



VIABLE SWEETPOTATO TECHNOLOGIES IN AFRICA (VISTA–Mozambique)

YEAR 5, QUARTER 2 PROGRESS REPORT

1 January–31 March 2019



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ACRONYMS

CIP	International Potato Center
DVM	Decentralized vine multiplier
HH	Household
IIAM	<i>Instituto de Investigação Agrária de Moçambique</i> (Mozambican Agrarian Research Institute)
JFS	João Ferreira dos Santos
OFSP	Orange-fleshed sweetpotato
SAN	<i>Sociedade Algodoeira de Niassa</i>
SDAE	District Services of Economics Activities
TC	Tissue culture
USAID	United States Agency for International Development
USG	United States Government
VISTA	Viable Sweetpotato Technologies in Africa
Y5Q2	Year 5, quarter 2 of the VISTA project

EXECUTIVE SUMMARY

This section of the report summarizes the technical progress against the targets of the Feed the Future Viable Sweetpotato Technologies in Africa (VISTA) project for Year 5, second quarter (Y5Q2) (1 January–31 March 2019). The VISTA project is a 5-year project (1 October 2014–30 June 2019) with funding from the United States Agency for International Development. The project is led by the International Potato Center (CIP) and is implemented in partnership with Mozambique government partners.

The project targets are to reach 65,100 households (HH) directly and 260,050 HH indirectly. During Y5Q2 the project continued to intensify sweetpotato agronomy, nutrition, and marketing activities in the eight intensification districts of Murrupula, Monapo, Meconta, Mecuburi, Nampula City, Alto Molocue, Mocuba, and Gurué. The project distributed orange-fleshed sweetpotato (OFSP) vines to **10,309 HH (9% more than the quarterly target) and trained 10,341 (54% female) HH** in eight districts on sweetpotato agronomy and nutrition. Through its agricultural production and nutrition education activities, the project reached **9,678 children** under 5 years of age (**38% under 2 years of age, 52% female**).

Project agronomists, jointly with inspectors from the national provincial seed inspectorate department in Nampula, inspected multiplication fields for 80 decentralized vine multipliers (DVMs) for compliance with set regulations for sweetpotato seed multiplication. Forty-seven (**58%**) of the inspected DVMs complied with the set regulations and were certified as formally recognized sweetpotato seed multipliers, a recognition that boosts their reputation as good sources of planting material and could enhance market opportunities for their vines.

As part of the phase-out process, the project is conducting several training activities to strengthen the capacity of other institutions (national and NGOs) to be able to continue sweetpotato agronomy and nutrition interventions beyond the VISTA project. Accordingly, during the reporting period, the project trained six agronomists, two each from *Instituto de Investigação Agrária de Moçambique*, World Vision, and Lvia on sweetpotato agronomy. Additionally, the project provided both theoretical and practical training on OFSP nutrition to **21 health professionals (12 females)**. To enhance its nutrition education activities, the project printed **500 nutrition counseling cards** to be distributed to health centers, and trained nurses and promoters to use them as teaching aids in nutrition counseling. The project also developed other information, education, and communication materials, including a recipe leaflet, poster, and brochure, which will be used for market promotion and demand creation activities planned for Q3 to coincide with the main sweetpotato harvest.

Creating market opportunities for DVMs is one of the major achievements for the project during this quarter. The project erected signs with the names and contact details of the DVMs in public places to link interested vine buyers and DVMs. In addition, the project met with several institutional buyers working on OFSP who were linked to the DVMs. A total of 39 tons of vines were marketed in the intervention districts by DVMs at a value of **MZN 194,000 (~\$3,000)**.

The project completed a number of operational research activities that will inform project implementation in the coming quarter and future interventions. For instance, during the reporting period, the project held field days at Mother–Baby trials in nine districts to conduct participatory evaluation of OFSP varieties for their local adaptability in terms of yields and sensory attributes. The results of the evaluation showed that the top 10 varieties in terms of root yield were ‘Melinda’ (~14 t/h), ‘Namanga’ (~12 t/h), ‘Cecilia’ (~11 t/h), ‘Bela’ (10 t/h), ‘Tio Joe’ (~10 t/h), ‘Erica’ (~9t/h), ‘Lourdes’ (~9t/h), ‘Ivone’ (~8t/h), ‘Alisha’ (~8t/h), and ‘Sumaia’ (~8t/ha). In almost all sites, the yields of almost all varieties were higher than that of the local

variety. The best performing varieties in each district were identified. However, the yields of these varieties are still below the potential yield as recorded at research stations, which demonstrates that there is still room to increase the yields with better agronomic management. In terms of taste preference, the most preferred were 'Gloria' (78%), 'Caelan' (76%), 'Irene' (70%), 'Cecilia' (70%), 'Tio Joe' (68%), 'Alisha' (67%), 'Sumaia' (67%), 'Delvia' (66%), and 'Namanga' (65%).

Most farmers in the project target areas utilize sweetpotato for dual purposes, that is, for root and leaf consumption. The project also conducted operational research to evaluate which variety is preferred for leaf consumption using eight varieties, including the top five yielding ones ('Melinda,' 'Namanga,' 'Cecilia,' 'Bela,' and 'Tio Joe') and three others randomly chosen from the list ('Delvia,' 'Irene,' and 'Ininda'). The results show that farmers prefer the leaves and roots of 'Bela,' 'Tio Joe,' and 'Cecilia' in terms of taste in addition to being high yielding.

The project also completed two operational studies during the reporting period: the rapid market assessment study and the 2017 and 2018 surveys. The reports for the two are submitted separately from this report as Annex 1 and Annex 2.

1. PROJECT OVERVIEW

Feed the Future VISTA–Mozambique is a 5-year project (1 October 2014–30 June 2019) funded by the United States Agency for International Development (USAID). It is being implemented by the International Potato Center (CIP), in collaboration with government partners—including the *Instituto de Investigação Agrária de Moçambique* (IIAM), the District Services of Economics Activities (SDAE), and the District Services of Health and Women and Social Action—nongovernmental organizations, community-based organizations, and education and research institutions.

Initially, the project was designed for 7 years, which included a 2-year pilot (1 October 2014–30 September 2016) and a 5-year (1 October 2016–30 September 2021) expansion phase that involved scaling out orange-fleshed sweetpotato (OFSP) from 6 to 16 districts, 11 in Nampula Province¹ and 5 in Zambézia Province.² However, due to funding cuts, the project duration was cut to 5 years (1 October 2014–30 June 2019). Accordingly, the project targets, budget, and work plan were adjusted. Additionally, intervention districts were reduced from 16 to 8.³ The target number of direct beneficiary households (HH) reached with nutritious OFSP planting material was revised down to 65,100, including the 22,500 reached in the initial 2-year pilot.

VISTA is part of USAID’s Feed the Future program in Mozambique. It contributes to the key agriculture and nutrition objectives of the program, including increased and equitable growth in the agriculture sector and improved consumption of vitamin A-rich foods by young children and pregnant and lactating women. In accordance with the program, VISTA monitors the Feed the Future indicators for agricultural production, nutrition, incomes, and gender.

The overall goal of the project is to expand production and utilization of nutritious OFSP among HH with children under 5 and women of reproductive age. In addition to the 65,100 direct beneficiary HH, the project is expected to reach 260,050 HH indirectly with OFSP planting material, knowledge, and skills through farmer-to-farmer diffusion.

VISTA has the following specific objectives:

- **Increased production of OFSP** among at least 65,100 direct and 260,050 indirect beneficiary HH through use of productive, locally adapted varieties, quality planting material, and sustainable agricultural practices. This will be achieved through (1) multiplication of planting materials of five improved OFSP varieties, (2) farmer-led varietal demos, (3) marketing and distribution of quality planting materials of preferred varieties, (4) farmer training in sweetpotato agronomy and vine conservation technologies, and (5) operational studies to determine factors affecting production of OFSP among resource-poor HH.
- **Increased consumption of OFSP by children under 5 and women** in at least 65,100 beneficiary HH vulnerable to malnutrition. This will be achieved through (1) nutrition training of staff from government and NGOs, with a focus on micronutrient-rich foods; (2) nutrition education in at least 400 communities in target districts; (3) development and promotion of recipes for HH-level OFSP utilization as a healthy food for all; and (4) broad education campaigns on nutrient-rich foods, including OFSP, through the government health sector.

1. Angoche, Larde, Malema, Meconta, Mecuburi, Mogovolas, Moma, Monapo, Murrupula, Nampula City, and Rapale.

2. Gilé, Alto Molocue, Gurué, Mocuba, and Nicoadala.

3. Murrupula, Monapo, Meconta, Mecuburi, Nampula City, Alto Molocue, Mocuba, and Gurué.

- **Increased agricultural incomes** among at least 10,000 HH from sales of OFSP roots, vines, leaves, and processed products in local and urban markets and commercial processing. This will be achieved through (1) training farmers and traders in improved handling, packaging, and transport of fresh roots and leaves; (2) facilitation of OFSP market days (two per target district) to increase visibility of OFSP and other nutritious foods grown locally; (3) production and promotion of OFSP puree for use in school and community demonstrations and educational activities; (4) technical and management support for use of OFSP puree in commercial food processing, specifically in local bakeries; and (5) demand creation and consumer awareness campaigns for healthier diets that include OFSP.

2. PROJECT MANAGEMENT

2.1 Closure of the VISTA Project Office in Alto Molocue

As part of the project phase-out process, the CIP country management team decided to close the Alto Molocue office at the end of March 2019. Contracts for project staff who were based at this station expired in March and were not renewed. In deciding to close the office, the project management team made sure that key planned project activities for the three districts in Zambezia (Alto Molocue, Mocuba, and Gurué) were implemented before closure. Additionally, CIP staff smoothly handed over some of the activities to government agriculture and health officials (SDAE and District Services of Health and Women and Social Action) in each district whose capacity has been strengthened during project implementation. The remaining project staff (two agronomists, one nutritionist, and two monitoring and evaluation staff) based in the Nampula office will continue to provide technical backstopping to these districts in addition to continuing to implement planned activities in the five districts in Nampula Province until project closure.

2.2 Engagement of National Staff from IIAM in VISTA Project Activities

During the reporting period, CIP directly engaged four IIAM staff (two agronomists, one nutritionist, and one communications specialist) in joint implementation of VISTA agronomy and nutrition activities. The objective of this engagement is to strengthen the capacity of the national system in sweetpotato agronomy and nutrition and facilitate institutionalization of sweetpotato activities in the national program for sustainability and impacts at scale. Through this strengthened collaboration, the CIP and IIAM agronomists are jointly managing sweetpotato planting material in the greenhouse and on-station multiplication field and have also been jointly involved in the field days for participatory evaluation of sweetpotato varieties in nine project districts. Similarly, the IIAM nutritionist and communications specialist were actively involved in training district nutrition and health officers and evaluation of OFSP varieties for leaf consumption. They will be involved in planned OFSP market-level promotion and demand creation events that will be conducted during market days in four of the intervention districts.

2.3 CARE USA Visit to VISTA Project Site

On 19 March 2019, three CARE USA staff visited VISTA project activities in Meconta and Monapo as part of their preparation for the upcoming visit by U.S. Congressional delegates to observe the impact and importance of investing in foreign assistance. The visit is scheduled for the week of 26 May. The VISTA project team took the CARE team to a sweetpotato seed multiplier and a health center where CIP conducts nutrition promotion activities with a women's group in Meconta.

2.4 Collaboration with World Vision

The World Vision office in Nampula requested that CIP collaborate on an activity evaluating the impact of a World Vision-led school-feeding program implemented in selected districts of Nampula. This program includes OFSP, so CIP is now reviving earlier attempts to establish a formal memorandum of understanding between CIP and World Vision. This will allow the two organizations to jointly develop a research proposal to evaluate the impact of the OFSP-based school-feeding program on child educational outcomes (including school attendance, attentiveness, and literacy levels). This collaborative research effort, if successful, will generate a critical evidence base on the impacts of OFSP intake on not just nutrition outcomes, but also concomitant impacts on child education that will be useful for evidence-based advocacy for increased investment in OFSP interventions.

3. ACTIVITY PROGRESS BY PROJECT OBJECTIVES

3.1 Agriculture Component

Achievements under VISTA Objective 1: Increased production of OFSP among at least 65,100 direct and 260,050 indirect beneficiary HH through use of productive, locally adapted varieties, quality planting material, and sustainable agricultural practices.

3.1.1 Formal certification of decentralized vine multipliers

The project further strengthened its long-standing collaboration with local government institutions, the national research system, and the private sector to ensure sustainability and enhanced impacts of OFSP intervention at scale. To this end, CIP collaborated with IIAM and other government departments on different activities.

During the reporting period, the project collaborated with the national seed inspectorate department at the provincial level in Nampula to inspect the sweetpotato vine multiplication fields of the project's decentralized vine multipliers (DVMs). The ultimate objective of the inspection was to certify qualified DVMs who have complied with the legal requirements for sweetpotato seed production as officially recognized sweetpotato seed multipliers. This recognition confirms the credibility of the seed multiplier as a supplier of quality planting material and as such enhances the supplier's prospects of securing markets for their seed from reputable buyers, including institutional buyers.

Three inspectors and VISTA project agronomists jointly inspected 80 DVMs in Alto Molocue, Gurué, Mecuburi, Meconta, Monapo, Murrupula, Mocuba, and Nampula districts. Out of these, 47 (58%) complied with the established regulations and qualified for certification. The certified DVMs are now formally recognized vine multipliers. The remaining DVMs did not qualify for certification for various reasons, including multiplication plots that were too small, weed infestations, and not leaving the recommended separation distances of 3 m between varieties, although the quality of their planting material was good enough for distribution.

3.1.2 Training of IIAM staff on production of sweetpotato tissue culture material

The project met with IIAM to plan for a 3-day training of eight staff members (all males) from the IIAM-Nampula tissue culture (TC) laboratory on production of clean sweetpotato foundation material through TC. This training is aimed at enabling IIAM to start producing disease-free quality OFSP foundation material to support on-station sweetpotato vine multiplication and supply DVMs for further multiplication. A local consultant TC laboratory with IIAM-Maputo, with over 20 years' experience in seed multiplication through TC, has been hired to facilitate this training.

3.1.3 Strengthening capacity of NGOs on OFSP for sustainability and impacts at scale

During the reporting period, the project trained six agronomists on sweetpotato agronomy, two each from IIAM, World Vision, and a new NGO (Lvia) that is working on climate resilience. The training covered several aspects of sweetpotato agronomy, including land preparation, planting, soil fertility, cropping systems, and pest and disease management. Building the capacity of the national system and other NGOs in sweetpotato agronomy is important for enhancing the sustainability of OFSP intervention and impacts at scale.

3.1.4 Number of HH trained in sweetpotato agronomy

Outputs relative to indicator EG: 3.2-1: Number of individuals who have received United States government (USG)-supported short-term agricultural sector productivity or food security training

Table 1 presents the distribution of families trained on sweetpotato agronomy, specifically focusing on soil fertility management, good agronomic practice, ridge preparation, pest and disease identification, and management techniques. The training was conducted in the eight project target districts during the vine distribution exercise in January and February. In total, 10,341 HH were trained, of which 5,543 (54%) were females. More females attended agronomy training in the districts of Mecuburi, Mocuba, Gurué, Mecuburi, Alto Molocue, and Monapo than their male counterparts. Thus, the project ensured women's participation in trainings, which is important in enhancing their access to knowledge and skills that are critical to increasing women's empowerment and increasing productivity for a crop like sweetpotato, which is largely a woman's crop. However, men's participation was noticeable in all districts, and it is important that both men and women gain the required knowledge and skills to ensure the effectiveness of the project intervention because production and consumption decisions within the HH are made jointly by males and females. Those who were trained were issued vouchers by the project, which they used to obtain vines from the nearest DVM (Table 1) and (Fig. 1).

Table 1. Distribution of families trained in sweetpotato agronomy in Y5Q2

Province	District	Males	Females	Total
Nampula	Cidade de Nampula	515 (50%)	506 (50%)	1,021
	Meconta	746 (59%)	529 (41%)	1,275
	Mecubúri	414 (43%)	545 (75%)	959
	Monapo	486 (46%)	565 (54%)	1,051
	Murrupula	885 (51%)	865 (49%)	1,750
	Subtotal Nampula	3,046 (50%)	3,010 (50%)	6,056
Zambezia	Alto Molócue	370 (46%)	436 (54%)	806
	Gurué	972 (43%)	1,313 (57%)	2,285
	Mocuba	410 (34%)	784 (66%)	1,194
	Subtotal Zambezia	1,752 (41%)	2,533 (59%)	4,285
Grand Total		4,798 (46%)	5,543 (54%)	10,341

3.1.5 Number of HH receiving OFSP planting materials

Indicator: Outputs relative to indicator EG: 3-1: Number of HH benefiting directly from USG intervention

HH that took part in the sweetpotato agronomy training were supplied with sweetpotato planting materials through vouchers that were redeemed at the nearest DVMs within the district. In districts where the supply of vines was limited, the project sourced vines from the nearest district where vines were available and distributed them to beneficiaries in the target districts. In total 10,309 HH of those who were trained received vines through the two dissemination mechanisms. The small difference between trained beneficiaries (Table 1) and HH that received vines is due to the fact that, in some cases, HH were trained but did not have fields ready for planting and therefore did not get planting materials from DVMs.

The achievement on the indicator “*Number of HH benefiting directly from USG intervention*” exceeds the target by 9% (Table 2). In some districts the project exceeded the target more than in others due to differences in agro-ecology, rainfall onset, and support from local partners, which in turn influenced the starting time and duration of the vine distribution exercise. For instance, in the districts of Gurué (171%) and Mocuba (126%), the project far exceeded the target because vine dissemination started relatively early due to early onset of rains (Table 2) and (Fig. 1).

Table 2. Distribution of HH who received sweetpotato planting materials by district (Y5Q2)

Province	District	Achieved	2018 Target	Against 2018
Nampula	Cidade de Nampula	1,021	900	113%
	Meconta	1,259	1,250	102%
	Mecuburi	943	900	107%
	Monapo	1,051	1,500	70%
	Murupula	1,750	1,650	106%
	Subtotal Nampula	6,024	6,200	97%
Zambezia	Alto Molocue	806	1,000	81%
	Gurué	2,285	1,335	171%
	Mocuba	1,194	949	126%
	Subtotal Zambezia	4,285	3,284	130%
	Total	10,309	9,484	109%

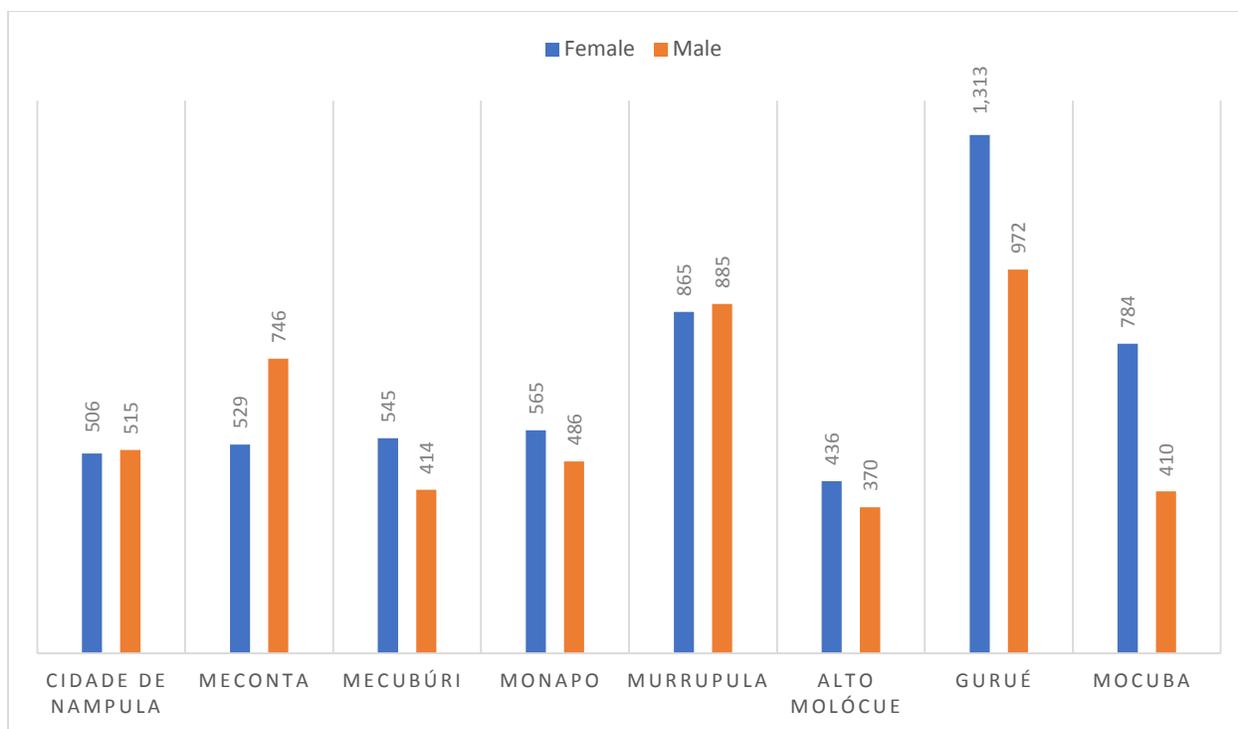


Figure 1. Distribution of HH receiving planting materials by gender over districts.

3.2 Nutrition Component

Achievements under VISTA Objective 2: Increased consumption of OFSP by children under 5 years of age and women in at least 65,100 beneficiary HH vulnerable to vitamin A deficiency and other forms of malnutrition.

3.2.1 Number of individuals reached with nutrition-related trainings

Outputs relative to indicator **HL.9-4:** Number of individuals receiving nutrition-related professional training (RAA) through USG-supported programs

The major aim of the second objective of VISTA is to promote consumption of OFSP rich in beta-carotene (a precursor of vitamin A) by children under 5 years of age and women in order to improve their vitamin A status. To achieve this, several nutrition education and social behavior change communication activities were implemented in the target communities. The project uses a cascading training of trainers approach in its nutrition trainings. The project nutritionists train community health workers (animators) and promoters in coordination with the nurses and other health professionals working in the districts. The trained promoters and animators in turn train the communities under their supervision.

On 18–19 March, the project conducted a 2-day nutrition training of health professionals (nurses, nutritionists, and health technicians) in Nampula (Photo 1). Twenty-one health professionals (12 females) (58% of target) from the intervention districts of Nampula City, Meconta, Mecuburi, Murrupula, Alto Molocue, Gurué, and Mocuba were trained. The training had two components, a theoretical part that was covered during the first day and a practical component that was the focus of the second day of the training. The theoretical component focused on providing participants knowledge on maternal and infant young child-feeding practices, the nutritional value of OFSP and its benefits for pregnant and lactating mothers and for children

under 5, balanced diets, and how to integrate OFSP into locally available diets. Specifically, the theoretical component covered the following topics:

- Nutritional deficiencies: prevalence, causes, manifestations, and consequences of stunting and vitamin A deficiency
- Nutrition interventions to reduce prevalence of vitamin A deficiency
- Concept and care in the first 1,000 days
- Components of a balanced diet
- Benefits of OFSP—the double role in diet
- Water, sanitation, and hygiene
- Utilization of the counseling card and techniques for social behavior change communications



Photo 1. Health and nutrition professionals attending the theoretical component of the 2-day nutrition training.

The second day of the training was the practical component, entirely focusing on teaching participants how to prepare different OFSP recipes/products (Photo 2). Participants prepared five OFSP-based products—sweets (with coconut), porridge (with peanut), biscuits, juice, and bread—using the five OFSP varieties with the highest yields (‘Melinda,’ ‘Bela,’ ‘Cecilia,’ ‘Namanga,’ and ‘Tio Joe’) as identified from the participatory varietal evaluations. Participants conducted a sensory evaluation of the products based on five attributes (color, taste, aroma, consistency/texture, and aftertaste) to identify which of the high-yielding varieties is most suitable for making the different products.



Photo 2. Left to right: Nurse presenting bread made from OFSP and wheat flour, juice from different OFSP varieties, porridge from OFSP, child eating OFSP meal, and training participants evaluating attributes of products made from OFSP.

3.2.2 Number of families received short nutrition training

A total of 10,341 (54% females) families were reached with OFSP-based nutrition trainings through the cascading approach of the project activities. The project trained 511 animators, community health workers, and 38 health promoters in Y5Q2, and the trained animators, with the support of promoters, cascaded down the training to families. The families were trained on various nutrition and health topics, including infant and young child feeding practices, types of food groups, mother and child health care, and the importance of visiting hospitals before and after childbirth. The nutrition training was conducted at the same time as the agronomy training, targeting the same HH, so that beneficiary HH receive a complete intervention package that includes agronomy and nutrition training and planting materials. In fact, the animators and promoters jointly identified, selected, and registered beneficiary HH who were provided with short-term training in both agronomy and nutrition and received OFSP planting material.

Table 3. Distribution of promoters and animators trained in OFSP-based nutrition in Y5Q2

Province	District	Promoters	Animators	Total
Nampula	Cidade de Nampula	4	48	52
	Meconta	3	53	56
	Mecubúri	6	60	66
	Monapo	6	71	77
	Murrapula	7	79	86
	Subtotal Nampula	26	311	337
Zambezia	Alto Molócue	4	69	73
	Gurué	4	61	65
	Mocuba	4	70	74
	Subtotal Zambezia	12	200	212
Total		38	511	549

Table 4. Number of individuals receiving nutrition-related short-term training

Province	District	No. of Families Trained		
		Female	Male	Total
Nampula	Cidade de Nampula	506	515	1,021
	Meconta	529	746	1,275
	Mecubúri	545	414	959
	Monapo	565	486	1,051
	Murrapula	865	885	1,750
Zambezia	Alto Molócue	436	370	806
	Gurué	1,313	972	2,285
	Mocuba	784	410	1,194
Total		5,543	4,798	10,341

3.2.3 Number of children under 5 and under 2 years reached by the project

HL.9-1: Number of children under 5 (0–59 months) reached with nutrition-specific interventions through USG-supported program and **HL.9-2:** Number of children under 2 (0–23 months) reached with community-level nutrition interventions through USG-supported program

During the reporting period, the project reached 9,678 (52% female) children under 5 years of age, of which 38% (3,707) were under 2 (Table 5). These children benefited through the nutrition knowledge their parents (mothers and caregivers) gained from the nutrition trainings they attended. During the training, topics on infant and young child-feeding practices were covered, giving mothers and caregivers the opportunity to learn good practices for improved child nutrition, health, and development. The achievement of indicator “*Number of children under five (0–59 months) and under 2 (0–23 months) reached by nutrition-specific interventions*” is 70% of the quarterly target. The underperformance is due to fewer families being reached with nutrition training by animators, who were trained by the project.

Table 5. Children under 5 and under 2 years and women 15-49 reached with nutrition intervention in Y5Q2

Province	District	Under-5s			Under-2s			Women 15-49*
		Females	Males	Total	Females	Males	Total	Total
Nampula	Cidade de Nampula	732	672	1,404	298	242	540	1,248
	Meconta	578	513	1,091	245	200	445	968
	Mecubúri	342	359	701	138	140	278	886
	Monapo	432	403	835	165	179	344	936
	Murrapula	925	824	1,749	290	240	530	1,453
	Subtotal Nampula	3,009	2,771	5,780	1,136	1,001	2,137	5,491
Zambezia	Alto Molócue	278	276	554	147	130	277	551
	Gurué	1,239	1,186	2,425	515	438	953	2,733
	Mocuba	486	433	919	187	153	340	1,160
	Subtotal Zambezia	2,003	1,895	3,898	849	721	1,570	4,444
Grand Total		5,012	4,666	9,678	1,985	1,722	3,707	9,935

Source: VISTA Y5Q2 monitoring and evaluation report

* Women of reproductive age (15-49).

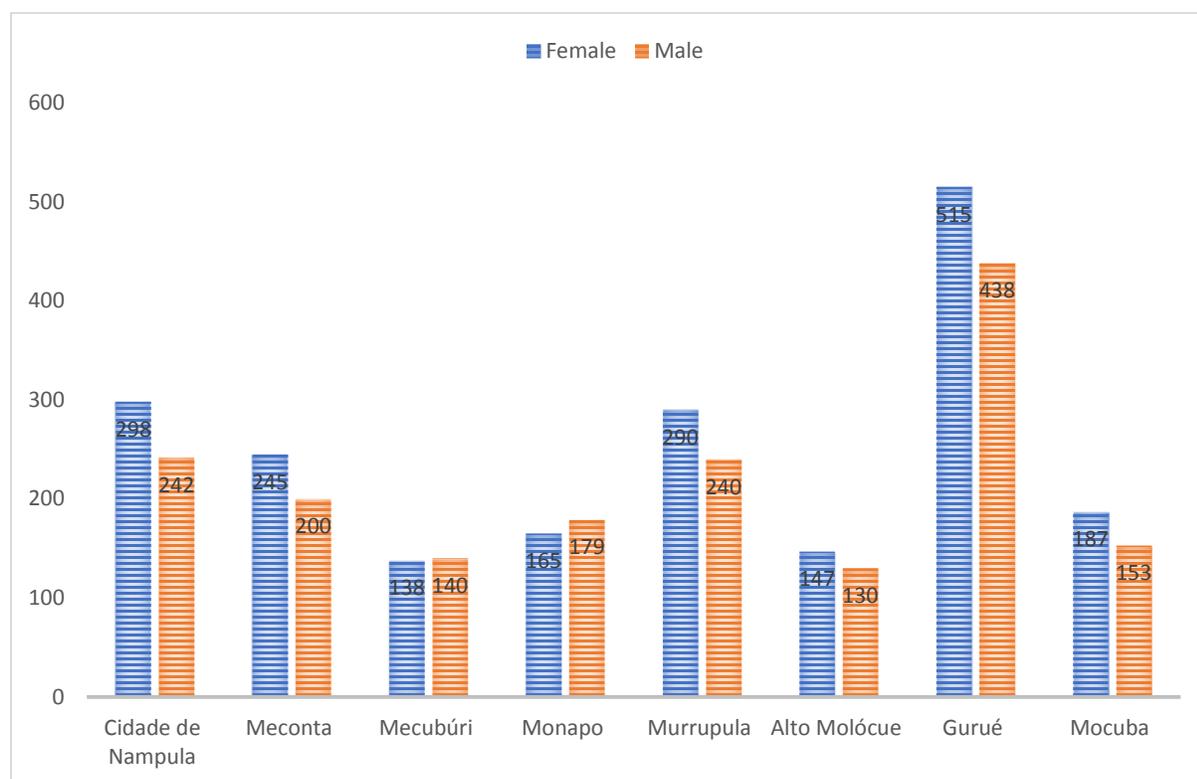


Figure 2. Number of children under 2 years of age reached with nutrition intervention in Y5Q2.

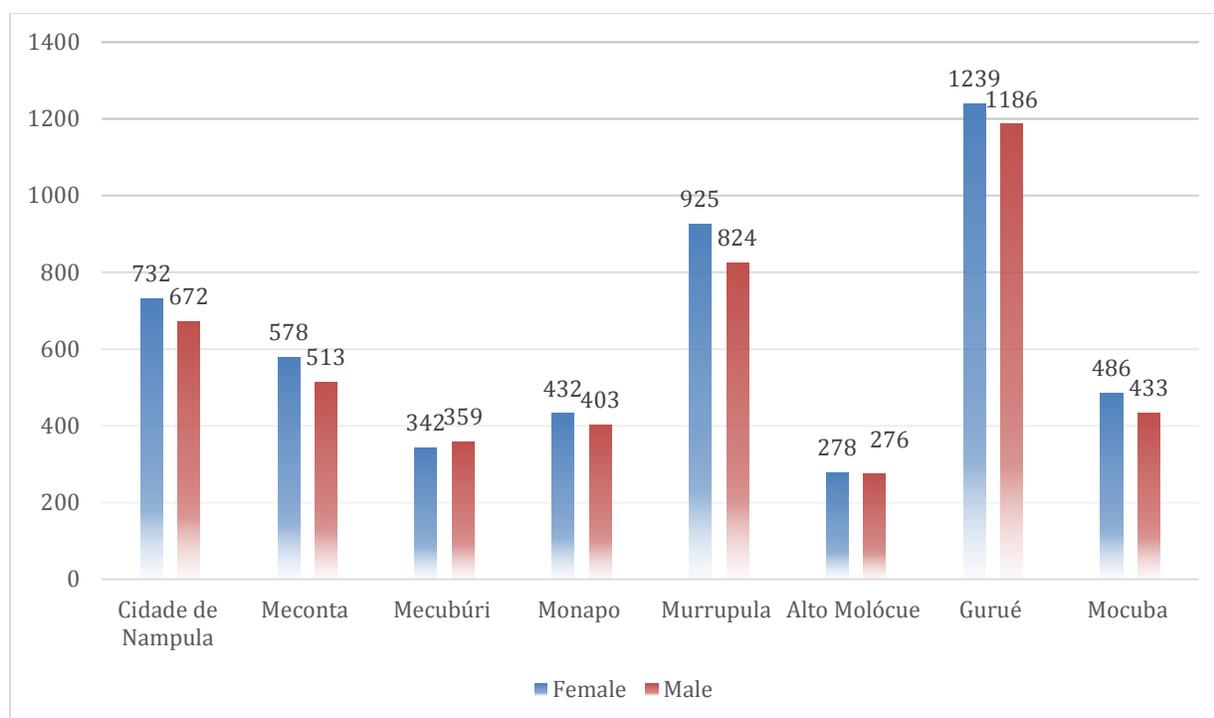


Figure 3. Number of children under 5 years of age reached with nutrition intervention in Y5Q2.

3.2.4 Designing of information, education, and communication materials for nutrition education

Nutrition education using OFSP as an entry point is at the center of the project behavior change communication and demand creation strategy. Accordingly, the project nutrition education activities include two complementary approaches that focus on trainings and dissemination of information, education, and communication materials either directly to beneficiary HH or to national agriculture and health staff at different levels, such as SDAE officials, nurses, promoters, and animators who then cascade down to beneficiary HH. During the reporting period, the project printed 500 nutrition counseling cards, which were disseminated to nurses, promoters, and animators in the eight intervention districts for use as training aids in cascade training of beneficiaries. In addition to the counseling cards, the project also disseminated 530 T-shirts in the target districts. Through the strengthened partnership with IIAM, the IIAM communication specialist jointly with the CIP nutritionist designed a poster on the nutritional value of OFSP, which will be distributed to health centers in the target districts. In addition, the project also developed a recipe leaflet and banner, which will be used for market-level OFSP promotion campaigns planned for Q3.

3.2 Marketing Component

Achievements under VISTA Objective 3: Increased agricultural incomes among at least 10,000 HH from sales of OFSP roots, vines, leaves, and processed products in local and urban markets and commercial processing

3.2.1 Linking project DVMs to markets

As reported in the previous quarter, the focus for the marketing component for the remainder of the project time will be on vine and fresh roots marketing. This quarter marks the beginning of the main rainy season, and therefore project marketing activities focused on creating market opportunities for DVMs.

During the reporting period, the project designed 60 signposts for displaying at DVMs in the 16 districts in which the project has been operating since its inception. The labels showed the name of the DVM, contact details, and distance of the multiplication field from where the signpost was erected (Photo 3). The signposts were erected in public view, normally along the roadside, in order to establish linkages between DVMs and vine buyers by providing market information. Since the signposts were erected, the project has already received reports of vine buyers who were linked to vine multipliers through the signposts, most notably in the districts of Malema, Murrupula, Gurué, Mocuba, and Monapo.



Photo 3. DVM signpost erected along the main road for visibility and promotion of OFSP.

As part of the phase-out strategy, the project held meetings with several NGOs working on interventions that include OFSP with the view to link the project DVMs to institutional buyers. Through this effort, the project managed to link multipliers in Monapo District to Lvia, an international NGO with activities in Monapo, Nacala, and Mussoril districts. In addition, the project linked multipliers in Malema, Gurué, Murrupula, Molocue, and Mocuba to institutional buyers Joao Fereiras dos Santos (JFS) and *Sociedade Algodoeira de Niassa* (SAN). These buyers were purchasing vines on behalf of the Nacala Corridor program, and distributed the vines to farmers in Malema, Cuamba, Mecanhelas, and Lichinga as part of a resettlement program for HH affected by the rehabilitation of the railway used for disposal of charcoal from Tete Province to the new Port of Nacala Velha. These buyers (JFS and SAN) bought a total of 37.8 t of vines from the project multipliers at 5 meticaís per kg, which were distributed to 630 resettled farmers. Most of the vine sales were recorded in Gurué, Malema, and Murrupula.

3.2.2 Markets for fresh roots

The reporting period falls at the beginning of the rainy season in the project intervention areas. Accordingly, during this quarter sweetpotato sales were dominated by vine sales, with limited sale of fresh roots, which is expected to increase in the harvest months of May-July. However, some DVMs were selling fresh roots from their multiplication plots, especially for the early maturing OFSP varieties. A weekly monitoring of roadside markets along Murrupula-Maputo highway (Photo 4) showed that during a particular week farmers sold 3.4 tons in the districts of Mecuburi, Mocuba, and Gurué at a value of approximately 20,000 meticaís (~\$320), making a total sale value from OFSP vines (Table 6) and fresh roots of 214,290 MZN (~\$3,300).



Photo 4. Sweetpotato sales along the Murrupula-Maputo highway.

Table 6. OFSP marketing by DVM and associations in target districts

District	Qty. Vines		Qty. Roots		Total Amount	Buyers
	Sold (kg)	Meticais	Sold (kg)	MZN	Meticais	
Murrupula	7,000	35,000	0	0	35,000	JFS
Gurué	18,795	93,795	420	900	94,695	JFS/Local Market
Meconta	20	100	156	1560	1660	Local Market
Mecuburi	0	0	2,341	11,310	11,310	Local Market/Arista Market Seller
Mogovolas	100	500	0	0	500	SAN
Mocuba	920	4,600	510	6,500	11,100	Local Market/Association of Namacoa
Malema	2,820	14,100	0	0	14,100	SAN
Malema	9,185	45,925	0	0	45,925	JFS
Total	38,840	194,020	3,427	20,270	214,290	

4. OPERATIONAL RESEARCH ACTIVITIES

During the reporting period, the project conducted a number of operational research studies whose findings generated insights and lessons that are useful for informing project implementation and future interventions. These include participatory varietal evaluations using Mother–Baby trials, a rapid market assessment study, sensory evaluation of OFSP-based products and leaves, and an endline survey.

4.1 Participatory Varietal Evaluation and Selection

4.1.1 Average yield performance of varieties

The project held a field day at Mother trials in each of the nine districts of Alto Molocue, Gurué, Malema, Meconta, Mecuburi, Mogovolas, Murrupula, Nampula city, and Rapale (Photo 5). Farmers, local leaders, district and local SDAE officials, and CIP and IIAM staff attended the field days. On average 450 people attended the field days per district. The objective of the field days was to jointly with farmers evaluate the adaptability of 22 improved sweetpotato varieties (19 OFSP and 3 purple fleshed) and a local white-fleshed variety in terms of yield and a sensory evaluation of the boiled varieties in terms of taste, appearance (color), dry matter content (texture), and shape of the fresh root. As farmers actively participate in the evaluation and select varieties of their own choice, this approach increases adoption, retention, and diffusion of selected varieties. During the field days, some farmers collected vines of high-yielding varieties to plant in their fields.

Photo 5. Left to right, Rapale district administrator visiting Mother trial field, women cutting vines before harvesting, root harvest, boiled roots ready for taste, and farmers testing boiled roots, in Rapale District.



Figure 4 presents the average yields of each variety across the nine districts. The results show that ‘Melinda’ was the highest yielding variety, with an estimated yield of 14 t/ha. ‘Amelia’ and ‘Lawrence’ performed the worst, with yields of 2 t/ha and 1 t/ha, respectively. These two were the only varieties that performed below the local variety out of the 22 varieties evaluated. The top 10 high-performing varieties were ‘Melinda’ (~14 t/ha), ‘Namanga’ (~12 t/ha), ‘Cecilia’ (~11 t/ha), ‘Bela’ (10 t/ha), ‘Tio Joe’ (~10 t/ha), ‘Erica’ (~9 t/ha), ‘Lourdes’ (~9 t/ha), ‘Ivone’ (~8 t/ha), ‘Alisha’ (~8 t/ha), and ‘Sumaia’ (~8 t/ha). Although these varieties performed well, the yields realized were still more than 50% below the potential yield realized on the research station with optimal management practices.

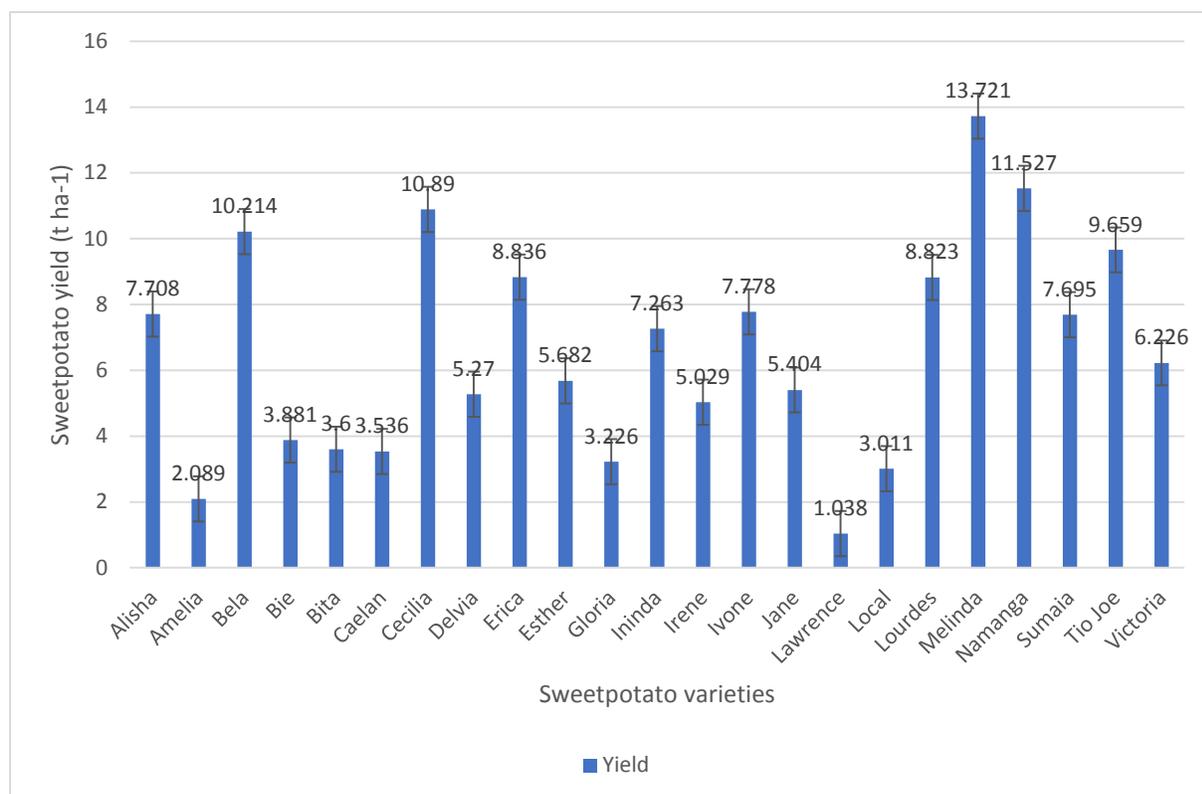


Figure 4. Performance of 22 OFSP varieties in relation to the local variety in nine districts in Nampula and Zambezia provinces.

4.1.2 Varietal yield performance by district

The performance of each variety differed markedly across the nine districts, demonstrating that the sweetpotato varieties have very localized adaptability. Table 7 presents the estimated yields for each variety in the nine districts.

Table 7. Yield performance (t/ha) of 23 sweetpotato varieties from Mother–Baby trials in nine districts in Nampula and Zambezia

Variety	Districts								
	Alto Molocue	Gurué	Malema	Meconta	Mecuburi	Mogovolas	Murrupula	Nampula City	Rapale
Alisha	11.4	9.4	13.9	9.0	9.4	3.3	2.8	7.2	4.7
Amelia	1.6	8.6	1.6	3.9	8.6	0.0	0.0	0.5	0.4
Bela	10.8	24.9	22.8	7.6	24.9	1.1	0.0	0.2	16.8
Bie	9.4	3.9	0.0	8.6	3.9	0.0	0.0	1.8	1.0
Bitá	13.4	2.7	6.1	0.9	2.7	2.2	1.7	2.1	0.9
Caelan	8.9	3.3	6.3	3.8	3.3	0.5	1.3	0.0	7.2
Cecilia	13.6	12.9	10.6	31.0	12.9	3.8	3.9	0.7	11.7
Delvia	6.5	3.6	5.3	6.7	3.6	1.6	1.3	1.8	4.0
Erica	10.0	22.1	5.8	5.4	22.1	13.5	5.5	0.0	16.1
Esther	8.6	6.1	14.6	9.1	6.1	1.7	1.6	0.3	8.9
Gloria	4.8	6.2	5.7	5.5	6.2	0.6	0.6	0.6	1.4
Ininda	10.5	20.2	10.2	7.1	20.2	2.4	3.4	2.5	3.9
Irene	6.6	6.8	5.6	9.3	6.8	0.8	3.7	1.1	2.1
Ivone	5.0	9.8	12.6	15.1	9.8	1.3	2.6	2.7	9.6
Jane	6.8	9.4	12.5	6.9	9.4	5.1	0.7	1.3	4.2
Lawrence	0.2	0.4	3.2	0.5	0.4	0.0	0.9	0.8	0.9
Local	3.5	0.9	6.0	2.3	0.9	0.0	10.1	1.9	2.0
Lourdes	7.2	24.3	12.5	4.2	24.3	0.4	1.9	0.0	5.5
Melinda	20.5	16.3	24.2	6.9	16.3	19.3	12.8	3.0	14.6
Namanga	13.2	29.0	16.0	5.7	29.0	0.8	7.5	0.7	11.3
Sumaia	7.1	13.3	12.6	3.5	13.3	0.6	4.0	1.3	16.5
Tio Joe	5.3	22.0	9.4	15.2	22.0	10.2	6.2	8.7	8.0
Victoria	11.3	7.0	7.4	14.4	7.0	0.6	4.8	1.0	6.8
Mean	8.5	11.4	9.8	7.9	11.4	3.0	3.4	1.7	6.9

NOTE: Figures in gray shade = yields greater than 10 t/ha.

Based on the estimated yields, the maximum yield for a local variety was 10 t/ha realized in Murrupula District (where sweetpotato production is very important). Using 10 t/ha as a benchmark, the varieties that yielded more than 10 t/ha were identified and recommended for each district (Table 8). Five varieties, ‘Melinda,’ ‘Namanga,’ ‘Bela,’ ‘Cecilia,’ and ‘Tio Joe,’ performed consistently well and are recommended for many districts.

Table 8. Recommended improved sweetpotato varieties in each district based on yield performance

District	Varieties yielding more than 10 t/ha recommended for root production
Alto Molocue	Alisha, Bela, Bitá, Cecilia, Erica, Ininda, Melinda, Namanga, and Victoria.
Gurué	Bela, Cecilia, Erica, Ininda, Lourdes, Melinda, Namanga, Sumaia, and Tio Joe.
Malema	Alisha, Bela, Cecilia, Esther, Ininda, Ivone, Jane, Lourdes, Melinda, Namanga, Sumaia
Meconta	Cecilia, Ivone, Tio Joe, Victoria
Mecuburi	Bela, Cecilia, Erica, Ininda, Lourdes, Melinda, Namanga, Tio Joe
Mogovolás	Erica, Melinda, Tio Joe
Murrupula	Melinda
Nampula town*	Alisha, Melinda, Tio Joe
Rapale	Bela, Cecilia, Erica, Melinda, Namanga, Tio Joe

*Best-performing varieties in this district, although they did not reach 10 t/ha yield level.

4.1.3 Sensory evaluation of varieties

In addition to yield, farmers also select varieties based on sensory characteristics such as taste and appearance (color), texture (contains fiber or not), and dryness/wateriness (a proxy for dry matter content). Of these attributes, taste and dry matter content were the most important for farmers. After harvesting each of the varieties, a sample of each was boiled, placed in plates without participants knowing which variety they were evaluating, and rated on the sensory attributes through a voting system.

Cards of three color codes were used in the voting, with green standing for highly acceptable, yellow for acceptable, and red for not acceptable. Each variety was evaluated by at least 40 farmers. Out of the 23 varieties evaluated, 18 were liked by at least 50% of the farmers in terms of taste (Fig. 5).

The nine most preferred varieties for taste were ‘Gloria’ (78%), ‘Caelan’ (76%), ‘Irene’ (70%), ‘Cecilia’ (70%), ‘Tio Joe’ (68%), ‘Alisha’ (67%), ‘Sumaia’ (67%), ‘Delvia’ (66%), and ‘Namanga’ (65%) (Fig. 5). However, other varieties outside the top nine were also preferred by at least 50% of the farmers. These include ‘Bela,’ ‘Bitá,’ ‘Delvia,’ ‘Erica,’ ‘Ester,’ ‘Ininda,’ ‘Jane,’ ‘Lourdes,’ and ‘Melinda’ (Fig. 5). The varieties ‘Bie,’ ‘Ivone,’ ‘Lawrence,’ and ‘Victoria’ were preferred by less than 50% of the farmers.

In terms of gender differentiation of preferences, the results show that most of the varieties were more preferred by men than women (Fig. 6). More men preferred the varieties ‘Caelan,’ ‘Cecilia,’ ‘Delvia,’ ‘Erica,’ ‘Ester,’ ‘Gloria,’ ‘Ininda,’ ‘Irene,’ ‘Ivone,’ ‘Jane,’ ‘Local,’ ‘Lourdes,’ ‘Melinda,’ ‘Namanga,’ ‘Sumaia,’ ‘Tio Joe’ and ‘Victoria’ than did women. More women than men preferred the varieties ‘Amelia,’ ‘Bie,’ and ‘Lawrence’. However, some varieties, such as ‘Alisha,’ ‘Bela,’ and ‘Bitá,’ were preferred by men and women alike (Fig. 6).

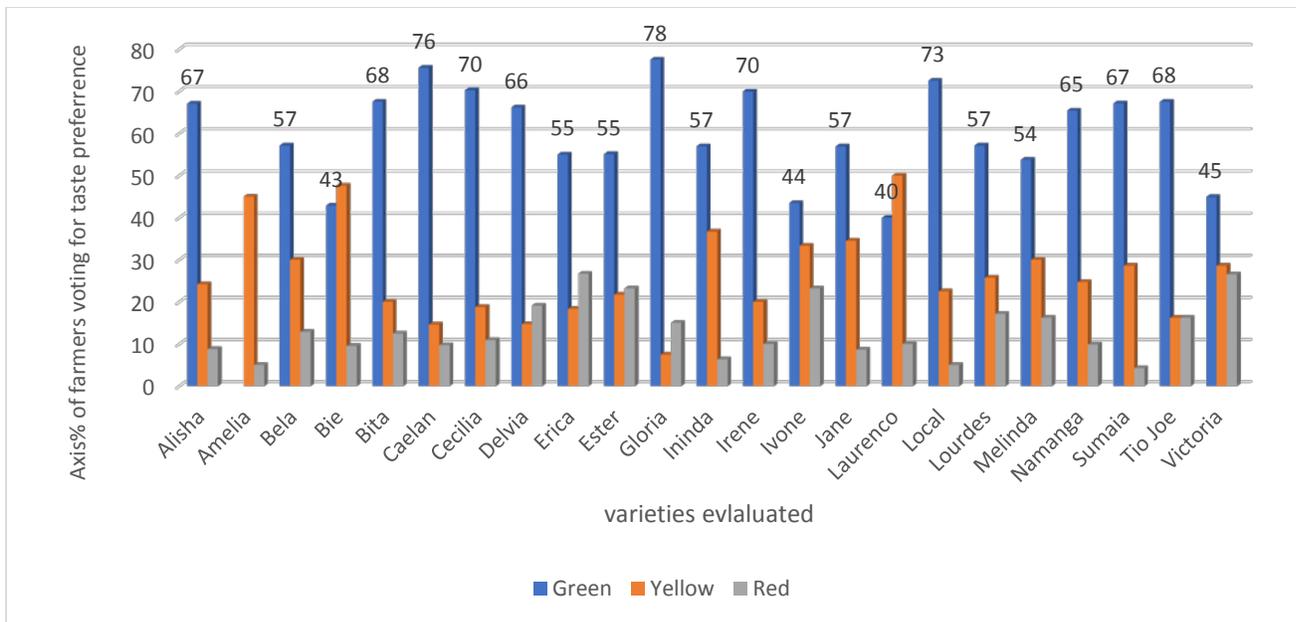


Figure 5. Percentage of farmers (combined men and women) who voted for a specific variety in terms of taste preference in nine districts of Nampula and Zambezia provinces.

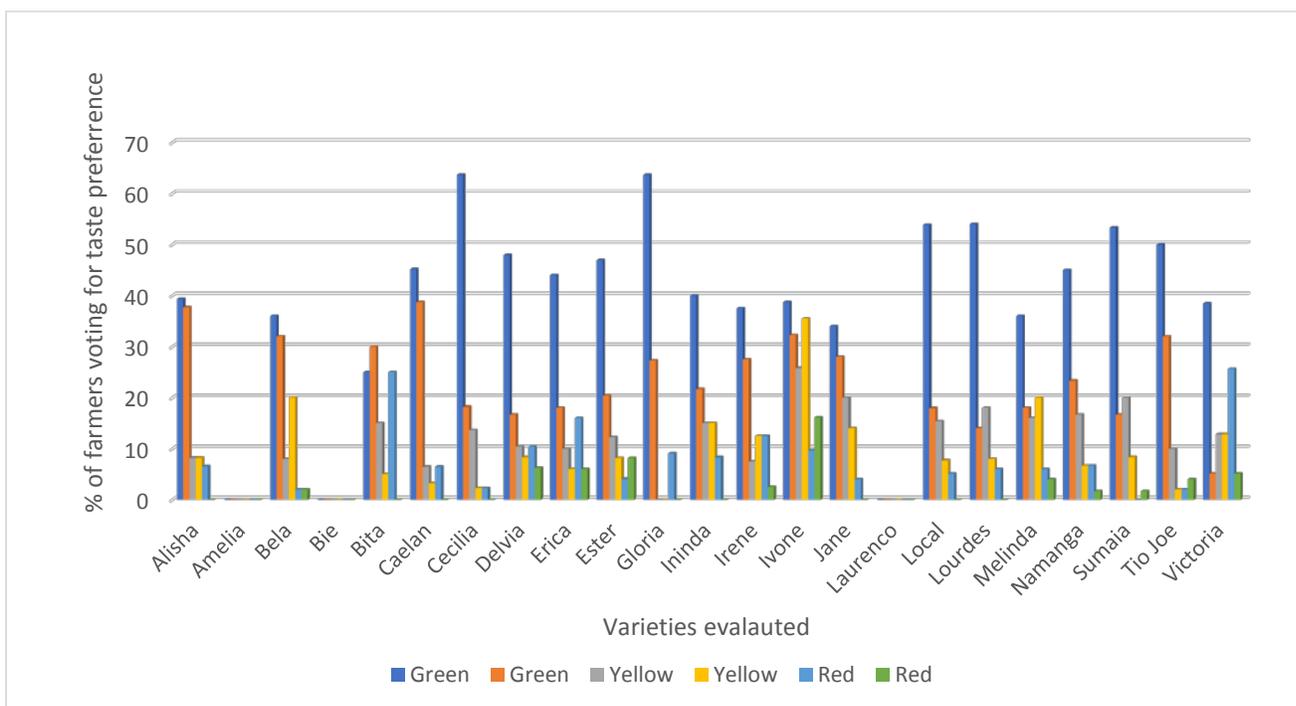


Figure 6. Percentage of farmers (men and women separated) who voted for a specific variety in terms of taste preference in nine districts of Nampula and Zambezia provinces.

On the basis of this study, the varieties in Table 8 are recommended for both high productivity (top 10) and farmers' taste preferences.

Out of the 23 varieties that were evaluated, only 5 (‘Namanga’, ‘Cecilia’, ‘Tio Joe’, ‘Alisha’, and ‘Sumaia’) attained a high yield of above 10 t/ha and at the same time were widely preferred by farmers in terms of taste (Table 9).

Table 9. Varieties recommended for both high root yield and high preference taste evaluation by farmers in Nampula and Zambezia provinces

Top 10 recommended varieties for high yield	Melinda, Namanga, Cecilia, Bela, Tio Joe, Erica, Lourdes, Ivone, Alisha, Sumaia
Top 10 recommended varieties for taste preference	Gloria, Caelan, Tio Joe, Cecilia, Alisha, Local, Sumaia, Namanga, Delvia and Irene
Varieties recommended for both yield and taste preference	Namanga, Cecilia, Tio Joe, Alisha, Sumaia

4.2 Rapid Market Assessment Study

During Q1 the project engaged a consultancy firm, WinResources, to commission a rapid market assessment study on the OFSP fresh roots and related market chains (mainly white-fleshed and other roots and tubers). The firm completed the study and submitted the final report to CIP during Q2. The study focused on the main sweetpotato production districts of Nampula City, Monapo, Murrupula, and Meconta. The main objective of the rapid market study was to identify entry points for establishing and strengthening market linkages in the OFSP fresh root market through, specifically, identifying and characterizing the main actors in the OFSP and WFSP value chain (and related roots and tuber crops), the marketing channels in these chains, and location of the main production and marketing zones of the crops. A combination of qualitative and quantitative methods was used to characterize OFSP and related chains and analyze market data from different chain actors. The study findings are important for designing project marketing-related activities that will be intensified in the third quarter of the project. For instance, the study identified major sweetpotato or roots/tuber markets in each district and retailers, with their contact details, information that will be used to link traders and root producers to markets. Additionally, the assessment identified the marketing days in each market. In the coming quarter the project will conduct market-level OFSP promotion campaigns in those markets during market days to create demand for OFSP. A summary of the main findings of the rapid assessment study appears in Annex 1.

4.3 Sensory Evaluation of OFSP Leaves for HH Consumption

Sweetpotato leaves are widely consumed in the project intervention districts. These leaves are a good source of nutrients, including vitamins A, B, and C; calcium; niacin; protein; and fiber. In these communities, sweetpotato leaves are commonly prepared in the form of curry or are mixed with locally available foods such as peanuts, coconuts, beans, oil, tomatoes, onions, and garlic and served with xima, rice, cassava, or bread.

During the reporting period, the VISTA nutritionist, in collaboration with the IIAM nutritionist, conducted a sensory evaluation of leaves of eight OFSP varieties in the three districts of Nampula, Meconta, and Murrupula (Photo 6). Only eight varieties were included in the sensory evaluation, including the five highest yielding varieties (‘Melinda’, ‘Bela’, ‘Tio Joe’, ‘Namanga’, and ‘Cecilia’) and three other randomly selected thin-leafed varieties. (This was based on the prior understanding that most communities prefer consuming leaves of sweetpotato varieties with thin leaves as opposed to broad leaves). The three randomly selected thin-leafed varieties were ‘Delvia’, ‘Irene’, and ‘Ininda’. Leaves of the different varieties were prepared uniformly, and participants did not know a priori which variety they were evaluating. A total of 75 farmers from Teterene locality of Meconta, Cuzuzu locality of Murrupula, and Muriaze locality of Nampula participated in evaluating the varieties on five sensory characteristics: color/appearance, aroma, taste, consistency/texture and aftertaste.

The farmer rating on each attribute was based on a 5-point Likert scale: 1 – Dislike too much; 2 – Dislike; 3 – Normal; 4 – Like; 5 – Like too much.

The most preferred varieties in terms of taste were ‘Bela’, ‘Tio Joe’, and ‘Cecilia’ (Fig. 7). With regard to aroma ‘Tio Joe’, ‘Bela’, and ‘Melinda’ were most preferred (Fig. 8). In terms of color/appearance ‘Bela’ was most preferred, followed by ‘Tio Joe’ and ‘Cecilia’ (Fig. 9).



Photo 6. Women during sweetpotato leaf tasting in Monapo District.

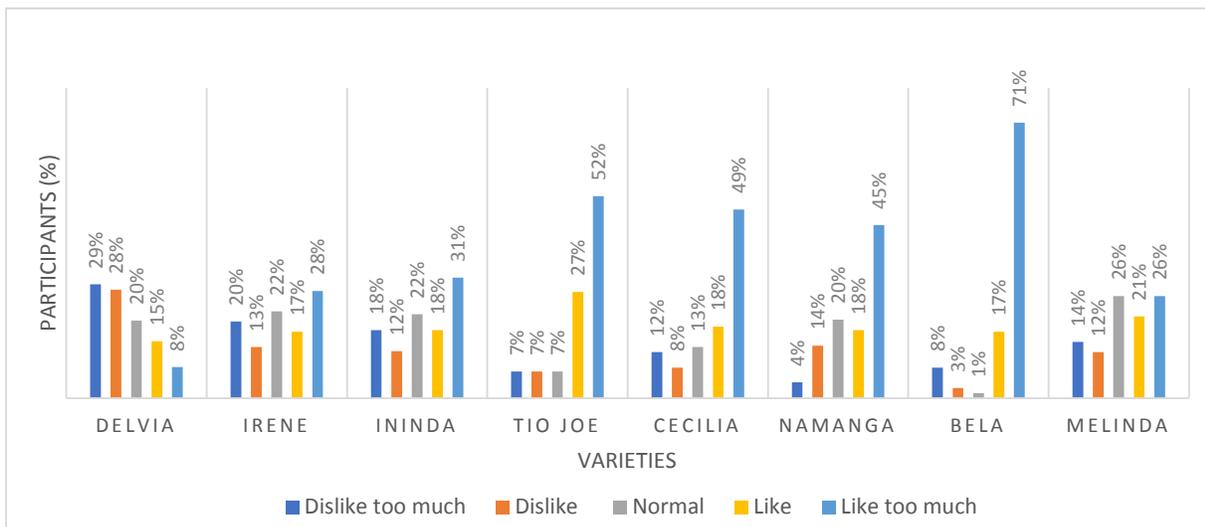


Figure 7. Taste preference of farmers for the eight OFSP varieties.

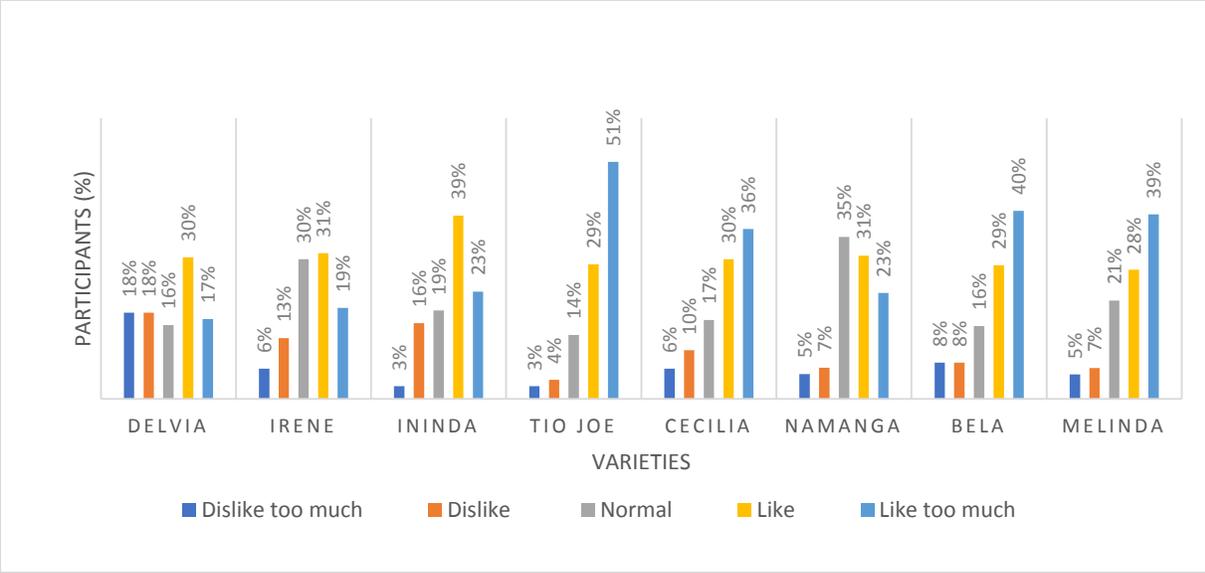


Figure 8. Aroma preference of farmers for the eight OFSP varieties.

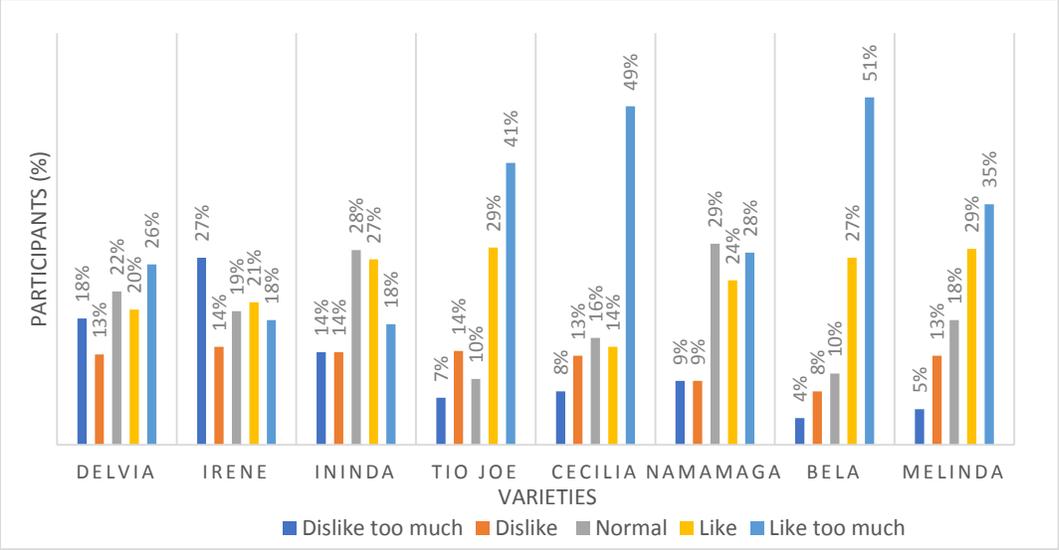


Figure 9. Color preference of farmers for the eight OFSP varieties.

The above results, when viewed together with the results on root yield and taste preference, show that three of the top five yielding varieties (‘Bela’, ‘Tio Joe’, and ‘Cecilia’) are preferred by farmers for the taste of their leaves and roots in addition to being high yielding.

4.4 Findings from the 2017 and 2018 Surveys

The project conducted mid- and endline surveys in 2017 and 2018 to monitor and document the impact of the project intervention on key sweetpotato production and nutrition outcome indicators, including adoption and retention of OFSP, nutrition knowledge, consumption of vitamin A-rich foods (including OFSP), dietary diversity, and food security. Accordingly, two surveys gathered information on sweetpotato production, nutrition knowledge, OFSP consumption among children and women, dietary diversity, frequency of

consumption of vitamin A-rich foods (including OFSP), food security, infant and young children-feeding practices, HH assets, and participation in the project.

The midline survey was conducted on a sample of 2,297 HH from July to September 2017. The endline survey was done on 1,538 HH from 15 districts (11 in Nampula, 4 in Zambezia Province) during November/December 2018. These two surveys included some, but not all, HH that were interviewed during the project baseline implemented in six districts in 2015. Thus, the three surveys (2015, 2017, and 2018 surveys) present a 3-year panel—albeit not perfect—to allow for robust analysis of changes over time and impacts. In the 2018 survey, 1,295 HH from the 2017 survey were revisited, and 243 HH were also part of the much smaller baseline survey.

The results of the analysis showed that the project significantly improved nutrition knowledge and the food security status of beneficiary HH. Statistically significant differences were observed between control and intervention HH regarding the proportion of HH “eating a limited variety of foods” ($p < 0.000$), “eating some foods that they don’t really want to eat” ($p < 0.034$), and “no food to eat of any kind” ($p < 0.009$) during the 4 weeks of the survey in 2017. Moreover, the net effect of the difference in consumption of various food items resulted in a significant difference in children’s diets, and the higher proportion of children meeting minimum dietary diversity goals. In 2017, 37% of children receiving the intervention and 15% of control children consumed food groups that meet the minimum dietary diversity.

The frequency of consumption of vitamin A-rich foods improved significantly among intervention HH. Of the children from intervention HH, 79% consumed vitamin A-rich foods at least 3 days in a week, compared with 67% in the control group, a 12 percentage point increase in frequency ($p < 0.005$). On the basis of the 2018 survey, 29% of the intervention caregivers had adequate intake of vitamin A-rich foods, compared with 26% of control group caregivers ($p < 0.000$). The frequency of OFSP intake increased significantly in the project target areas, with results from the 2017 survey showing that 68% of children and 64% of women from intervention HH consumed OFSP at least once a week, compared with only 5% children from control HH ($p < 0.000$). Nearly one-third of children and one-quarter of women consumed OFSP more frequently (at least 3 times a week) compared with only 3% in the control group ($p < 0.000$). The detailed results from the two surveys are presented in Annex 2.

5. CHALLENGES AND MITIGATION STRATEGIES

5.1 Challenges

The project withdrew from eight intervention districts after the first quarter as part of the phase-out process after funding cuts were announced. However, in the districts that were dropped, DVMs had multiplied a lot of vines ready for distribution. This situation is demoralizing the DVMs, who expected that the project would buy their vines for distribution to target beneficiary HH. A number of those DVMs kept calling project staff, requesting a market for their vines.

The Mother–Baby trials for participatory evaluation of varieties were established in lowlands during the dry season. At the onset of the rains, some of the Baby trials were lost due to flooding before being harvested. In some districts, such as Angoche and Monapo, trials were lost due to an extreme dry spell or were destroyed by stray domestic animals. In the districts of Moma and Larde, the trials were established late and were not

ready for harvesting. Under such circumstances, farmers hosting the trials wanted to have the trials harvested so that they could prepare the land for other crops planned for the season. The loss of Mother and/or Baby trials in some districts took away the opportunity for the project to select locally adapted varieties for those districts. Additionally, the loss of Baby trials in particular meant that the project could not evaluate yields under typical farmer management practices in those districts.

The project still has a capacity gap in the area of communications. As highlighted in the previous reports, the project tried to hire a communications specialist but failed to get suitably qualified candidates. The absence of this capacity has affected the project's ability to document and compile impact stories and case studies, and as a result project successes that are quite visible on the ground are not told.

5.2 Mitigation Strategies

To deal with the challenge of lack of market for DVMs in the dropped districts and indeed others in the intervention districts, the project used three approaches. First, during the vine distribution exercise in the eight intervention districts, some DVMs within the target districts could not supply enough vines to distribute to target HH, and the project purchased vines from the nearest dropped district to distribute in the intervention district. Second, the project erected signs in places of public view with names and contact details of the DVM as a way to “advertise” and link interested buyers to the DVMs. In some places this has paid dividends, with some institutional buyers reporting to have been linked to the DVMs through the signs. Finally, the project also met with other NGOs who were interested in buying vines and referred them to the DVMs.

As said earlier, the loss of Baby trials in some districts robbed the project of an opportunity to estimate yields under farmer management conditions. To mitigate this effect, the project will rely on crop-cut yield estimates that will be obtained from DVM fields and farmers' fields during the planned HH survey to be done in May/June 2019.

The project strengthened its partnership with IIAM by directly engaging IIAM staff, a nutritionist and communications specialist, in VISTA project activities. This is a win-win arrangement as it strengthens the capacity of the IIAM staff, which enhances sustainability of CIP's work but also benefited the project in addressing its capacity gap, particularly in the area of communications. The two staff have contributed greatly in strengthening the nutrition and communication activities in Q2 and will be similarly useful in Q3.

6. SUCCESS STORIES

6.1 Story 1

VISTA investment increased access to planting material, dietary diversity, and nutritional knowledge among local women

Investments in research and development over the last few years have generated improved technologies for sweetpotato, which have in turn greatly improved nutrition, income, and food security among vulnerable HH in Africa and Asia. For women in Nampula and Zambezia provinces, having access to improved sweetpotato technologies meant growing and consuming OFSP varieties, such as the popular climate-smart ‘Irene,’ whose narrow leaves can be eaten as a vegetable 60 days after planting, while roots are ready to harvest after 100 days. Malira José, one of the women beneficiaries meeting us in Mocuba explains, “previously, we only had the local sweetpotato varieties. We did not know about OFSP or how to grow and incorporate it in our diets. We did not know that juice can be made to feed our children.” Through VISTA and working closely with health workers and reaching women of reproductive age and children under 5, the project benefited women like Malira (Photo 7), following nutrition trainings. Furthermore, pregnant and lactating women received continuous training on the importance of postnatal and antenatal health care, breastfeeding, and eating a balanced diet. Lucia Claudina, another beneficiary confirms that OFSP, now locally grown by many women, is one of the foods given to children during complementary feeding from 6 to 59 months. She adds that available markets for the root need to be strengthened to ensure the surplus can be sold, providing a source of income for the women.



Photo 7: Malira José with her 3-year-old child and nurse after attending the counseling session in Mocuba Health Center, Mocuba District, Zambezia Province.

6.2 Story 2

Mrs. Natália Sabonete, age 41, is a DVM in Murrupula District. She started her OFSP seed production business in 2017 after receiving an intensive sweetpotato agronomy training from the VISTA project. She is helped by her husband and three children in her crop production activities. She has a total area of 4 ha, of which 1 ha is under sweetpotato production and 3 ha are under other crops, such as groundnuts, maize, beans, and cowpeas. In her sweetpotato production area (Photo 8), she is cultivating eight improved orange sweetpotato varieties, ‘Esther’, ‘Erica’, ‘Irene’, ‘Jane’, ‘Ininda’, ‘Melinda’, ‘Cecilia’, and ‘Delvia.’



Photo 8. Mrs. Sabonete’s OFSP vine production field in Murrupula.

Mrs. Sabonete ventured into the sweetpotato production business with two objectives, vine and root production. She prepares several diversified dishes with either OFSP leaves with xima or roots as boiled, roasted, chips, and juice for household consumption. Before engaging in the sweetpotato production business, lunch for her children was a nightmare. Now with OFSP in the field, it’s a matter of harvesting, preparing, and packing for her children. Her three children have developed a habit of carrying OFSP boiled roots to school to feed themselves during lunch time. The children do not only carry boiled roots to school, as Mrs. Sabonete was taught other recipes in sweetpotato processing by VISTA nutritionists working in the district together with a local government nutritionist. At times she prepares chips and juice for her children over and above the traditional boiling of sweetpotato roots for consumption. Due to her understanding of recipes, she has started teaching other women in Murrupula how to process OFSP at the household level.

In the 2019 cropping season, Mrs. Sabonete has so far sold 2,000 kg of sweetpotato vines to a private buyer, JFS, at 5 MZN/kg and realized an income of 10,000 MZN (approximately \$153). She has started selling roots at her seed marketing shop, which she opened last year from the proceeds of OFSP root sales. Her unit of measurement for root sales is a dish, and she sells a dish full of roots at 100 MZN (Photo 9). With the money that she earned from vine and root sales, Mrs. Sabonete bought school material for her three children and bought other food items to diversify her diet as recommended by nutritionists. She has also used some of the money to increase her sweetpotato production area and finalized the construction of her house roofed with iron sheets.



Photo 9. Mrs. Sabonete selling OFSP roots at her seed shop in Murrupula District.

She has also promised to conserve some roots using the techniques that she was taught by the VISTA project agronomists to ensure food security for at least 3 months after harvesting. “I would love to conserve the roots so that I have a regular supply of vitamin A-rich sweetpotato for household consumption and provide food diversity during the period of scarcity. It’s better to take care of my future nutritional needs during food scarcity period than to sell all the OFSP roots that I have in my field,” said Mrs. Sabonete.

One challenge she has faced in her sweetpotato production business is producing on a large area without a guaranteed buyer of roots. She has also faced low price at the market because her production is rain fed and her crop is harvested at a time when root supply to the market is very high, thereby pushing down the unit price of sweetpotato root.

7. PLANNED ACTIVITIES FOR Q3

Indicator/Issue	Activity	Location	Target Quarter
<i>Objective 1: Increased production of OFSP among at least 65,100 direct and 260,050 indirect beneficiary HH through use of productive, locally adapted varieties, quality planting material, and sustainable agricultural practices.</i>			
EG.3.2-1: Number of individuals who have received USG-supported short-term agricultural sector productivity or food security training	Provide backstopping and refresher training on OFSP agronomy to DVMs, SDAE extension, NGO agronomists, and association members	Nampula City, Murrupula, Monapo, Meconta, Mecuburi, Gurué, Alto Molocue, Mocuba	102
	Present results of the participatory varietal evaluation to SDAEs from all districts during backstopping training	Nampula City, Murrupula, Monapo, Meconta, Mecuburi, Gurué, Alto Molocue, Mocuba	
EG.3.2-18: Number of hectares of land under improved technologies or management practices with USG assistance	Collect data on planting, area planted during household survey	Nampula City, Murrupula, Monapo, Meconta, Mecuburi, Gurué, Alto Molocue, Mocuba	400
	Conduct mini end-line survey of at least 500 HH to assess sweetpotato production (yields), consumption, nutrition, and marketing during harvest season	Nampula City, Murrupula, Monapo, Meconta, Mecuburi, Gurué, Alto Molocue, Mocuba	500
<i>Objective 2: Increased consumption of OFSP by children under 5 years of age and women in at least 65,100 beneficiary HH vulnerable to malnutrition</i>			
HL.9-4 Number of individuals receiving nutrition-related professional training (RAA) through USG-supported programs	Training nurses and health professionals selected from health centers on OFSP product development	Nampula City, Murrupula, Monapo, Meconta, Mecuburi, Gurué, Alto Molocue, Mocuba,	21
	Evaluate leaves of 5 selected high-yielding and 3 narrow-leaved OFSP varieties by 75 farmers in at least 3 districts	Nampula City, Murrupula, Meconta	3
Market-level OFSP promotion and demand creation campaigns	Conduct market-level OFSP promotion and demand creation during market days in at least 4 intervention districts	Nampula City, Murrupula, Monapo, Meconta	4
<i>Objective 3: Increased agricultural incomes among at least 10,000 HH from sales of OFSP roots in local and urban markets, including fresh root and leaf markets, institutional markets, and commercial processing</i>			
EG.3.2-19: Value of smallholder incremental sales generated with USG assistance (in USD)	Revive existing roadside OFSP selling outlets and introduce OFSP in existing vegetable or roots and tuber marketing stalls in 5 district markets	Nampula City, Murrupula, Monapo, Meconta, Mecuburi, Gurué, Alto Molocue, Mocuba	5
EG.3.2-20: Number of for-profit private enterprises, producer organizations, water user associations, women's groups, trade and business associations, and community-based organizations that applied improved organization-level technologies or management practices with USG assistance	Monitoring of farmer associations; train association members from at least 4 promising groups in OFSP product development	Nampula City, Murrupula, Monapo, Meconta, Mecuburi, Gurué, Alto Molocue, Mocuba	4
	Provide agronomy backstopping training to association members and support at least 4 associations with access to water with irrigation pumps for dry season vine and root production	Nampula City, Murrupula, Monapo, Meconta, Mecuburi, Gurué, Alto Molocue, Mocuba	8
	Organize women's group, and design the theater and simulation of nutrition education/cooking demos	Meconta	1

8. FINANCIAL REPORT

A detailed financial report (most recent pipeline report) will be sent as a separate file.

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