



## **TECHNICAL REPORT FOR THE PROJECT “ACCELERATED BREEDING BETTER BANANA”**

**REPORTING PERIOD: 01 OCTOBER 2019 – 31 MARCH 2020**

### **1 Executive Summary**

This report presents results of the progress achieved by Tanzania Agricultural Research Institute (TARI) during the first 6-months period (01 October 2019 to 31 March 2020) of implementation of the 3-year project entitled “Accelerated Breeding Better Banana”. TARI has the major role of *varietal testing and improved understanding of key stakeholders in target regions for the introduction of new banana cultivars in Tanzania*. The report therefore focuses on the activities and achievements of TARI in citing the Primary Outcomes, Intermediate Outcomes, Outputs and Milestones. The report articulates results to date, challenges encountered, lessons learned, and the work plan for future activities.

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## 2. Results Summary

**Outcome 9.0:** Varietal testing and improved understanding of key stakeholders in target regions for the introduction of new banana cultivars in Uganda and Tanzania

**Intermediate Outcome:** Matooke hybrids evaluated for release in Uganda and Tanzania.

One workshop meeting on strategizing banana breeding and testing of banana hybrids for release in Tanzania was conducted. The participants of the meeting included scientists from Tanzania Official Seed Certification Institute (TOSCI), Tanzania Agricultural Research Institute (TARI-Maruku, TARI-Tengeru, TARI-Makutopora), National Agricultural Research Organization Uganda (NARO-Uganda), International Institute of Tropical Agriculture (IITA-Arusha), Bioversity International, and Nelson Mandela African Institution of Science and Technology, Arusha (NM – AIST).

- a) The following were the workshop outputs:
  - i) TOSCI agrees to use the previous evaluation trials (Lyamungo, Maruku and Mitalula) for Distinctness, Uniformity and Stability (DUS) testing and for National Performance Trial (NPT).
  - ii) It was suggested that TARI to start an application for DUS and NPT as soon as possible in order to get a chance of releasing the selected NARITA hybrid this year.
  - iii) TARI and NARO have to prepare advanced yield trial (AYT) report and it should follow TOSCI format.
  - iv) Joint preparation of descriptors for NARITAs varieties we want to release (TARI&TOSCI)
  - v) Introduction and Agronomic Evaluation of NAROBan1-5 from Uganda
  
- b) The progress made after the meeting:
  - i) General management practices i.e weeding, farmyard manure application, de-suckering and pruning were employed in all trial sites and fields are now in good condition for DUS testing and NPT
  - ii) Application for DUS and NPT have been done
  - iii) AYT report is in progress and will be finished soon

### 3. Primary Outcomes, Intermediate Outcomes, Outputs and Milestones

Table 1 below provides information on the primary outcome, intermediate outcomes, outputs and milestones achieved by TARI.

**Table 1: Framework and results tracker for TARI**

	Primary Outcome		Intermediate Outcomes		Outputs	Targets/ Milestones				
						YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
9.0	Varietal testing and improved understanding of key stakeholders in target regions for the introduction of new banana cultivars in Uganda and Tanzania (Seed delivery /variety release system.)	9.1	Matooke hybrids evaluated for release in Uganda and Tanzania.	9.1.1	Banana variety release process in partner countries (Uganda and Tanzania) including DUS (Distinctness, Uniformity and Stability) determined.	Two consultative meetings between Ugandan and Tanzanian breeders to understand the variety release processes.	One list of country specific regulatory requirements, field designs and data needed to release varieties	NA		
				9.1.2	Areas for appropriate sites for varietal release identified and mapped.	Three suitable sites for variety testing and release in Uganda identified.	Three suitable sites for variety testing and release in Tanzania identified.	NA		
				9.1.3	Evaluation trials in relevant agro-ecologies in Uganda and Tanzania for varietal release established.	6300 tissue culture plants of 5 NARITAs and 2 local checks; 60 on farm trials in 3 agroecologies;	Flowering and vegetative data of NARITAs for cycle 1 recorded;	Cycle 1, 2 and 3 data collection on yield, sensory, pest/disease data and analysis on old NARITAs;		
						Preliminary ranking of 10 best hybrids for yield from agronomic, pest/disease resistance and sensory data	Field performance data on cycle 1-2 of 7 triploid hybrids selected from PYT1	60 on-farm/DUS trials in 3 agroecological zones in Uganda		

	Primary Outcome		Intermediate Outcomes		Outputs	Targets/ Milestones				
						YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
						collection on cycle 1-2 of hybrids selected from PYT1				
						Handheld electronic data collection tool, linked to database for standardized data	Final ranking & selection for yield of best tasting hybrids from PYT1	Agronomic, pest/disease resistance and sensory data collection cycle 1-2 of hybrids selected from PYT2		
							3 candidate secondary triploids for release selected from PYT1	45 on-farm/DUS trials in 3 agroecological zones in Tanzania		
							6 triploid hybrids selected from PYT2			
				9.1.4	Varietal release applications submitted to the National Variety release committees in Uganda and Tanzania	Nothing to report on Period 1	One successful application detailing attributes and crop husbandry practices of candidate varieties submitted.	DUS data collection on old 5 NARITAs by ministry inspectors;		
							At least 3 candidate varieties presented before a variety release committee for release	Yield and minimum descriptors data of the candidate banana varieties;		
				9.1.5	New improved Matooke hybrids made available to selected farmers for pilot testing of assessment of performance in the field.	Nothing to report on Period 1	Nothing to report on Period 2	Development of a gender-sensitive illustration guide for Matooke hybrids "NARITAs" and made available to stakeholders.		

#### 4. Results to Date

The results achieved during 1 October 2019 – 31 March 2020 are presented in Table 2

**Table 2: Progress for TARI during 1 October 2019 – 31 March 2020**

	Outputs	Targets/ Milestones	Progress	Variance
		<b>YEAR 1</b>		
9.1.1	Banana variety release process in partner countries (Uganda and Tanzania) including DUS (Distinctness, Uniformity and Stability) determined.	Two consultative meetings between Ugandan and Tanzanian breeders to understand the variety release processes.	One workshop meeting was successful conducted	50% achieved – 0% variance to be achieved by October 2020
9.1.2	Areas for appropriate sites for varietal release identified and mapped.			
9.1.3	Evaluation trials in relevant agro-ecologies in Uganda and Tanzania for varietal release established.	6300 tissue culture plants of 5 NARITAs and 2 local checks; 60 on farm trials in 3 agroecologies	TC introduced from IITA Nigeria and are now multiplied at IITA Arusha	100% achieved – 0% variance.
		Preliminary ranking of 10 best hybrids for yield from agronomic, pest/disease resistance and sensory data collection on cycle 1-2 of hybrids selected from PYT1		100% achieved – 0% variance.
		Handheld electronic data collection tool, linked to database for standardized data		
9.1.4	Varietal release applications submitted to the National Variety release committees in Tanzania			80% achieved- 0% variance to be achieved by September 2020 upon planting of characterization trials.
9.1.5	New improved Matooke hybrids made available to selected farmers for pilot testing of assessment of performance in the field.	Nothing to report on Period 1		

## **5. Challenges Encountered**

- Onset of DUS testing delayed due to outbreak of COVID-19. Hopefully, the exercise will be resume soon
- Since TOSCI agrees to use the previous BBB1 trials sites which are very big for DUS testing and NPT, the maintainance and management cost is very big and may affect our budget.

## **6. Lessons Learned**

Nothing specific to report.

## **7. Work Plan**

Generally, the overall work plan including timeline will be adjusted, this is due to the fact that the previous trials sites will be used for DUS testing and NPT hence there will be no need to establish new trials as previous planned. Furthermore, the selection of the NARITAs hybrids fully involved farmers both male and female (Participatory variety selection) hence there will be no need to establish on-farm trials (baby trials) as previous planned. If everything goes well we are expecting to release the first four banana varieties (NARITA 4, NARITA 7, NARITA 18 and NARITA 23) this year (Plate 1,&2). TARI is looking to introduce and evaluate NAROBan 1-5 as suggested during the workshop meeting.

## **8. Budget Summary**

The will be reallocation for the funds in our budget. This is due to the fact that budget for DUS testing and NPT was not allocated in the first year and we need to use some funds for DUS and NPT application. The summarized and detailed financial reports will be provided.



Plate 1: NARITA 4



Plate 2: NARITA 23 (Left) and NARITA 7 (Right)