

Scaling project – Annual report

Project title: Orange Fleshed Sweetpotato (OFSP) Puree for Safe and Nutritious Food Products and Economic Opportunities for Women and Youths in Kenya, Uganda and Malawi

Project start and end date: Jan 2019- Jan 2021

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Project lead organization: International Potato Center (CIP): www.cipotato.org, www.rtb.cgiar.org

Implementing Partners:

1. Roots Tubers Crop Development Trust -RTCDT (Malawi)
2. United Purpose -(Malawi)
3. Tehilah Enterprise -Malawi
4. Bioinnovate - Kenya and Uganda
5. Farm Concern International -Kenya
6. Organi Limited- Kenya
7. NetBiz Impact –Kenya, Uganda and Malawi

Country (ies) of intervention: Kenya, Uganda and Malawi

Total budget: USD 890,000

Total co-investment

Date of submission: February 2020



Progress and results

Summary of achievements

This document presents the first annual report for the Orange-Fleshed Sweetpotato (OFSP) puree for baked and fried products in Kenya, Uganda and Malawi project covering the period of January -December 2019. During this reporting period, the project's focus was on consolidating the project team, characterizing the innovation as per scaling readiness strategy and identifying the scaling partners. The project team (Scaling champions, monitor and project leader) held two meetings a day before and after the RTB batch II Kick off workshop early April to unpack the proposal. With the help of the Project Management team (PMU) the team modified the project title, the objectives, and complementary innovations. The project was then officially launched on May 31st in Kenya, July 9th and July 11th in Uganda and Malawi, respectively. The launch was preceded by stakeholders' workshop where participants completed stakeholder's surveys and participated in innovation characterization. Stakeholders gave feedback on the complementary innovation and identified partners under each innovation (Annex 2). A total of 20 partners were identified as strategic to scale up OFSP value chain. Roll out of project activities and implementation was aligned to CIP developments as well as existing scaling partners initiatives and projects along the value chain. Collaborative agreement and sub grantee awards were completed for all scaling partners. In Kenya the project carried out technology demonstrations, food safety training to key partners (private, public and other NGOs) and participated in both national and county level community development events to create awareness for the innovation. Through the scaling champions initiative, the OFSP puree and bread standards were released by the Kenya Bureau of Standards which is a boost to scaling up of OFSP puree for baked and fried products. Through scaling readiness strategy, the project brought order in the OFSP value chain in Kenya.

Overview of the intervention

Orange-fleshed Sweetpotato (OFSP) puree provides a cost effective and nutritious ingredient in the baking industry with ability to replace up to 30-60% of wheat flour in a range of baked and fried products. The puree can also reduce the amount of sugar used in dough by as much as 70% and amount of oil by 30%, lowering the overall cost of production of wheat and wheat-based products by 12-20%. OFSP puree is promoted by the project as a healthy ingredient aimed at not only reducing use of wheat flour but also improving the nutrient content of baked and fried products to reach formal and informal market and to a large extent improve the income of small holder farmers through ready market for OFSP roots. Overall, OFSP puree processing and utilization for the three countries is at different stages. At the start of this reporting phase Kenya had two operating puree processors towards the end of 2019 an additional processor for shelf stable puree without preservatives was brought on board. Uganda on the other hand had no prior initiatives on puree processing at the start of the project. In collaboration BioInnovate project, a puree processor was identified in October 2019, procurement of puree processing equipment is underway. Through the RTB scaling project two more processors in Eastern and Central Uganda were considered for support to initiate puree processing in Uganda. Like Kenya, Malawi had OFSP puree added products on the market from Tehilah enterprises and Mother holdings both based in southern part (Blantyre). One pressor capital (Lilongwe) was identified towards end of 2019 discussion on collaboration setting up of puree process ongoing.



1:FIG 1 OFSP PUREE BEING PROCESSED

Project Objectives

By the end of the two years the project aims to;

- i. Increase smallholder OFSP productivity and production through quality inputs and good agronomic practices in selected areas of Kenya, Malawi, Uganda linked to OFSP puree processing,
- ii. Introduce production and use of OFSP Puree in commercial food processing, in particular in the bakery sector,
- iii. To create and facilitate equitable income and employment opportunities for youth and women in the OFSP puree value chain,
- iv. To increase the awareness of the nutritional benefits of OFSP and OFSP puree products in Kenya, Uganda and Malawi

Following the scaling readiness strategy project objectives were readjusted as captured under reflections scaling readiness section.

Outputs

Summarize the level of achievement of each output and briefly present the key milestones completed.

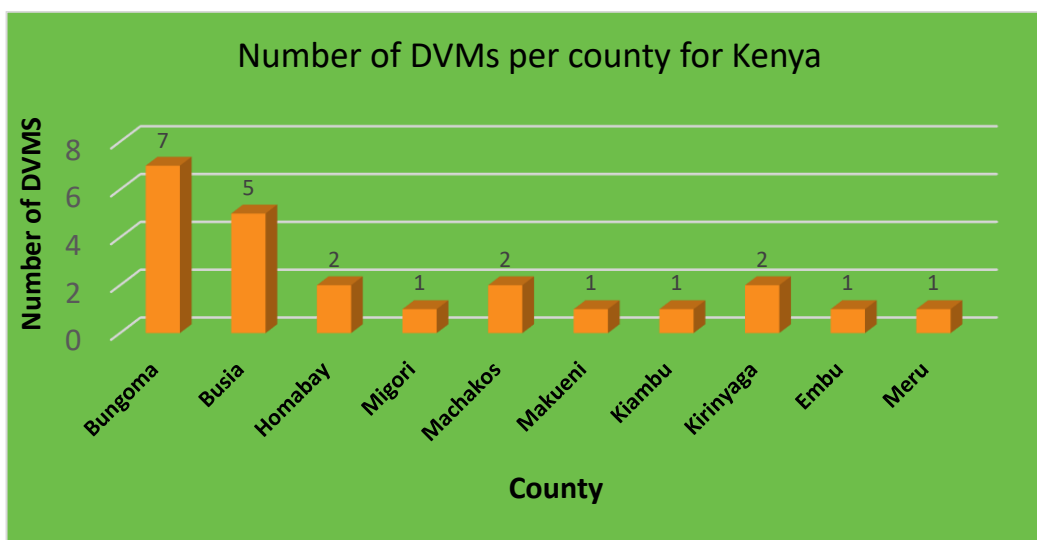
Refer to the list of deliverables reported for more details (see Annex 1)

There were no changes to project outputs as stated in the proposal. Summary of achievements under each output is as follows.

Output 1: Farmers accessing high quality OFSP vines:

The Orange-fleshed Sweetpotato is currently a readily available crop that is easily planted and maintained by farmers offering excellent potential for both fresh root and processing markets. Seed is the most important input that determines yield in OFSP value chain however stakeholders pointed out lack of clean seed as the main hindrance to scaling. The project took advantage of the existing initiative around OFP seed system. In Kenya Out of the 84 Decentralized Vine Multipliers (DVM) by the CIP's AVCD and SUSTAIN projects, the project leveraged on the DDBio project to selected 23 (7 Female 16 male) with an average acreage 0.4 Hectares to supply vines to commercial root producers linked to puree processors in each county. By October 2019, the 24 DVMs had an equivalent total of 5000 bags of vines which was being taken up by commercial root

producers under contract farming for short rains. Fig 1 gives distribution of commercial DVMs linked to puree processing in Kenya. Trough collaboration with DDBio project a new OFSP variety a better shape, more suitable for puree processing compared to Vita and Kabode was released in Kenya. Vine multipliers have been supplied with pre-basic material for multiplication in preparation for 2020 long rains (April- July) which will benefit other scaling partners to along the value chain. Plans to release more varieties under way through collaboration between CIP and Kenya Agricultural Livestock Research Organization (KALRO).



List of
stakeholders.docx

FIG 2: DISTRIBUTION OF DECENTRALIZED VINE MULTIPLIERS IN KENYA

The seed system in Uganda is advanced with better OFSP varieties such as Ejumula and Naspot 13 already with vine multipliers. A partnership with Harvers Plus, Self-help Africa and Eastern Agriculture development cooperation (EADC) was established to ride on their existing network of farmers and vine multipliers for consistent root supply to puree processor covering Eastern, Central and Northern Uganda.

Malawi on other hand has 9 OFSP varieties out of which six OFSP varieties namely MathuthuZondeni, Kadyaubwerere, Chipika, Ana Akwanire and Kaphurila were released s as early as 2011. Three more varieties namely, Royal choice, Mthesa Njala and Msunga Banja were released in 2019. The most preferred varieties for OFSP puree processing are Kadyaubwerere, Chipika, Mathuthu and Kaphurila which are being multiplied by 67 DVMs. Accessing certified seed multiplier remain a challenge to most farmers in malawi due to mix up of varieties. Through scaling partner, United Purpose, 30 vine multipliers were selected to propagate at 5 OFSP varieties linked to puree processor, Mother holdings limited

Output 2: Farmers trained on Good Agronomic Practices

In many instances' farmers producing sweetpotato lack proper information and guidance on simple but important aspects to improve productivity and profitability of the value chain. There is limited or no training material for sweetpotato that is available for use at the village level and by non-agricultural staff. Cognizant of the lean extension services from the government, media was highlighted as an avenue to reach masses in the three countries. In Kenya the project signed a contract with The Mediae company to produce and disseminate messages on access to clean planting material, crop management, harvesting and postharvest

handling to benefit all other partners along the OFSP value chain. These episodes will be aired on the Kenya's most watched national Television- Citizen TV- targeting viewership of 4.5 million. The 6-month TV show will run from March 2020 when farmers will be preparing for long rain season to puree utilization. The video clips will also be uploaded on YouTube together with the ishamba portal where farmers can access extension information on OFSP in East Africa. In Uganda the project will rely on partners to disseminate GAP information. A stakeholders' workshop will be planned early 2020 to develop a workplan for implementation. In Malawi working in collaboration with the DIVERSIFY project 100 lead farmers (53 male 47 Female) were trained on OFSP agronomy, harvesting storage, and processing. The number of LFs selected in each area was based on the population of participating beneficiaries. The lead farmers cascaded the training to 1999 farmer (964 male and 1,082 female) as presented in Table 2. In this way the project reached the beneficiaries with the information that is needed to produce and market their crop.

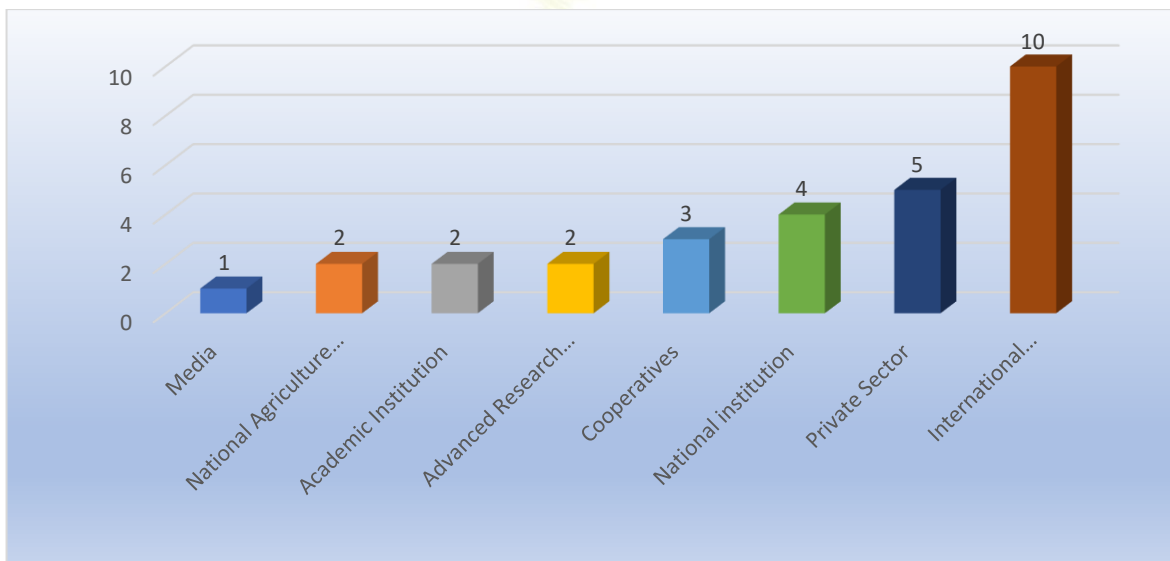
Table 2. Number of stakeholders trained in agronomic practices by district and by gender

Districts	Target Project Districts											
	Balaka			Chiradzulu			Thyolo			Project Total		
Activity	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Extension workers	18	2	20	10	4	14	12	7	19	40	13	53
LFs	22	12	34	11	9	20	20	26	46	53	47	100
Beneficiary farmers	243	257	500	328	272	600	346	553	899	917	1,082	1,999
Totals	283	271	554	349	285	634	378	586	964	1,010	1,142	2,152

Output 3: Partnership

The project brought together a range of partners from public, private international, regional, national and local level. Internally, the project leveraged on the existing CIP's initiative in the three countries. In Kenya the project initiated a collaborative meeting with ongoing CIP sweetpotato projects in Kenya (DDBIO, TAAT, FANEL BioInnovate) on July 16th to identify areas of synergy and collaboration.

To reach external partners the project organized for inception and launch meetings to bring together stakeholders from respective countries with an aim of creating awareness, allow participants to understand the objectives and implementation modalities of the project, identify synergies and opportunities for collaboration. The Kenya meeting was held on 30th and 31st May 2019 at ILRI Campus Kenya, bringing together 38 participants from several organizations. Malawi and Uganda meetings took place on 9th and 11th July 2019 respectively. The meetings ended with stakeholders completing stakeholders' profiles. Out of these meetings strategic partners for scaling were identified guided by the project's innovation profile. Later a joint workplan review meeting with scaling partners for Kenya was held on 30th October 2019 to consolidate scaling efforts. Identification of areas of synergy and collaboration. Identification of scaling partners for Malawi and Uganda is ongoing.



List of
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FIG 2: OFSP PUREE SCALING PARTNERS FOR KENYA

Output 4: Market assessment reports

The project started off from the findings of the value chain analysis by Tanya et al (2015) under the study “Sweetpotato value chains in Kenya: a business opportunity for puree processing and the potential role for commercial fresh root storage). The study presented OFSP puree processing and opportunities in baking industry for Kenya however highlighted inconsistent supply of roots for processing through the year as the main challenge to up. There has been major development across the value chain but inconsistency supply of puree due to rain fed production remains a challenge as identified during innovation characterization for Kenya Uganda and Malawi. In October 2019, CIP through DDBIO project consulted Bottom of the Pyramid (BOP) to carry out sweetpotato Market Assessment for Nairobi and Eastern in Study report yet to be shared. A market Assessment for OFSP puree processing and utilization business opportunity in Uganda is planned for the next reporting phase through collaboration with Self Help Africa. A National study was conducted in Malawi within the month of June 2019 to assess the adoption of OFSP varieties and their utilization within the communities and the commercial industries. In addition to these, the study also investigated the demand of OFSP by the consumers and processors. The results of this study will be available in the first quarter of 2020 and will give a clear indication of what the consumers require.

Output 5: Production and supply plan for OFSP roots for puree processing and for market

The project-initiated contract farming -one of the complementary innovations identified by stakeholders to address the inconsistent supply of OFSP roots for puree processing. Inconsistent root supply stalls/stops puree processing for months until the next harvesting season for most processors. In Kenya contract farming enabled processor to develop production and supply plan by staggering production among farmers and also promoted production in the wetland under irrigation. Two farmers in Machakos and one in Meru have taken up growing OFSP under irrigation with expected yield of 20 ton to be used by a private puree processor. In Kenya, Organi Limited a puree processor has so far contracted 139 commercial root producers while Burton and Bamber has contracted 50 farmers with an average of an acre 0.4 Ha translating to approximately of 300 tons of roots for the 2019 short rains harvesting is expected to start in February 2020. A plan to absorb roots



that will not make it to the puree processor was initiated by contracting Farm Concern International (FCI) Kenya to link the OFSP farmers to fresh root market for to diversify root outlets. FCI will too link puree processors to informal markets to increase volumes of puree utilized there by providing market for farmers produce.

For Uganda, the project initiated a collaborative agreement with self-help Africa an organization that have a network of 1000 OFSP farmers in Northern Uganda. In Eastern Uganda the project held talks with EADC, an enterprise that trades OFSP on the export market but has interest in OFSP puree processing to minimize post-harvest wastage of 60% of OFSP roots that do not make it into the export market. These two partners will supply the roots to a Bio fresh Limited private processor established under Bio Innovate project.

Inconsistent root supply for pure processing in Malawi is a major issue due to unimodal rainfall. Farmers in the wetlands have been trained through Diversify project to start OFSP root production under irrigation to benefit puree processors. Through diversify project processors were trained and issued with deep freezers to maintain consistent supply of puree. The project is also encouraging puree processors to make available the puree to small processors and entrepreneurs in communities and urban centers. This activity would increase the current demand for puree hence OFSP roots. Through the DIVERSIFY project 3,000 OFSP farmers have been organized into groups and have been linked to Mothers Holding Olympic bakery to produce roots that are part of the bread called “Bakers Gold”.

Output 6: Advocacy and capacity building


In 2019 being the first year of project operation the project supported and participated in several national events to create awareness and demand for OFSP puree to reach both local and urban markets. The following capacity development activities were held during this reporting period.

1. County level engagement meetings for Kenya were held in July to introduce the project to county governments in Eastern, Central and Coastal regions for Kenya where CIP had no prior presence. The meetings targeted top county officials from the ministries of agriculture and health to introduce the project, get permission and support to work with farmers and traders within their counties. A total of 9 counties were visited, 3 from Central, 4 from Eastern and 2 from the Coastal region. All county officials agreed to support the project initiatives in their counties except Kitui county representatives who was skeptical about the new crop as they receive scant rainfall and is partly semi-arid area. The project activities were integrated in the counties main workplan.
2. The project supported and participated in the 3rd Annual National Agri nutrition Conference held from September 24th -26th 2019 under the “Enhancing Multisectoral Agri-Nutrition Approaches for Improved Nutrition Outcomes in Kenya”. The conference aimed to contribute to global efforts to address malnutrition through agriculture. With over 400 delegates across the country attending, the conference offered a good platform to showcase OFSP puree technology as part of Agro-processing at a national level. The project held an exhibition booth attracting several 59 stakeholders (31male, 28 females) from different parts of the country who were interested in OFSP puree processing and requested for follow up.
3. The 2019 World Food Day celebrations were preceded by a National food policy dialogue where RTB scaling project participated to voice out OFSP at National food policy level. The project too supported the world Food day celebration and set up an exhibition booth which attracted 105 participants (55male, 51 female) who were mostly youth who left their contact details for follow up.



3 FIG4: PROF HAMADI BOGA, THE PRINCIPAL SECRETARY STATE DEPARTMENT FOR CROP DEVELOPMENT & AGRICULTURAL RESEARCH AND THE GOVERNOR MAKUENI COUNTY BEING TAKEN THROUGH THE CONCEPT OF OFSP PUREE DURING WORLD FOOD DAY CELEBRATIONS.

4. The project also supported and participated in the Kiambu farmers field day on 11th October 2019 an event that brought together more than 4000 farmers across the region. Through collaboration with TAAT project, vine multiplication site for 4 OFSP varieties had been set up at this venue. Being the first-time farmers being introduced to OFSP in Kiambu the project set up an exhibition boot that attracted many farmers for the 2 days. Farmers who required follow up on commercial root production were 189 (105 males, 85 female). All were linked to the manager at the ATC who oversaw the OFSP vines production from whom they were to procure the planting materials. However, farmers were urged not to plant without knowing the end market for their roots.
5. During this reporting period the project actively participated in the National Nutrition Technical working group discussion including the development of Agri-nutrition action plan at national and county level. Through the project's initiative OFSP has been included as one of the major nutrition sensitive intervention national nutrition strategy receiving immense support from the ministry of health.
6. The project was represented in the SUN business network meetings for Kenya
7. Joined and participates in the Kenya Agriculture stakeholders' network, a forum that aimed at influencing Agriculture policies in the country.
8. The project organized a 2019/2020 work plan review meeting that took place on 30th October 2019 in Kenya. The participants came from various sectors including government, private-sector food processors and non-profit organizations. Thirty participants (13 women, 17 men) from 20 organizations (e.g. government, private sector food processors, NGOs, etc.) attended.



Other than the meeting, the project was able to publish blogs to create awareness about the project. For each country the project prepared blogs that were disseminated in different avenues. Kenya two publications a blog and report were published on the CGI space and on the national television in Uganda and Malawi. A Project brief and banner was developed together with other IEC materials like GAP manual nutrition material were adopted materials were adopted more materials from SASHA and AVCD project.

Output 7: Updated consumer and market reports

A market assessment by Organi limited indicated a drastic reduction in puree uptake by Naivas and Tusky's supermarkets. Organi had lost business to a private OFSP puree processor while Naivas stores indicated an erratic bread production pattern, partly attributed to relatively high cost of the bread since the introduction of 16% VAT in 2018 and lack of adequate awareness about OFSP products by consumers. A reduction in the number of stores baking OFSP bread and buns from 15 in 2018 to 10 in 2019, was also noted. This was partly attributed to bakery trained personnel transfers to other Naivas outlets where sweetpotato baked products were not stocked. The project worked with the processor to carry out training and refresher activities and recruit more puree off takers, plan which will be actualized in the next reporting period. Consumer surveys for shelf stable puree will be done in March 2020 during brand promotion and market activation. For Malawi and Uganda this was not achieved.

Output 8: Nutrition messaging advocacy and social marketing strategy.

The initial step under this output was to identify the target audience to inform nutrition and social marketing strategy. This was done during stakeholders' engagement meeting on 30th May 2019. The target audience was identified as; Potential investors for puree processors, potential Puree utilizers (Bakeries, hotels, food vendors) and consumers of OFSP puree enriched products.

Partners were identified for each target audience during stakeholders' workshop. To create general demand and awareness of the OFSP puree products the Mediae company through Shamba Shape Up will air 10 episodes on OFSP on the Kenya's most watched Television. Collaborative agreements with RTI, CRS, World Vision and WFP for dissemination of nutrition messaging and promoting uptake of OFSP puree are at advanced stages. Nutrition messaging under RTI International will be done through Kenya Crops and Dairy Marketing System Program, Catholic Relief Services (CRS) under MWENDO project. World Vision and World Food Program have a huge presence at grassroot level more so in the arid and semi-arid areas. Through collaboration with the RTB scaling fund project the two organization will disseminate nutrition messaging and promote uptake in marginalized area.

The project benefited from the ongoing broadcast with Farm Radio Malawi who airs messages on the benefits of using OFSP at the community level as well as consuming OFSP products. Print media through local newspapers for demand creation and success stories of people who are using OFSP products. A book of common OFSP recipes has been updated ready to be printed and distributed to Lead farmers and community group leaders. The project members have regularly presented progress reports to the National Technology Working Group on nutrition.

Output 9: Scaling protocols

The innovation matrix developed by the project team at the inception kickoff workshop was modified after the first stakeholder's workshop to have more relevant complementary innovations. Through the guidance of Murat, the final project innovation profile was developed, and work plans drawn based on complementary innovations. Stakeholders profile surveys were completed by 36 people have completed the process is ongoing for new stakeholders identified. Diagnostic surveys have been completed by 49 stakeholders, 30 from Kenya 13 from Malawi and 6 from Uganda. The results will be shared by Murat

Output 10: Business development model

Once of the challenges facing sweetpotato commercialization is access credit facilities. Stakeholders raised concerns on the limited efforts to commercialization of OFSP value chain. Developing business capacity of SMEs to run competitive businesses that can qualify to access credit from financial institutions is one of the complementary innovations that will be addressed by the project. A private partner NetBiz Impact was contracted to develop the capacity of SME and help businesses develop business profile as well as marketing strategy. The contractual agreements were completed during this reporting period and the consultant will start engaging with 10 SMEs identified from Kenya, Uganda and Malawi from Jan 2020.

Output 11: Technology demonstrations on Puree processing


Processing and value addition of OFSP has been centered around flour processing, OFSP puree is a new technology to many food processors, private sector and donors in Kenya, Malawi and Uganda. A series of technology demonstration workshops at national and county level for Kenya were planned. The first technology demonstration workshop was held on 25th November 2019 at Euro Ingredients Limited premises bringing together private processors, non-governmental organizations and governmental officials. This was a hands-on workshop with thirty-eight participants (15 females and 23 males) from 22 organizations. The objective of the meeting was to create awareness among key project partners to support the scaling up of OFSP puree. In the workshop the processing equipment, the puree processing process and how to integrate in baked and fried products was demonstrated Annex 4. The project will carry out 4 more demonstrations from February 2020.



FIG 2: PARTICIPANTS OF TECHNOLOGY DEMONSTRATION

Food safety training

Food safety and standardization is a key output to scaling up use OFSP puree in baked and fried products. Most small - scale businesses in the food industry fail to meet safety standards set by national bureau of



standards hindering expansion of the business and in most cases closing down. In collaboration with Food Safety Nutrition Evaluation lab (FANEL), and NRI a one-week food safety training workshop was organized for government officials from the ministry of agriculture, health and private sector food processors from 9th to 13th December 2019 at ILRI campus Nairobi. A total of thirty-nine (22 males, 17 females) participants were trained across 47 counties. The objective of the training was to equip participants (from national and county government, private-sector food processors and non-profit organizations) with knowledge and skills on food safety and hygiene. The participants will cascade the knowledge to food handlers within their counties of operations. The training report is attached as Annex 5. Same kind of training has been planned for Uganda and Malawi during the next reporting phase.

Sweetpotato and puree standards

The RTB scaling supported the process of development of sweetpotato standards for Kenya. The scaling champion participated in the national technical committee meetings that reviewed existing standards as well as developed new standards which are key in the scaling up OFSP puree. The sweetpotato standards were finally released by the Kenya Bureau of Standards (KEBS) national standards that will facilitate trade on safe and quality products. The sweetpotato puree and sweetpotato bread standards are currently available to facilitate puree processing and utilization. This is a milestone to the scaling up of OFSP puree processing and utilization for Kenya. The project supported the purchase of these standards to benefit other CIP projects.

1. Fresh Sweetpotato Specification
2. Production and Handling of sweet potato- Code of practice
3. Sweetpotato bread-Specification

Initiatives to get same kind of standardization in Uganda and Malawi will be actualized during the next reporting phase.

Output 12: Supply and production plan for puree and bread developed

The existing supply and production plan with existing puree processor in Kenya and Malawi are weak, through the project, contract farming in Kenya to make sure puree processing happens throughout the year. Mapping out of puree utilizers, bakeries and hotels and technology demonstration was planned for this reporting phase. However, due to delay in sub grant agreement with private partners this was partially achieved. This will be achieved in the next reporting period. CIP Malawi trained 100 lead farmers and give them reference recipes on how to process OFSP roots for home consumption. These have been instrumental in passing on the knowledge to households that are interested to use new processing methods and consume the products. In addition to the above activity, 105 women and youths' entrepreneurs that are already in the business of making mandazi, Chips, flitters and donuts using potatoes were selected in the target districts of Balaka, Chiradzulu and Thyolo were trained on how they could also use OFSP to make the same products and realize more profits.

Outcomes

At the start of the project there were a total of 4 puree processors, 2 in Kenya and 2 in Malawi. One more processor through private public partnership with CIP has been established in Kenya to process shelf stable puree (Aseptically packed). Trials from this processor and testing of the products will be done in March 2020. The project will be supporting the purchase of a complete set of puree processing equipment to be leased to a private partner for processing. These are two additional processors making a total of 4. The process of recruitment of additional processors to cover Central part of Malawi Lilongwe which is the capital city was initiated with an expression of interest in the local dailies, a total of 7 applications were received out of which

3 will be considered for puree utilization while 1 will receive a set of complete equipment on lease for puree processing. Following the same recruitment procedure an expression of interest was done for Uganda in the local dailies, only three applications were received even after re-advertisement. A private partner, Bio Fresh limited, was selected for processing and the activity was led by Makerere University under BioInnovate project. The project has so far identified 2 more potential processors for Uganda to be supported for puree processing and for baking. Procurement procedure for purchase of the puree machine has been initiated making a total of 12 processors. In terms of puree utilization for Kenya, Naivas and Tuskys were the main off takers, culinary colleges and hotels have been considered and the exact number of institutions will be shared during the next reporting phase. Bakeries and other institutions for Malawi will be profiled in January to diversify puree utilization. For Uganda discussions on engaging with Tuskys supermarket have been initiated however due to delay in the signing up of puree processors trials were to be delayed. NALRO a research institute with private sector in product development has been approached to utilize OFSP puree for Uganda. NALRO has a capacity of 300 to 500 loaves per day.

Table 3: Developments of OFSP puree processing

TABLE 1: CURRENT AND PROJECTIONS OF SCALING

Country	Puree Processors			Puree Utilizers		
	Old/Existing	New	Total	Old/Existing	New (target)	Total
Kenya	2	1	3	2	15	17
Uganda	0	3	3	0	5	5
Malawi	2	1	3	2	20	22
Total	4	4	9	4	40	

- The 1st technology demonstration and investor workshop was held in Kenya. From the positive feedback it is envisaged that adoption of OFSP puree by micro, small and medium bakeries and informal sector (mainly those dealing with fried wheat products) will be enhanced. Women and youth are the major economic beneficiaries given the high level of their involvement in production, marketing and processing.
- Standards developed for sweetpotato roots, puree and related products are already approved and published by the Kenya Bureau of Standards (KEBS). CIP played crucial role in the standards development as a key member of the technical committee on roots and tuber products. KEBS appreciate the importance of standards for OFSP and RTB crop value chains and publishing these standards is key to facilitate and enhance trade in products. Stakeholders have been sensitized on these standards in the last 3 RTB OFSP puree Scaling workshops.
- The bakers and informal sectors were sensitized on the importance of using improved OFSP processing technologies in their operations in the 1st technology demonstration workshop held in Kenya. From the feedback and inquiries arising from the participants, there is no doubt adoption will be increased in due course.
- The Ministry of Agriculture and Health have developed interest in OFSP products and inclusion in nutrition and health promotion activities and campaigns has commenced



Impact

The following were the expected outcomes at the beginning of the project. However, during this reporting phase the impact of the project has not been realized.

- Improved nutritional status of women and children linked to OFSP puree value chain as a result of sustainable adoption and household consumption of OFSP.
- Income of OFSP-related processing activities of 20 000 smallholder households in Kenya, Malawi and Uganda increased by more than 10% at the end of the project in 2022.
- Increased investment in OFSP by private sector, informal sector and governments in Kenya, Malawi and Uganda creating employment and income opportunities for women and youths

With the increased number of puree processors on board the project expects increased production of OFSP puree and its utilization resulting in expanded markets to drive economic development, leading to increased investment in the OFSP value chain by the private and public sectors in Kenya, Malawi, and Uganda. This is expected to create employment and income opportunities for women and youth in the project countries. Overall, the increased consumption of OFSP enriched products will lead to the improved nutritional status of women and children at the household level by the end of the project.

Reflections and learnings about scaling and Scaling Readiness

Innovation package

Describe the innovation package at the beginning and at the end of the project.

The innovation package at the beginning comprised of the project's core innovation as "The OFSP puree as a baked and fried product and 4 complementary innovations as below: Communication, media and demand creation, Partnership, Technology transfer and technology demonstration. The project team modified the innovation package during the kickoff workshop with the guidance of the PMU team. This exercise 8 more complementary innovations were added as per table 4 below. The main objective and specific objectives were also modified as indicated in the innovation matrix table below.



TABLE 2: INNOVATION MATRIX DEVELOPED BY PROJECT TEAM

Main objective

Increase the utilization of OFSP puree in baked and fried products in Kenya, Uganda and Malawi.

Specific Objectives

- Ensure reliable and consistent supply of good quality fresh OFSP roots for puree processing.
- Increase production and use of OFSP puree in Kenya, Uganda and Malawi.
- To increase the awareness of the nutritional benefits of OFSP among farmers in Kenya, Uganda and Malawi.
- To increase the awareness of the economic benefits of OFSP producers and processors in Kenya, Uganda and Malawi.

Innovation (initial formulation)	User	Innovation type	Brief description
Use OFSP puree for baked and fried products by formal and street vendors in Malawi, Kenya and Uganda	Formal (Bakeries) and informal-(street food vendors)	Product	Use of OFSP puree as a substitute of wheat for improved nutrition and business/economic benefits
Disease and pest free OFSP planting materials	Farmers linked to puree processor	Service	1. Farmers have access to disease free planting materials 2. Provide OFSP in varieties suitable for processing, and the good agronomic practices for these varieties.
Extension service	Farmers linked to puree processor	Service	The Kenya ministry of Agriculture has a well-defined extension services system from County to ward level which can be utilized by the project.
Training on best practices on harvesting and post-harvest handling, temporary storage before taking roots to aggregation centers	Extension service agents and processors	Practice	Training on harvesting and post harvesting 1. Activities during harvesting (method of harvesting, tools, and timing of harvest). 2. Activities after harvesting (Washing, grading, packing and on-farm root storage before taking to aggregation site)
Organization of farmers for aggregation of OFSP roots linked to the processor	Farmers linked to puree processor	Organization al model	Clustering farmers in to zones for collective action in production and Marketing. Aggregation centers are centers where farmers in a cluster bring harvested roots on specific days for a Processor/trader to collect.
Storage technologies for OFSP roots	Puree processor	Service	Holding areas are the temporary storage for fresh roots from the farm before being processed it can be a small room or a shade.
Storage technologies for OFSP puree at processor level	Processors	Service	These are freezers as well as organized shelves for temporary storage of puree before sending to the market by the Processor
OFSP puree processing technologies-equipment for independent processor	Processors	Plan/model	Equipment for washing roots, steaming/boiling roots, mashing, mixing and packing available in Kenya

Food safety for puree processors and end users	Processors and End Users	Product	The food safety by both vendors and processors
OFSP puree specifications that meets requirements of end users including food safety	Processor and End User	Service	Procedures of making puree and definition of puree by end users in Kenya
Technology demonstration for OFSP puree users in formal and informal sectors	Potential investors	Service	Training users on the needs and procedures through interactive/participatory processes
Access to credit information for farmers linked to OFSP processing.	Farmers and processor	Service	Partnering with formal credit providers in Kenya and sharing information
Social behavior change and communication (SBCC) guidance targeting OFSP and products in place	Consumers awareness for OFSP products	Service	A blueprint on how demand creation activities will be rolled out and for who. It is in form of Product promotion, IEC material behavior changes avenues among others.
Business development plans and capacity building facilities in place e.g. incubation centers	Processors of puree and vendors	Service	Development and sharing of business plans on OFSP puree processing, and diversified utilization.

During the stakeholder's workshops for each country the innovation matrix was shared with participants who gave their inputs on the innovation package by adding removing and adding more relevant innovation and eliminating those that they deemed less important reducing complementary innovation to 9 presented in Table 3. For instance, stakeholders felt that organization of farmers and training on GAP still fell under agriculture extension services but root storage for consistent supply of roots for processing was key. However cold chain storage could not be achieved during this reporting period. Social behavior change and access to information by farmers were merged into one innovation

TABLE 3: FINAL INNOVATION PROFILE FOR OFSP PUREE

Innovation Profile- OFSP puree							
Innovation	Output1	Output 2	Output 3	Value Chain Level	Innovation Function	Who is doing it?	Who can fund?
1. Contract farming for provision of disease and pest free seeds and vines	2. Large scale (Nuclear) OFSP seed multiplication center for disease and pest free seed production	4. Quality declared planting material law on commercial vine multiplication	6. Providing incentives/subsidies to commercial vine producers	Planting Material	Accessibility (Affordability)	KALRO, CIP, FCI, ORGANI, Processors	
2. Processing friendly OFSP varieties for production by commercial farmers in Kenya	8. List of processing friendly OFSP varieties that can be released quickly in Kenya for commercial OFSP production	List of existing OFSP varieties suitable for different climatic areas		Planting Material	Accessibility (Availability)	KALRO, KEPHIS	DDbio
3. Delivery of extension services	5. Training of commercial vine producers on vine	7. Upgrade module on disease and pest free	22. Commercial OFSP farmer clusters	Planting Material	Accessibility (Availability)	MOA, CIP, FCI,	



	multiplication and positive selection	OFSP production for mobile extension application					
10. Climate controlled storage for OFSP roots	Not achievable within this project its expensive			OFSP Roots	Accessibility (Availability)	CIP DDBIO in Uganda	
4. Cold chain for OFSP puree for sales and shelves for shelf stable puree	12. Shelves for storing puree before sales to wholesalers and retailers			OFSP Puree	Accessibility (Availability)	EIL	
5. OFSP puree processing technologies-equipment for independent processor	14. OFSP Puree packaging equipment			OFSP Puree	Capacity to use/work (Hardware)	EIL	
6. Demonstrations of OFSP Puree processing and packaging equipment	21.Training workshop on OFSP Puree business	16. Guidelines on procedures of puree making	10. Temporary holding areas for OFSP fresh roots in the processing facility	OFSP Puree	Capacity to use/work (People)	CIP,EIL	
7. Credit access guide(manual) for OFSP producers	17. Credibility assessment guidelines on OFSP production for banks			OFSP Roots	Accessibility (Affordability)	Netbiz Impact, GAIN, RTS SHA	
8. Advocacy and Awareness campaign on benefits of OFSP				OFSP Bread or pastry	Motivation (Convince)	CIP, WV, RTI, CRS,	
9. OFSP Puree Business Development Guide(Manual)				OFSP Puree	Capacity to use/work (People)	GAIN, SHA, RTI	

Explain which were the main changes that have been made in the innovation package and the reasons/ processes that have determined these changes.

At the kickoff workshop it was realized that the topic was too broad and for the purposes of scaling there was need to be for specific. The PMU team worked together with the team to revise the topic, objectives and select more complementary innovation based on what, for who, why who. The objectives of the project were summarized as per Table 4. Along the way the innovation package was modified, and complementary innovations reduced to 9 after the stakeholder workshop. These innovations were defined by the team after the realization that a core innovation stands no chance to succeed in itself-it depends on a several support pillars referred to as complementary innovations. Being an agricultural product, sustainable OFSP puree production required proper planning and organization at the root production level: Disease and pest free OFSP planting materials; elaborate extension service and training on OFSP best practices. It also demands good post-harvest practices that are not limited to proper storage technologies for OFSP roots and puree storage at processor level. OFSP puree processing technologies-equipment for independent processor coupled with food safety/standards for puree processors and end users were also identified as necessary requirements. It was also deemed necessary for the team to look at cross-cutting issues such as social behavior changes and communication (SBCC) and advocacy in addition to business development plans and capacity building of key stakeholders.

Explain if and how the changes have enhanced or will enhance the scaling potential and /or the technical, economic, social and environmental viability of the innovation package.


No changes cited during this quarter

Partnership strategy

Partners were identified through innovation characterization at project level and during stakeholder's engagement as explained in the output section. The project had identified implementing partners at the proposal stage but through innovation profile partners like Organi Limited for Kenya, Tehilah enterprise, and two more for Uganda were identified to receive sub grants to support the implementation of OFSP puree scaling project. Funds allocated to original implementing partners in the proposal were also adjusted as per the new activities assigned after innovation characterization.

Collaborative agreements were developed for scaling partners who did not receive grants from the project but identified as strategic. Through stakeholder's workshop participants identified partners for each complementary innovation. The roles of partners as described in the proposal were modified to fit the scaling need which included adjusting of funding and getting new sub grantees on board. During this reporting period partnership developed were maintained as;

- Euro Ingredients Ltd (EIL) has been useful in technology demonstration activities and providing much needed technical advice on required processing and storage equipment as well as linking the informal sector and SMEs to equipment customized for OFSP processing and providing technical backstopping for technology adopters.
- EIL and FANEL teamed up with RTB scaling project to conduct a training workshop on the OFSP puree processing technologies and food safety to selected processors, private sector and public health officers from key counties involved in OFSP production and marketing.

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- The project engaged FCI to leverage on extensive network of informal market buyers as well as comprehensive knowledge on key institutional and formal buyers to enhance the efficiency of the supply chain especially optimizing sourcing of quality produce in Kenya.
 - The project has expanded its network to include a communication team (Mediae) that has been engaged to market the project activities to a larger population through the use of radio and television network. The first video shooting has been carried out and more are planned for the year 2020.
 - The government of Kenya through the Ministry of Agriculture, Ministry of Health, Kenyatta University and University of Nairobi were brought on board to mainstream OFSP products in their national programs and training activities. The county governments where OFSP roots are grown and traded were also involved in the project to ensure proper coverage and reach in the grassroots.

Nutrition messaging and demand creation will be disseminated through collaborate efforts with organizations that have strong community nutrition and social behavior change and communication strategies. Collaborative agreements with organizations such as RTI International, World Food Program, World Vision and Catholic Relief Services. For instance the RTI International through Kenya Crops and Dairy Market System working in 13 counties through collaboration agreement will add OFSP specific nutrition messaging to their nutrition curriculum for group session, CRS through MWENDO project will help puree utilization at the informal settlement and some organized production at rural level. World Vision and WFP have heavy presence in the arid and semi-arid areas, through collaborative agreement they will disseminate nutrition's message, promote puree processing and utilization at grass root level and in arid and semi-arid areas. MESTP on the other hand works in eastern and coastal region with organized group of farmers the RTB scaling fund will not recruit other groups of farmers but work with the existing groups and existing collecting centers for the other crops

Present the key lessons learned in terms of partnership management and its importance for the scaling process

- Scaling readiness exposed the gap in along the value chain, many organizations working isolation sharing project beneficiaries and each with different approach to these households with OFSP with low adoption rates. Some partners were promoting varieties that were very soggy discouraging when there were better varieties. There were no forums for partners to link with each other but through stakeholders' profile and linkages in Kenya sweetpotato partners are now working together to benefit from the established seed system and collective marketing. We believe this will have a deeper impact
- Identifying the right partners through innovation characterization helped the project identify levels of synergy and collaborations to avoid duplication of efforts. Other than the project funding partners have been able to commit their resources along the value chain towards scaling of OFSP puree which will enable the project to commit its resources towards addressing the scaling bottlenecks.
- One of the biggest challenges identified during the stakeholder's engagements was access to clean planting material yet CIP has a well-established seed system in Kenya, Uganda and Malawi.
- Uptake of vines from decentralized vine multipliers set up by CIP has been very low. Through this partnership, organizations can benefit from CIP DVM network hence support consistency in the supply of roots to puree processors which has been a problem. This will also ensure that correct varieties are being disseminated to farmers.
- For Uganda and Malawi, the processing of Identifying scaling partners for collaboration is ongoing

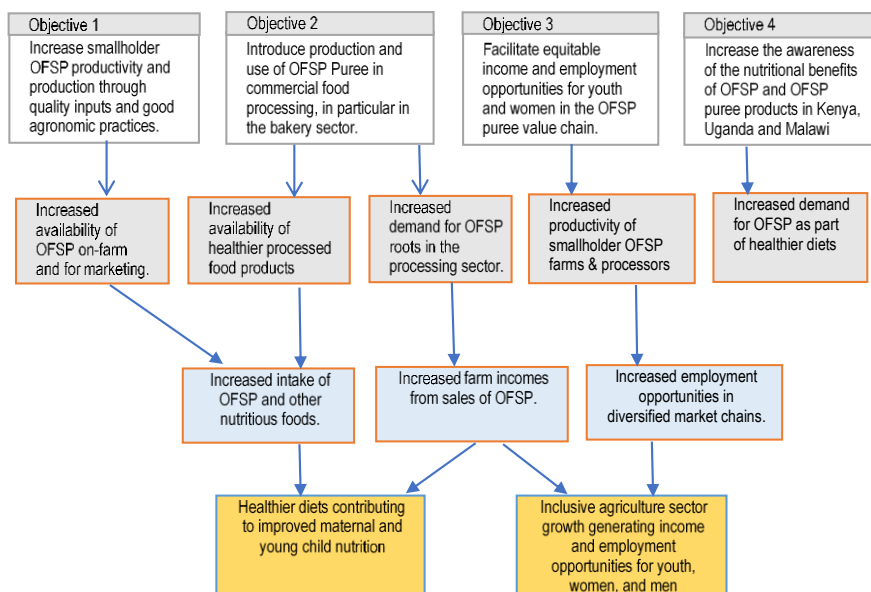
Scaling strategy

Present the scaling pathways defined at the beginning of the project and the changes that were needed during its implementation.

The scaling strategy will be developed after analyzing the diagnostic survey result and knowing the findings.

Below is the project impact pathway developed at the proposal stage. This will be modified after data analysis to focus on addressing scaling bottlenecks

Fig 1. Project Impact Pathway for Kenya, Malawi and Uganda



Explain the decision-making process that has been used to adapt the scaling strategy and the key stakeholders involved.

This will be done during the next reporting period

Explain if and how the changes have influenced the project capacity of going to scale with the innovation package.

No changes so far on the influence of innovation package on projects capacity to go to scale

Scaling Readiness

Provide short update on how Scaling Readiness was applied and supported the:

- (I) *Characterization of the innovation and scaling context,*
This was done at two levels, first with project team and at the key stakeholder's workshop. Complementary innovations were identified and modified to give rise to a complete innovation profile for the three countries.
- (II) *Diagnosis of bottlenecks for scaling,*
This was done through diagnostic surveys completed by 49 stakeholders. The team worked with key stakeholders to map out the bottlenecks for scaling up in each of the identified complementary innovations. There were challenges in convincing stakeholders to take part in the survey through

skype or phone call since they hailed from different parts of the country especially in Malawi where phone networks are poor. Having stakeholders at a central place either riding on other project activities then request for an hour with the stakeholders to complete the surveys seemed to work for Kenya. The length of the survey and the nature of the questions made it difficult for the surveys to be self-administered. For the completed surveys, results will be shared during the next reporting phase

(III) *Design of the scaling strategy,*

This was not achieved during this reporting period

(IV) *Stakeholder negotiations and development of the scaling action plan, and*

This will be achieved during year two of project implementation

(V) *Monitoring, evaluation and learning.*

This was integrated in the implementation of project activities. Forms were developed to collect monitoring data, during advocacy and capacity development events. Market research has been developed to serve as baseline to be able to project progress after the end of the project. Project inputs, outputs and deliverables were uploaded in the RTB MEL system.

If these learnings have already been captured in other documents, including the ones developed in collaboration with the Scaling consultant and/or the Scaling team, please make reference to these documents.

Financial update

Present financial data using the standard cost categories

Categories	Y1 Budget (USD)	Y1 Expenses (USD)	Y2 Budget (USD)	Y2 Expenses (USD)
Personnel				
Collaborator Costs – CGIAR Centers				
Collaborator Costs – Others				
Supplies and Services				
Training / Workshop				
Operational Travel				
Depreciation				
Sub-total of Direct Cost				
Indirect Costs/Institutional Overhead (15%)				
TOTAL – all Costs				


Present the level of co-investment mobilized

Categories	Main activities covered and geographical scope	Y1 Expenses (USD)	Y2 Expenses (USD)
Co-investor 1	<i>Short narrative</i>		
Co-investor 2			
Co-investor 3			
...			
TOTAL – all co-investors			



Annex 1. List of deliverables reported

Output	Deliverable	Description	Status
Farmers accessing high quality OFSP vines	Vine multipliers linked to puree processing Varieties suitable for puree processing	DVMs producing disease free OFSP planting materials for OFSP puree processing	24 Active vine multipliers identified and linked to commercial root producers for puree processing for Kenya One new variety released in Kenya and three in Malawi release suitable for puree processing In Malawi 67 DVMs were Mapped to support OFSP puree processing out of these 30 will be supported by United Purpose in terms of Capacity development
Farmers trained on Good Agronomic Practices	Training manual on GAP Training and workshop reports Extension services to support OFSP farmers produce, harvest and sell quality OFSP roots	Number of individual/groups of farmers trained on Good Agronomic practices Training manuals adopted	=>Training Manual adopted from AVCD project Kenya =>Extension messages on been prerecorded and to be aired on National Tv program running for a period of 6 months =>County and sub county agriculture officials were briefed on the project and training material on Anything you ever wanted to know about sweetpotato shared with them =>In Malawi 100 lead farmers were trained on GAP and post-harvest handling these will cascade train other farmers
Supply and production plan for root linked to a puree processor	1.Market profiling report. 2.Production and market linkage plan 3.Out grower networks established 4.Contract farming initiated	Farmer groups and associations in high-potential areas for year-round production of preferred processing varieties for marketing to processors Organizing OFSP farmers into out grower networks linked to processors.	=>Contract farming was initiated during this reporting period with 189 farmers organized into out grower network linked to puree processing have signed the contracts. =>In Malawi the project identified 88 farmer groups already in operation under United purpose to support and organize production for consistent root supply
Partnership	Signed partnership agreements and work plans 1.MOUs with partners developed 2.Identify commercial partners for puree processing or processing for scaling up	Partners formerly engaged to participate in the project with clear roles Partners to promote the activities involving production, marketing and processing were identified and work plans refined in 2 workshops. Identify commercial partners and develop collaborative agreements.	=>A total of 8 sub grant agreement were signed, 8 MOUs developed with different scaling partners for Kenya 4 commercial partners In Malawi and 3 in Uganda have been identify in for pure processing development of collaborative agreements at an advanced stage
Scaling protocols	1Stakeholders profiling report 2Stakeholders engagement report 3.Diagnostic assessment report		1.Stakeholders profiling completed 2.Stakeholders/partner engagement completed 3.Diagnostic assessment completed for Kenya
Awareness and demand creation	10 Video clips on: Access to clean planting, harvesting and post-harvest handling, OFSP puree utilization by both formal and informal markets Access to SMS Research findings into impact of the series after broadcast traffic in SMS database specific to episode and access to	Support regular information exchange between researchers, farmer associations, and other stakeholders on new OFSP varieties. Adverts and content developed for mass media, social media and direct contacts. Cooking demonstrations in	=>The Mediae Company was contracted to develop and film 10 episode across the OFSP vale chain to raise awareness. Organization strong in nutrition messaging contacted , development of collaborative agreement going =>Participation of the project in SUN Buzines movement and Nutrition technical working group



	phone numbers of SMSs specific to topic by the public	stores and in local trade centers and markets for OFSP puree	Nutrition and gender strategy will be developed by Bioversity International in the next reporting phase
Updated consumer and market reports	Consumer evaluation and market assessments reports		=>A market analysis was done to evaluate puree uptake puree by two main off takers in Kenya. This informed planning for market activation and refresher training of staff at this entity =>CIP did a consumer survey are planned for march with the hot fill puree processor
Nutrition messaging and Advocacy and social marketing strategy	<ul style="list-style-type: none"> •Progress report on nutrition messaging and uptake •Link to adverts and content developed for mass media, •Report on Cooking demonstrations in stores and in local trade centers, markets for OFSP puree. •Advocacy strategy1. Workshop reports 2.Consumer study report 3.Media content developed for OFSP puree and puree products 		Partners to disseminate nutrition messaging and demand creation were identified. 2 blogs were shared to create demand for Puree Technology demonstration among key stakeholders was done to create demand for puree The project was represented in National and local level forums like WFP,
Business development model	<ul style="list-style-type: none"> •Product profiles for 10 enterprises •Business models developed for the 10 SMEs •Advocacy tool for the 10 SMEs Marketing strategy for SMEs and growth plan	3 workshops in each country or clinics with informal sector and SME on OFSP puree business plans and strategy, and supply chain management	Netbiz impact has been contracted to develop the capacity of 10 SMEs in puree processing to develop business profiles that will give them an opportunity to access credit/financial and to run sustainable business models. Engagement with the SMEs will start in January 2020
Protocols for OFSP puree processing	<ol style="list-style-type: none"> 1.OFSP puree specifications and standardization 2.OFSP puree production equipment specificity for small and medium enterprises. 3.Food safety manual 4.Food safety training reports Puree processing manual	Validation of OFSP puree recipes, equipment and production facilities from pilot production to full scale Development of protocols customized by location, farming systems and business environment	The OFSP roots, puree and bread standards were released by the KBS. Through scaling champions this will be achieved in the next reporting phase for Uganda and Malawi
Technology demonstrations on Puree processing	<ol style="list-style-type: none"> 1.Workshop reports 2.Product development reports 3. Recipe developed 	4 Workshops conducted in each country show casing demand, the recipes, products, equipment, production scales for OFSP puree and products Development of OFSP puree processing manuals for public dissemination	Technology demonstration report Annexed For safety training held for Kenya report uploaded
Supply and production plan for OFSP puree and OFSP puree products	<ul style="list-style-type: none"> Business models for OFSP puree Business models for OFSP puree products Training reports for bakers Market activation reports 	OFSP farmer coordination and linkages with OFSP puree producers. Bakers/puree utilizers linked to puree processors.	This was not achieved during this reporting period

Once you have reported the deliverables under the project created in MEL. You may generate this information directly through the [POWB page](#).