioned above, SPVD is the most threatening disease. The disease is caused by multiple viruses and soil-borne pathogens that lead to root rotting and wilting. Management strategies involve avoiding known infested areas, practicing crop rotation and using resistant varieties. She finalized the talk by insisting that the extension staff create awareness on GAP, insect pests and disease management, as well as the use of improved seeds to increase production.

Several questions and comments were raised by participants during this session to deepen their knowledge on good agronomic practices for OFSP land preparation, production, insect pests and diseases management as summarized in box 3 below.

Box 3: Questions and comments raised by participants

Question 1: *Mr. Sapias from Nkasi, Rukwa asked: Why do some varieties lose their qualities and become prone to diseases over time? She further enquired whether the tissue culture technique is used to multiply sweet potato seeds, as is the case with cassava, and whether any TARI institutes use this technique.*



Response: Dr Hadija highlighted that this occurs due to genetic deterioration; therefore, she insisted to the participants that it is crucial to advise farmers not to recycle seeds beyond the point of deterioration. She further noted that the tissue culture technique is primarily used for cassava multiplication, but it is also used for sweet potato multiplication. Mikocheni and Kibaha centres are using the tissue culture technique to produce sweet potato and cassava seedlings as a means of rapid multiplication.

Question 2: *Ms. Mwajabu Ramadhani from Singida wanted to know the reasons why sweet potatoes developed mixed colors in their leaves.*

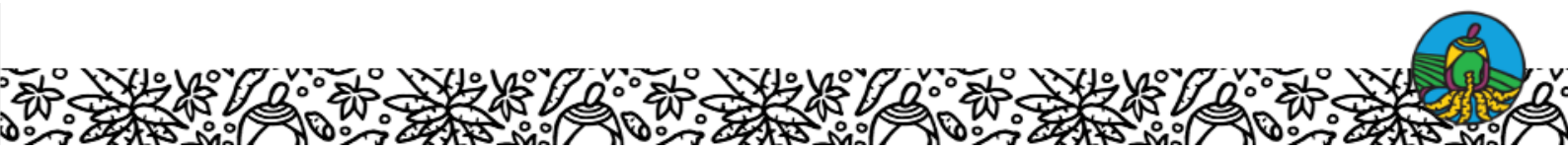
Response: The facilitator mentioned that the reasons may be due to various reasons, including nutrient deficiency, disease, or insect pest attack. Miss Mwajabu also wanted to know about the availability of improved varieties and where to get them. Dr. Hadija responded by saying there are farmers' associations in Kahama who deal in sweet potato vines, and she can connect with them to get the vines. Francisca then added that through Muhogo Bora, there will be new sweet potato seed producers from the project regions for the next growing season, 2025/2026.

Recruitment and selection process of new cassava seed multipliers

Mr. Ally Ng'adoa of IITA highlighted the crucial and vital activity of the project by explaining to the participants the need for them to understand the selection process for new CSEs. Among the steps mentioned for Muhogo Bora recruitment of new seed multipliers included: -

- a. **Pre-selection:** In this activity, IITA shares first with DAICOS the modified socially inclusive selection criteria, who thereafter, in collaboration with extension officers in the districts and ward level, conducts pre-selection in their localities.
- b. **Selection of CSEs:** This activity is done by IITA officials in collaboration with TARI officials using the screening tool designed by IITA.
- c. **Capacity strengthening:** TOSCI, IITA, and TARI conduct capacity building for the selected farmers to enhance their knowledge of all the rules and regulations governing cassava seed multiplication and ensure they comply with them for their fields to qualify during inspection.
- d. **Field inspection:** TOSCI, IITA and TARI will have a role to inspect the identified and established fields by farmers in collaboration with the extension officers in their working areas.

The facilitator insisted that ward agricultural extension officers (WAEOs) should assist in selecting farmers who are willing and serious about engaging in the cassava/beans/sweet potato seed enterprise to meet the project's target and goals. Lastly, Mr. Ng'adoa mentioned that a farmer to become a seed



entrepreneur must have several qualifications as indicated in the modified selection criteria, as summarized below: -

- a. A CSE must have their own field or can rent a field.
- b. A CSE must have a capital of at least TZS 500,000 – 600,000 for one acre of land preparation and management.
- c. A CSE must have business acumen or skills.
- d. A CSE must attend the training on cassava seed production and entrepreneurs.
- e. A CSE's field must be accessible.
- f. Priority is given to women and youth.

Discussions on challenges encountered during Muhogo Bora phase I

Mr. Habai Masunga from TARI Ukiriguru shared with the participants the challenges experienced during the phase I (2021-2024) of MB project. This was to enable the new extension officers and CSEs to not repeat the same mistakes in Phase II (2025-2027) so that the project would lead to remarkable success. The challenges faced were drawn from field experiences, including demo plots, field days, seed delivery and monitoring pre- and post-harvest activities. He later pinpointed some of the difficulties encountered as follows: -

- a. **Site and farmers' selection:** Some extension officers led to the selection of sites that are not suitable for cassava production but also some farmers previously selected were not committed some did not adhere to GAP, isolated distances and produced roots and not seeds.
- b. **Land preparation for timely planting:** Some farmers delayed preparing their fields, resulting in delayed delivery, and drying or rotting of cuttings before planting. It may be that for some farmers, cassava is not a priority crop, especially in communities where tobacco is a significant crop. They prepare the land first for tobacco, not for cassava.
- c. **Less accessible CSE fields and demo plots:** Some extension officers did not provide proper guidance in selecting the demos and CSE fields, so many farmers in the community could not see them.
- d. **Less commitment of selected CSEs:** Some CSEs received and planted seeds but did not plant or others planted but did not manage their fields or inform neighbors about the presence of the



improved varieties. Additionally, some CSEs failed to establish security strategies in the fields, resulting in the theft of seeds and roots across the entire field.

- e. **Logistics of cassava seed cuttings transportation and delivery:** Some CSEs delayed receiving the cassava seeds from the district offices where TARI left the seeds as they claimed to receive late notification and others complained of the high charges to their field locations. This resulted in late planting and sometimes the spoiling of cuttings at the farmers' homestead or at the district premises.
- f. **Animal grazing and invasion of wild animals such as elephants and monkeys:** In some districts, such as Itigi, Manyoni, Nsimbo, etc., there was a profound devastation of cassava fields by elephants, monkeys, and even grazing animals. This has significantly impacted seed multiplication efforts; however, district authorities in these areas are rectifying the situation accordingly.

Feedback from participants on challenges encountered during phase I

This session drew more attention from participants, with many asking follow-up questions to understand better. Some of the questions and comments raised by participants were as follows:

Box 4: Feedback from participants on challenges encountered during phase I

- The DAICO from Ikungi, Singida complemented the TARI and IITA teams by including high-level local government officials in the project's implementation, particularly in field and CSE selection. He added that training extension officers and sharing past experiences are crucial for identifying areas for improvement in the second phase. Habai responded by accepting those opinions and support. He then stated that TARI and IITA would provide the mandate to DAICOs, DALFOs, and WAEOs to verify the selection of CSEs, thereby helping to obtain committed farmers in implementing the assigned activities.
- The extension officer from Nkasi advised that DAICOs from every district should nominate a focal person in each district who will report only on the Muhogo Bora project, as the heads of department may be too busy with other administrative issues. Francisca Gwandu accepted the validity of the idea, but instead advised that it could be implemented as an internal district arrangement with their leaders, who would then communicate it.
- The regional agricultural advisor from Katavi, Mr. Faridu Mtiru, expressed his disappointment with some extension officers for their lack of commitment in his region and other project regions, and promised to work closely with researchers and field officers to ensure they have a positive impact on communities. Additionally, the RAA from Kigoma, Mr. Bathromeo morice promised that disciplinary actions will be taken against misbehaving extension officers to ensure they work efficiently and effectively.



- Mr. Omary Chuwa from Itigi gave a word of thanks to the facilitators for the nice training they brought to them and promised that they are going to work hard with their farmers to meet the project targets and boost farmers' income and livelihoods. Then he requested that the project coordinator ensure the timely delivery of seeds to avoid planting delays. Mr. Habai Masunga responded by acknowledging logistical problems in seed delivery, especially in phase one, when TARI was forced to wait for all farmers in a region to prepare their land and be ready to receive seeds. Still, these were due to different reasons, including the farmers' geographical location. Few committed farmers were able to travel to the selected centers to obtain the seeds. Both the facilitator and participants concluded by promising to reduce the challenge of delayed seed delivery by ensuring earlier field preparation and delivering seeds in piecemeal (to those who are ready). Ms. Fransisca Gwandu noted that despite the difficulties raised in Phase I, there were extension officers and CSEs who performed very well, enabling the project to achieve its target. She finally expressed her gratitude to the participants for their attentiveness throughout the first day of events and asked them to be punctual the next day, which marked the end of the training program.



Day 2 | Tuesday 23rd September 2025

The second day of the training began with participant registration, followed by a brief reflection on the highlights of day one, facilitated by Ms. Francisca Gwandu. This allowed participants to revisit lessons learned and connect them with the agenda ahead.

Identification of cassava pest and disease management

Mr. Kasele Salum of TARI presented the cassava diseases, which mostly threaten cassava production, mentioning Cassava Mosaic Disease (CMD), Cassava Brown Streak Disease (CBSD), and Cassava Bacterial Blight (CBB). Starting with CMD, he explained that a virus causes the disease, and there are several virus strains that cause CMD. The transmission of the virus occurs through a vector called Whitefly or by planting of infected cassava cuttings. Some of the disease symptoms include leaf mottling (yellow/light green patches), distortion (curling, malformation, and twisting of leaves and stalks), stunted growth, and a significant reduction in cassava root yield. To control this disease, he insisted on the use of clean seeds, improved varieties resistant to the virus, such as Mkombozi, Mkumba, TARICASS 1 to 5, and the control of the vector, as well as isolating the seed production fields from farmers' fields.

Secondly, Mr. Kasele mentioned CBSD as the most threatening disease compared to others. The disease is also caused by two virus strains, namely Cassava Brown Streak Virus (CBSV) and Ugandan Cassava Brown Streak Virus (UCBSV). It is transmitted through the planting of infected cuttings, whitefly infestations, and the use of local varieties that are not resistant to the virus. The yield loss due to this disease is 100%. To control the disease, farmers are required to maintain the vector, use clean seeds, and use improved varieties resistant to the virus, as previously mentioned.

Thirdly, the presenter mentioned the potential cassava insect pests, including cassava whitefly, cassava green mite, cassava mealybugs, grasshoppers, and ants. Among others, whiteflies and green mites are the most common insect pests in many areas where cassava is produced. They can be controlled using chemicals and improved, resistant varieties of those insect pests. Participants actively engaged in discussions on how to differentiate between CMD and CBSD in the field, the challenges of accessing improved varieties, and the role of farmer-to-farmer learning.

Identification of improved cassava varieties

Ms. Francisca Gwandu of TARI introduced the topic by defining the difference between a seed and a variety. She stated that a seed is a part of a plant that is used to grow another plant, while an array is a



group of similar plants that can be differentiated by morphology and growth. Additionally, she defined improved seeds as those obtained through the breeding pipeline (stage gates) and later validated and certified by TOSCI. Qualities of the improved seeds include genetic purity, germination ability, Morphological purity, and moisture content.

After the brief introduction, the facilitator highlighted the reasons for distinguishing cassava varieties, emphasizing their importance to researchers' improvement, selection and conservation and to farmers, who benefit from them in decision-making and selection. Based on these needs for variety identification, several traits are used to distinguish cassava varieties These includes:, colour of apical leaf (green, purple, purple mixed with green), morphology of the central leaf (Linear, elliptic, obovate), leaf colour (deep green, pale green, purple), number of leaves in a petiole (Three, five, seven, nine, eleven), petiole colour (yellow, green, red), petiole arrangements in a stem (Horizontal, vertical), stem color (orange, yellow, grey), root patterning in a stem, external colour of the roots (cream, pale brown and deep brown), color of root cortex (pink, purple, yellow, cream), and color of root pulp (white, cream, yellow).

Feedback a participant: An extension officer from Rukwa region appreciated the presentation since he was unaware of varieties distinction in cassava through leaves, stem and roots. The facilitator insisted on the importance of cassava farmers to identify cassava varieties which will help them to select a variety of preference.

Cassava and sweet potato processing and utilization

Ms. Martha Ndelemba from TARI Tumbi introduced cassava and sweet-potato processing and utilization, highlighting its importance, including extending shelf life, adding nutritional value, and enhancing the market value of cassava products. Some of the cassava products presented included boiled cassava, biscuits, doughnuts, spaghetti, chapatti and Ugali. Moreover, she mentioned the importance of consuming products, such as foods, to improve digestion, balance blood sugar, and strengthen the immune system. For dried cassava flour, she explained the proper procedure from harvesting, peeling and drying to maintain the cassava quality. She insisted on using drying facilities to accelerate the process while maintaining quality.

In addition to the cassava processing, Martha presented on sweet potato processing. She started by highlighting the importance of the orange-fleshed sweet potato in the body, as it is rich in Vitamin A, which is essential for improving vision and strengthening immunity. Regarding the importance of cassava processing, sweet potato processing is also necessary to extend shelf life, add nutritional value,



and enhance the market value of sweet potato products. Furthermore, she mentioned some sweet potato products and how to prepare them, such as cakes, crisps, and fries. She finalized by insisting on cassava and sweet potato processing to increase demand for and market for the products, which will be a charm for increasing cassava and sweet potato production. Comments raised by participants and responses provided by facilitators are summarized in box 5 below.

Box 5: Questions and comments raised by participants

Question 1: *Mr. Athmani Kidule an extensionist from Katavi asked whether there is a loss of nutrients during the cassava drying process.*

Response: Ms. Francisca referred to the CIAT publication on yellow cassava processing, which states that there is no significant nutrient loss during processing. Cassava, being rich in starch, is not affected by heat.

Question 2: *Mr. Godfrey Henry Kayombo a participant from Kakonko, Kigoma wanted to know which of improved cassava varieties are rich in Zinc.*

Response: Francisca highlighted that for all released cassava varieties available, zinc has not been quantified; however, initiatives are underway to quantify some minerals in released varieties and those in the breeding pipeline. Most of the previously released varieties were bred for CBSD and CMD resistance traits, with dry matter content also included.

Question 3: *An extension officer from Kigoma, Ms. Toligwe Kaisi asked about the health implications of consuming the ugali from the locally drying method of using banana leaves, making the roots develop a black layer.*

Response: Ms. Martha replied that there could be health effects, but studies have yet to be done to confirm the impact.

Business plan and entrepreneurship

Dr. Joel Nkwabi from TARI presented on business plan development and entrepreneurship skills for cassava seed entrepreneurs. He underlined the importance of structured planning, record-keeping, financial literacy, and entrepreneurship for cassava seed multipliers. The facilitator highlighted the production costs per acre for seed cassava and the estimated profit once the seeds and roots are sold.

Feedback and questions from participants were as follows:

Question 1: *Msafiri Mkenda, an extension officer from Tabora highlighted the farmers' challenges as follows: limited access to credit, inadequate financial services in rural areas, and the importance of Farmer cooperatives for business sustainability. The facilitators advised extension officers to seek such information from government officials at the regional and district levels, since loans are provided*



to women and youth groups, land for agriculture is also offered, and some banks provide agricultural loans.

Question 2: *An extension officer from Singida wanted to know why the cost of buying pesticides was not included in the production costs. Dr. Joel responded that since this is a sporadic case, if improved varieties are used and if it happens, there is a budget for miscellaneous items that can be used.*

Application of digital tools in data collection and reporting

Mr. Ally Ng'adoa introduced participants to the use of digital tools in agriculture which included Seed Tracker, Plant Village Nuru, AKILIMO, and KoboToolbox. These digital innovations sparked participants' interest, who raised questions about user-friendliness, technical support, and sustainability. This session was highly interactive, in which participants installed free Android apps and attempted to work with, especially, the Kobo Toolbox, which specializes in collecting and managing data of various categories.

Cassava market and market linkages

This session was led by Mr. Lembris Lazier from IITA. He explained to participants the potential strategies for strengthening farmer-buyer relationships and ensuring sustainable market access in a clear and concise manner. Participants expressed concerns about market instability, a lack of price transparency, and inadequate coordination across the value chain. This drew significant attention to participants because it presented a clear and well-structured market that would open up and sustain their seed business, ultimately making this model viable. Additionally, he reiterated the significance of business branding to boost market. Particularly for cassava, he highlighted the importance of the use of branded packages with descriptions of the product and contact information of the seed producer as well as the reflectors with contacts information about the cassava seed producer used by motorcycles riders. He gave examples of two successful groups - CHAWAZIWA and Mboni ya Vijana - who have advanced in cassava seed business.

Practical session on identification of cassava pests and diseases

In the afternoon of the second day, a practical session was conducted focusing on the identification of cassava diseases and the application of digital tools in the agricultural context. This session was jointly facilitated by Mr. Ally Ng'adoa (IITA) and Mr. Kasele Salum (TARI). Participants engaged in hands-on experience with the use of PlantVillage Nuru, Kobo Toolbox, and other tools, practicing disease diagnosis, digital data entry, and production planning. The practical exercise-built confidence among



participants in applying digital innovations in their day-to-day cassava production and marketing activities. The day concluded with group reflections, where participants emphasized the importance of disease management, market linkages, and digital tools in enhancing cassava seed systems.



Day 3 | Wednesday 24th September 2025

The final day of the training began with participant's recap and reflection of day two session, which was led by Ms. Francisca Gwandu. Key points included pest and disease management, variety identification, processing, market linkages, and the adoption of digital innovations.

Application of Kobo Toolbox in data collection and reporting

Mr. Lembris Laizer, a facilitator from IITA, presented on the application of the Kobo digital Toolbox for monitoring and reporting. He demonstrated how digital platforms can improve seed tracking, adoption monitoring, and field performance assessment. After the demonstration, he instructed the extension officers with smartphones to install the application, register for use and test. A few extension officers failed to register during the session, but they were given a slot in the afternoon to finish the registration. Participants stressed the need for localized training to improve digital literacy at the grassroots level. Due to the participants' motivation, Lembris announced that he was open to teaching them about the diverse applications of KoboToolbox beyond what he had demonstrated during the session and shared his personal contact information.

Gender Equality and Social Inclusion Considerations in Cassava Seed Systems

This session was delivered by Dr. Millicent Liani, a gender and social inclusion specialist from IITA. To introduce the session, she asked participants to share their own expectations of this session using cards, where they jotted down their content. The responses were summarized in Box 6 below:

Box 6: Summary of participants' own expectations of the GESI training

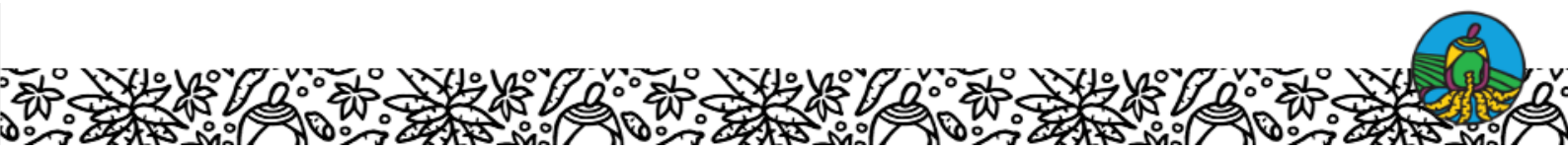
1. To understand how youth and women will be involved in Muhogo bora project as cassava seed production (9)
2. To understand how women and men will be given an opportunity to participate in project activities (8)
3. To understand why project have put great effort to women and youth instead of the whole community (5)
4. To understand the division of duties and responsibilities among men and women in implementation of project activities and society (6)
5. To understand how the division of duties and responsibilities in a family affect woman in participating in project activities (5)
6. How gender issues will be executed during phase II of Muhogo bora project implementations (2)
7. To learn the strategies of fighting violence against women and children under 18 years (6)
8. To learn more on how GBV relates to agricultural production activities in society (3)
9. To know how female youth will be given chance to participate in cassava seed production (5)
10. To understand why it is so important to have gender topic in cassava crop production (3)



11. To know how youth will be motivated so that they will participate in cassava seed production
12. To understand the importance of cassava seed and root production to both men, women and youth (4)
13. To understand how political leaders will be used in promoting gender issues in cassava production
14. To learn more on gender equity and gender equality (4)
15. To learn how women will be able to own land for cassava seed production (3)
16. To learn strategies for increasing women participations in production and owning assets (3)
17. To understand the challenges that make low participation of women in cassava seed production
18. To understand the difference between gender and sex and (4)
19. To understand the importance of gender equality in cassava production (5)
20. How project will help women to have power in decision making at family level
21. To understand the meaning of equal rights among men and women (2)
22. To understand the reason to why women want equal right (50/50) in everyday activities
23. To learn how to train farmers on gender equity and equality
24. To learn about market access for cassava and its products
25. To learn the strategies to make women produce and sell more of their produce

Thereafter, the facilitator wanted to understand the participants' awareness of the concepts on GESI. She asked participants to define gender equality vs. gender equity. A participant defined gender equality as access to opportunities in the communities for both women and men. They further mentioned that, according to communities' perceptions, there are tasks to be done only by men and others only by women at the household level. Currently, the inclusion of women in paid work has increased. Participants also stated that the number of women participating in agricultural value chains has increased, and that inclusion extends from production to the sale of products. Participants were taught about the dichotomy between sexual identity and gender identity; gender roles and relations in agriculture; types of gender roles; importance of gender equity and equality in CSE work as well as challenges in promoting gender equity and equality. Thereafter, she introduced the participants to the concept of intersectionality by using an example of the coin model of privilege and oppression, informing them that intersectionality is a lens towards embracing social inclusion which denotes moving beyond gender binary (women and men) analysis towards acknowledging that women and men have different individual social identities that shapes their differential privileges or disadvantages to participate and benefits from CSE work. She then presented on why GESI matters in extension and advisory systems, and how intersectional gendered data collection, analysis and reporting is done.

After the above introductory session, Millicent took participants through the gender-responsive approaches used in Muhogo Bora project, by sharing insights from Phase I (2021-2024) towards enhancing equal representation of women, men and youth as CSEs. Thereafter, she delved into the gender-transformative approaches by the project, by sharing findings from the co-creation participatory action research gender study conducted in phase I in Kasulu and Urambo districts aimed at understanding the root causes of inequalities and develop solutions for social change. The root



causes for both study sites were male dominance and control systems, customary land inheritance systems, unfavorable credit requirements, and an extension gap. These root causes result in a lack of decision-making, gender-based violence, and continuous burden of care for women's engagement in unpaid care work. Following the identified root causes and their impact, the facilitator underscored the importance of empowering women and marginalized groups to participate and benefit equally from cassava seed entrepreneurship

Human Rights, Gender-Based Violence and Land Rights in Cassava Seed Ecosystem

This session was delivered by Mr. Alfred Kalugendo, a facilitator from Urambo Legal Availment and Charity (ULAC). Starting with the topic of human rights and Gender-Based Violence (GBV) in CSE system, he gave a brief overview of human rights, including the right to life, property ownership, and the right to engage in various economic activities. He emphasized that there have been several incidents of different types of GBV due to the violation of human rights. He noted that women are the majority victims of GBV in our communities. This is attributed to retrogressive cultural beliefs and values entailing men's domination at the family level; lack of education, and awareness of human rights and laws associated with human rights and GBV among others. He noted that government and non-governmental organizations have initiated village-level initiatives to raise awareness and provide legal aid to people in need.

This was followed by a session on gendered land rights in the CSE ecosystem. Mr. Kalugendo gave a brief history about the land ownership in Tanzania, whereby he defined three systems of land ownership, namely, (i) the land ownership system before colonialism (no land lease documentation), (ii) the land ownership system during colonialism (land was offered to colonists) and (iii) land ownership system after colonialism (The guarantee of the land is by president on behalf of all the citizens). The law on land ownership was established in 1990 and revised in 1995, 1999, and 2023. He noted that lack of awareness of these land ownership systems has left women vulnerable to land ownership issues, hindering their participation in agricultural activities. He finalized by emphasizing the need for supportive policies and community-based interventions to ensure fair participation of all groups.



Box 7: Questions and comments raised by participants

Question 1: *Ms. Christina Lutta from Itigi, Singida wanted to know the reasons that cause the violation of women and children in society.*

Response: Mr. Kalugendo responded by mentioning retrogressive and poor traditions, values and norms, men domination, lack of awareness on human rights being some of the reasons to violence against women and children.

Question 2: *Mr. Mikidad Abdallah from Kasulu, Kigoma asked what should be done to stop violence against women and children?*

Response: The facilitator mentioned the following things to be done to stop violence against women and children: awareness creation on human rights, stopping poor traditions and beliefs, women's inclusion in social activities through media, LGA, etc, as well as provision of legal aid by government organizations and NGOs.

Question 3: *An extension officer from Buhigwe, Kigoma, Mr. Alfred Josephat, asked whether there are laws allowing women to inherit land in Tanzania.*

Response: The facilitator responded that there are laws allowing women to inherit land in the country.

Post-training assessment

Mr. Habai and Ms. Francisca conducted analysis of the post-training assessment to gauge the knowledge acquired during the training and gather feedback on the program's organization. They analyzed both pre- and post-training assessments to assess an overall performance as a feedback mechanism for participants' knowledge gain before and after training. The participants completed both pre- and post-training assessments were seventy-six. All scores were calculated and analyzed for all the seventy-six participants who completed these assessments. The average score on the pre-test was 52% with the lowest and highest scores being 20% and 71% respectively. The post-test results showed that the lowest and highest scores were 21% and 85% respectively, with an average score of 58%. Then the difference between the pre-test and post-test results were analyzed and found that the top three participants who improved the most were Stephania Chiza from Nsimbo district (scored 81%), Toligwe Kaisi from Uvinza district (scored 73%) and Msafiri Mkenda from Urambo (scored 71%). These three identified winners were awarded a token of appreciation at the end of the training, motivating them and the entire group as depicted in Figure 2 below.



Figure 2: The topmost participants who demonstrated change knowledge before and after the training based on the assessment results. Photo credit: J. Mwajombe/TARI.

Outcome of participants' evaluation of the training workshop

Following completion of the three-day training, participants were asked to evaluate the workshop. A training evaluation form was given to everyone. They were asked to rate the overall training logistics and content based on a five-point Likert scale - 1=strongly disagree; 2=disagree; 3=neutral; 4=agree; 5=strongly agree - on aspects related to the objectives and expectations; the relevance of the content to their work needs; whether the amount of new information and knowledge was good and whether they could recommend the training to other staff in a similar position in the institution; whether the facilitators were knowledgeable about the topics; whether they would like to participate in a similar workshop in the future; and whether the duration of the training was sufficient (see Fig. 3). Participants then indicated the main messages they took away from the workshop, what they did not fully understand, and recommendations for improving future training workshops. The results of the analysis showed that a total of 83 participants (19 women, 64 men) completed the evaluation forms. The outcome of the participants' ratings of the training are summarized in Figure 3.



Figure 3: Results of participants' own evaluation of the training workshop (n=83)

Box 8 below summarizes the messages that participants took away from the workshop.

Box 8: Participants' take-home message(s) from the workshop

- The importance of producing improved cassava varieties to the community
- Women and youth need encouragement and support to engage in cassava seed production in Muhogo Bora (2)
- Principles of cultivating cassava from land preparation to harvest (3)
- Selection and production of good and quality cassava variety (6)
- Cassava seed multiplication methods
- Cassava production is business, and it pays only if farmers take it seriously (4)
- Improved cassava varieties are very profitable than local varieties
- Market linkage is the basis for increasing productivity
- Production of cassava seed, and processing of cassava product
- Gender equality and inclusion in our society are the key to community development
- Support and promote cassava seed producer to succeed in Muhogo Bora project
- Gender equality and social inclusion, land right in CSE ecosystem (4)
- Human rights for women and men
- Disease identification, cassava management practices (3)
- Gender issues in cassava seed production (6)
- Gender education is very important
- Muhogo Bora project is for both men, women and youth
- Gender discrimination is very bad
- Equal participation of women and men in cassava seed production and other economic activities (2)
- The meaning of better cassava for all...Muhogo Bora is now everything in life (3)
- To assist CSEs in implementing Muhogo Bora project
- Gender equity in production and markets for agricultural goods



- Best knowledge on cassava project, gender issues and right of land ownership
- Selection of good farmers for project activity is very important
- Involvement of community and sensitize them on cassava growing
- Things to consider when selecting farmers as seed producers
- Women right to inherit property
- How to reduce gender inequalities in project activities
- How to facilitate the implementation of Muhogo Bora project in my area

When asked about what they did not understand during the training workshop, most participants (37/83) noted that they understood everything. This was followed by few who noted that they had not understood: the use of Kobo toolbox and its application in monitoring and reporting (7/83); gender issues in CSEs work (7/83) including land right laws and policies (3/83) owing to limited time; use of digital advisory tools like AKILIMO and Plant village Nuru (5/83); and Market linkages (2/83) Detailed responses are presented in Box 9 below:

Box 9: What participants did not fully understand about the training

- Nothing (37)
- Use of Kobo toolbox and its application in monitoring and reporting (7)
- Gender issues are very complicated; more time is needed to understand them well because the time was short (7)
- Use of digital advisory tools like AKILIMO and Plant village Nuru (5)
- Land right laws and policies (3)
- Market linkages (2)
- Gender monitoring
- Entrepreneurship
- Cassava seed business
- Seed identification
- How to solve the inequality between men and women
- How to differentiate cassava varieties
- Gender-based violence was not well understood
- How flooding increase salinity in soil
- Cassava diseases
- Specific herbicides used to control weed in cassava

Recommendations for improvement of future related training workshops

To improve future related training workshops, participants made several suggestions, which are summarized in Box 10 below:

Box 10: Recommendations for improvement future training workshops

- The training duration was very short; you should increase number of days from three to five days so that we can understand well because the topics were many (36)
- Regular refresher training seminars are important to boost our knowledge in cassava production (7) ...to be conducted at least twice a year (2)
- Provide practical group work examples during training (5)
- Time management during training was not good (4), timetable should be followed (3)



- Provision of good venue, especially the washrooms (4)
- Need for more extension agents to be trained based on the new modules (3)
- Participants should be provided with reference training materials/guides (3)
- Future selection of meeting training leaders is very important (3)
- Time considerations, and training motivation to reduce number of sleeping people in the venue (2)
- Many different cassava varieties according to the site of production
- Need to visit cassava seed demonstration plot during training
- Need for training in entrepreneurship
- The training on digital tools should be provided with more time so that every extension staff understand well.

Award of training certificates and closing remarks

The training closed with the official certificate award ceremony, presided over by Bartholomeo Morice, RAAs from Kigoma, Katavi and Tabora, the TARI representative, and IITA gender specialist Millicent. In their closing remarks, facilitators and participants highlighted the comprehensive nature of the training, particularly the balance of technical sessions, digital innovations, gender and land rights issues, and market integration. The ceremony marked the successful completion of the three-day training program.



Appendix 1: Training program

Program for Training of extension officers in Tabora - 22nd to 24th September 2025 Rapportuers: Mbise & Ngakwi (TARI)

DAY 1	TIME	TOPIC	RESPONSIBLE PERSON
(22.09.2025)	8:00 - 8:30 am	Registration	Ngowi
	8:30 - 8:35:00 am	Welcome Remarks	Mrema
	8:35 - 9:05 am	Highlights of Muhogo Bora Project - Phase 1 achievements, lessons, and key challenges and possible solutions; Phase 2 activities	Kiddo and Ally
	9:05- 9:15 am	Training objectives	Habai
	9:15 - 9:35 am	TARI Overview	DTTP-TARI
	9:35 - 9:50 am	Opening remarks	RC Tabora
	9:50 - 10:20 am	Pre-Test Assessment	Mrema & Ally
			Francisca, Mwajombe, Kalwinze
	10:20 - 11:00 am	Tea, Coffee and Group Photo	
	11:00 - 11:30 am	GAP -Site selection, land preparation, Planting (Cassava)	Habai
	11:30 - 12:00 noon	Cassava seed multiplication methods	Kiddo
	12:00 - 12:30 pm	Seed Act, Seed Regulations, & seed supply systems in Tanzania, Seed business, Quality control and Registration process of seed dealer	Ngura
	12:30 - 13:00 pm	GAP - Planting, pests and Diseases management (Sweet potato)	Hadija
	13:30 - 14:30 pm	Lunch Break	All
	14:30 - 15:30 pm	Selection Process of New Seed Multipliers	Ally
	15:30 - 16:00 pm	GAP - Pests and Disease management/control (Cassava)	Kasele
	16:00 - 17:30 pm	Discussions on challenges encountered during phase I	Habai
		END OF DAY 1	
DAY 2			
(23.09.2025)	8:00 - 8:30 am	Registration	Ngowi
	8:30 - 8:50 am	Reflection - day 1 topics	Mrema
	8:50 - 9:20 am	Identification of cassava varieties	Francisca
	9:20 - 9:50 am	Cassava processing and utilization	Martha
	9.50 - 10:30 am	Business plan and Entrepreneurship	Joel
	10:30 - 11:00 am	Tea, Coffee break	All
	11:00 - 12:30 pm	Seed Tracker, PlantVillage Nuru, AKILIMO	Ally
	12:30 - 13:30 pm	Market linkages	Lembris
	13:30 - 14:30 pm	Lunch Break	All



	14:30 - 17:30 pm	Practicals - NURU/Seed Tracker/AKILIMO/Practicals on cassava pests and diseases; Digital application in reporting progress	Ally, Kasele & Lembris
		END OF DAY 2	
DAY 3			
(24.09.2025)	8:00 - 8:30 am	Registration	Ngowi
	8:30 - 8:50 am	Reflection - day 2 topics	Mrema
	8:50 - 9:30 am	Application of digital tools in monitoring and reporting	Lembris
	9:30 - 10:30 am	Integration of Gender Equality and Social Inclusion in CSE work	Millicent & Ally
	10:30 - 11:00 am	Tea, Coffee break	All
	11:00 - 11:30 am	Gender and Social Transformative work in Phase II	Millicent
	11:30 - 13:00 pm	Human Rights and Gender Based Violence in CSE Ecosystem	Kalugendo (ULAC)
	13:00 - 14:00 pm	Lunch Break	
	14:00 - 15:00 pm	Land rights in CSE Ecosystem	Kalugendo (ULAC)
	15:00 - 15:30 pm	Post- test Assessment and Logistical Evaluation	Mrema
	15:30 - 16:00 pm	Award of training certificates	CD Ukiriguru & Millicent
	16:00 - 16:20 pm	Closing remarks	RAA Kigoma
	16:20 - 16:30 pm	Group photo	Francisca, Mwajombe, Kalwinze

Appendix 2: List of training participants

S/N	FULL NAME	SEX	REGION	DISTRICT	DESIGNATION	POSITION
1	Lazaro A. Mwala	M	Singida	Sindida	SAFO	RAA
2	Hillary G. Makundi	M	Singida	Sindida	SAFO	DALFO
3	Saumu A. Msangi	F	Singida	Sindida	SAFO	WAO
4	Mwajabu Ramadhani Juma	F	Singida	Sindida	SAFO	WAO
5	Vitalis G. Hiza	M	Singida	Ikungi	SAFO	WAO
6	Shilungu K. Lukanya	M	Singida	Sindida	SAFO	WAO
7	Issa Danlord Mtweve	M	Singida	Ikungi	SAFO	DALFO
8	Leah N. Azza	F	Singida	Ikungi	AFO	WAO
9	Vicky Peter Mushi	F	Singida	Ikungi	AFO	WAO
10	Shabani Kizenga Salum	M	Singida	Manyoni	SAO	DALFO
11	Mathew Saktay Qwaray	M	Singida	Manyoni	AFO	WAO
12	Shamsi N. Mhando	F	Singida	Manyoni	AFO	WAO



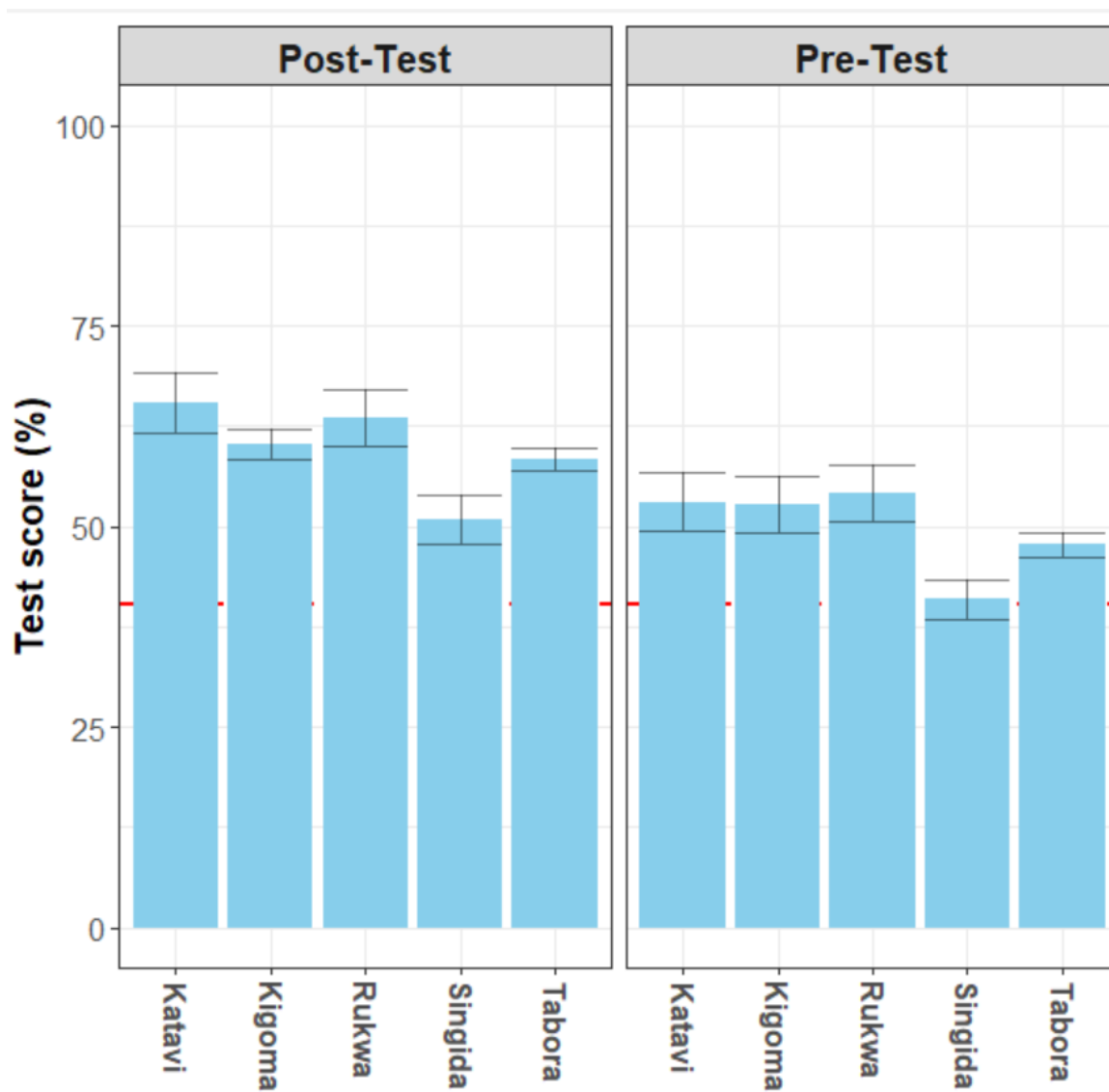
13	Charles G. Kalago	M	Singida	Manyoni	SAO	WAE0
14	Christina N. Lutta	F	Singida	Itigi	SAFO	WAE0
15	Chorea Bukolo Omary	F	Singida	Itigi	SAFO	WAE0
16	Christopher W. Chumpi	M	Singida	Itigi	SAO	DALFO
17	Neem A. Mwakatobe	F	Singida	Itigi	SAO	WAE0
18	Bartholomeo Morice Nkolonko	M	Kigoma	Kigoma	SAO	RAA
19	Godfrey Henry Kayombo	M	Kigoma	Kakonko	SAO	DALFO
20	Alphonse I Haule	M	Kigoma	Buhigwe	SAO	DALFO
21	Majid Ally Msuya	M	Kigoma	Kasulu DC	AFO	WAE0
22	Kabarana Maganga Iyongero	M	Kigoma	Uvinza	AFO	WAE0
23	Gerald Samike Kasonga	M	Kigoma	Kakonko	AFO	WAE0
24	Anicet Spach Lupamba	M	Kigoma	Uvinza	SAFO	WAE0
25	Debora Titus Rutabanzibwa	F	Kigoma	Kakonko	AFO	WAE0
26	Salvatory Vicent Moshi	M	Kigoma	Kibondo	SAFO	WAE0
27	Alfred Daud Mazengo	M	Kigoma	Uvinza	AFO	WAE0
28	Toligwe K. Musongwe	F	Kigoma	Uvinza	PAO	DALFO
29	Ayoub Markus Mgaya	M	Kigoma	Kakonko	AFO	WAE0
30	Mikidadi Abdallah Mbaruku	M	Kigoma	Kasulu DC	PAFO	DALFO
31	Yahya Ismail Mtongori	M	Kigoma	Kibondo	PAFO	DALFO
32	Abdallah Mfaume	M	Kigoma	Kasulu DC	SAFO	WAE0
33	Josephat Ndalawa Salila	M	Kigoma	Buhigwe	AFO	WAE0
34	Alfred Josephat Mbulile	M	Kigoma	Buhigwe	AFO	WAE0
35	Matai Kunge Nyachiya	M	Kigoma	Kibondo	ATE	WAE0
36	Annectus Alexander Rutashoborwa	M	Kigoma	Buhigwe	AFO	WAE0
37	Peter Mserenga	M	Kigoma	Kibondo	AFO	WAE0
38	Said Ahmed Babu	M	Tabora	Tabora	PAFO	RAA
39	Bahati Daudi Fundi	M	Tabora	Uyui	SAO	DALFO
40	Mary Elias Nkwilima	F	Tabora	Tabora	PAO	DALFO
41	Germana Simbano Mvungi	F	Tabora	Tabora	PAFO	WAE0
42	Kizito Lihamba Moyo	M	Tabora	Uyui	AFO	WAE0
43	Juma R. Andrew	M	Tabora	Uyui	AFO	WAE0
44	Sophia John Nsuruja	M	Tabora	Tabora	AFO	WAE0
45	Anjira Levi Sevetu	F	Tabora	Sikonge	AFO	WAE0
46	Francis D. Geay	M	Tabora	Sikonge	SAO	DALFO
47	Razaki Juma Rokochi	M	Tabora	Urambo	AFO	WAE0



48	Tumaini Elibariki Moreto	F	Tabora	Urambo	AFO	WAE0
49	Bahati Ernest Serejio	M	Tabora	Tabora	AFO	WAE0
50	Enogce Elisha Nyamtoota	M	Tabora	Uyui	AFO	WAE0
51	Amos Elisha Saiwa	M	Tabora	Nzega DC	SAFO	DALFO
52	Toyi Isaya Daniel	M	Tabora	Nzega DC	PAFO	WAE0
53	Iddi Jaffari	M	Tabora	Nzega DC	SAFO	WAE0
54	Simon Mayani Masonganya	M	Tabora	Nzega DC	AFO	WAE0
55	Dalla Hellya	M	Tabora	Urambo	PAFO	WAE0
56	Florentine Msafiri Mkenda	M	Tabora	Urambo	PAO	DALFO
57	Chambi Kwilasa Chambi	M	Tabora	Sikonge	AO	WAE0
58	Makrina V. Mbunda	F	Tabora	Kaliua	PAFO	DALFO
59	Santina S. Ngosi	F	Tabora	Kaliua	AO	WAE0
60	Swaidath Mohamed Jabiri	F	Tabora	Sikonge	AFO	WAE0
61	Faridu A. Mtiru	M	Katavi	Mpanda	PAFO	RAA
62	Athuman A. Kidule	M	Katavi	Mpanda	SAGROTEH	WAE0
63	Salim A. Mwakamela	M	Katavi	Mpanda	SAFO	DALFO
64	Ally A. Nugoye	M	Katavi	Mpanda	AFO	WAE0
65	Daniel Ngereza Walakunga	M	Katavi	Nsimbo	SAO	DALFO
66	Noel Emmanuel Mginila	M	Katavi	Mpanda	AFO	WAE0
67	Kulwa James Yichila	M	Katavi	Tanganyika	AO	WAE0
68	Sambua Paul Michael	M	Katavi	Tanganyika	AFO	WAE0
69	Emmanuel M. Joshua	M	Katavi	Tanganyika	AFO	WAE0
70	Musa Walumbizyo Mkisi	M	Katavi	Tanganyika	PAFO	DALFO
71	Luke Daniel Kifyasi	M	Katavi	Mlele	SAFO	DALFO
72	Anosigwe Hasan Nyingi	M	Katavi	Mlele	PAO	WAE0
73	Sabela Protas Pastory	M	Katavi	Mlele	AFO	WAE0
74	Joseph Charles Zizimo	M	Katavi	Mlele	PAFO	WAE0
75	Elice Damas Nkrumah	F	Katavi	Nsimbo	AFO	WAE0
76	Righton C. Myombe	M	Katavi	Nsimbo	PAFO	WAE0
77	Stephania Yared Chiza	F	Katavi	Nsimbo	SAFO	WAE0
78	Sapience P. Rugaimukamu	M	Rukwa	Nkasi	SAO	RAA
79	Joas Wilson Muyunga	M	Rukwa	Nkasi	AFO	WAE0
80	Isack Samson Elias	M	Rukwa	Nkasi	AFO	WAE0
81	Samwel Ngoroka Juma	M	Rukwa	Nkasi	AFO	WAE0
82	Adam Rashid Dege	M	Rukwa	Nkasi	PAFO	DALFO
83	Abuu Shaibu Kasese	M	Rukwa	Nkasi	AFO	WAE0



Appendix 3: Pre and post training assessment results by region





Appendix 4: Selected photos representing activities of the training workshop. Photos by TARI



Photo 1: Ms Francisca Gwandu presenting on cassava seed variety identification.



Photo 2: Participants practicing digital tools using smartphones during the digital tools' session.



Photo 3: Mr Habai conducting media briefing with the journalists during training.



Photo 4: Participants in the training session.



Photo 5: Participants and the training facilitators holding cassava manuals distributed to them during the training.



Photo 6: Participant contributing to discussion during the session.



Photo 7: Participant attentively taking notes during the training session.



Photo 8 : Participants discussing on disease identification during a field visit.