

# Sustained Diet Quality Improvement by Fortification with Climate-smart, Nutrition-smart Orange-fleshed Sweetpotato in Southern Nations, Nationalities and Peoples' Region (SNNPR), Ethiopia

2019 Annual Report

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# **Sustained Diet Quality Improvement by Fortification with Climate-smart, Nutrition-smart Orange-fleshed Sweetpotato in Southern Nations, Nationalities and Peoples' Region (SNNPR), Ethiopia**

**2019 Annual Report**

**March 2020**

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## ACRONYMS

AGP	Agricultural Growth Programme
ATVET	Agricultural Technical and Vocational Education and Training Institute
BANRD	Bureau of Agriculture and Natural Resource Development
CF	Community facilitator
CIP	International Potato Center
DA	Development agent
DM	Dry matter
DVM	Decentralised vine multiplier
EU	European Union
FO	Field officer
FTC	Farmer training centre
HARC	Hawassa Agricultural Research Center
HDA	Health Development Army
HEWs	Health extension workers
HH	Household(s)
HLCs	Healthy living clubs
IYCF	Infant and young child feeding
MLE	Monitoring, learning, and evaluation
OFSP	Orange-fleshed sweetpotato
PIN	People in Need
QDBH	Quality Diets for Better Health
QDS	Quality declared seed
RTB	Roots, Tubers and Bananas (a CGIAR Research programme)
SARI	Southern Agricultural Research Institute
SASHA	Sweetpotato Action for Food Security and Health in Africa
SBCC	Social behaviour change communication
SNNPR	Southern Nations, Nationalities and Peoples' Region
SSA	Sub-Saharan Africa
ToT	Training of trainers
VAD	Vitamin A deficiency

## EXECUTIVE SUMMARY

The Sustained Diet Quality Improvement by Fortification with Climate-smart, Nutrition-smart Orange-fleshed Sweetpotato in Southern Nations, Nationalities and Peoples' Region (SNNPR), Ethiopia is a 4.5-year project (the project) launched in 2017 and funded by the European Union. Because of its long formal, project implementers have developed a short-hand moniker: Quality Diets for Better Health (QDBH), which in a few words covers the project's ambitions. QDBH is being implemented by the International Potato Center (CIP) and partners People in Need and the Rollins School of Public Health at Emory University (Emory) in three woredas in SNNPR in Southern Ethiopia, which are subdivided into 66 kebeles.<sup>1</sup> Of these, 42 kebeles were selected as having the right conditions for sweetpotato production. The project is structured around one intermediary outcome and four outputs.

During year 3 of 2019 (Y3) QDBH added 18 new kebeles to the 24 kebeles already covered in 2018. As the security situation in Gedeo zone improved, these now include the five kebeles in Kochere, where interventions in 2018 had to be suspended.

In the project operated in five fields of action: research, extension, capacity building, value chain development, and monitoring and evaluation:

- Research
  - Research into the knowledge about vitamin A, the consumption of vitamin A-rich food, and of sweetpotato among urban consumers
  - Research on seed systems with emphasis on so-called “traditional vine multipliers” and irrigation and market actors for the development of the sweetpotato value chain to ensure properly designed interventions
  - Research into appropriate techniques for the production of sweetpotato leaves as a vegetable
  - Completion of the study of the adoption of improved nutrition and dietary practices by the 778 households (HH) who were enlisted in the first group of healthy living clubs (HLCs) in 2017
  - Piloting the use of brochures and cooking demos to promote the acceptance and sales of fresh roots among urban consumers
- Extension
  - Demo plots with the four OFSP varieties proposed for release ('Alamura', 'Dilla', 'Kabode', and 'Vita') and the already released OFSP variety 'Kulfo' and the local white-fleshed variety at farmer training centres (FTCs) and private farmers in 18 new kebeles
  - Cooking demos in 18 new kebeles on how to prepare traditional recipes incorporating OFSP
  - Vine multiplication utilising demo plots at 19 FTCs and 21 private farmers. One group of female farmers has joined the vine multiplication halfway through 2019, but had not made enough progress to be able to supply during the 2019 cycle

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1. Woreda is an administrative division in Ethiopia (managed by a local government), equivalent to a district with an average population of 100,000. Woredas are composed of a number of kebeles, or wards, which are the smallest unit of local government in Ethiopia. Woredas are grouped into zones, and zones are grouped into regions. The SNNPR region is divided into 13 administrative zones, 133 woredas, and 3,512 kebeles, with over 80 ethnic groups.

- Dissemination to 6,300 HH of quality vines of four OFSP varieties proposed for release ('Alamura', 'Dilla', 'Kabode', and 'Vita') and the old variety 'Kulfo'
- Dissemination of vines to about 2,000 FTCs and farmers in 12 additional woredas to support the scaling out of OFSP
- Official release of three, new high dry matter (DM) and high-yielding OFSP varieties
- Capacity building in agriculture, nutrition, and financial management
  - Training of trainers (ToT) course, step-down trainings to agricultural and health extension workers, and health development army volunteers, and establishing 210 HLCs
  - Financial management training of FTCs
  - Equipping FTCs with rainwater-harvesting and irrigation equipment
- Value chain development
  - Identification and training of 15 small food processors making food products with recipes that have been adapted to incorporate OFSP
  - Production and sales to consumers in Hawassa City and Chuko Town of injera, yeast bread (dabo), flat bread (ambasha), and doughnuts (bomobolino) prepared with OFSP by five small local businesses, of which two are managed by women
  - Supplying fresh roots to 30 informal sector vendors enrolled in a marketing pilot as a step to attract urban consumers in Hawassa City
  - Market promotion events in Wonago, Kochere, Dilla, and Chuko towns
- Monitoring and evaluation
  - Refinement of ongoing monitoring and evaluation, including the continuation of the analysis and write up of the study covering HLC-member HH of the first batch of HLCs and the establishment a quality monitoring system for HLC training sessions
  - Endline data collection in 13 intervention and 13 control kebeles

QDBH is aligned with the original logframe (Annex A). The backlog in recruiting beneficiary HH for HLCs that was created in 2018 due to civil unrest in the project's intervention area was almost fully compensated in 2019. The cumulative number of direct beneficiaries is now 10,348 HH—62 below the 10,410 that was planned (Table 1. Annual progress against key milestones (woredas, kebeles, FTCs, DVMs, HLCs, direct beneficiary HH, and amount of cuttings disseminated)

The only output where the project is not reaching its target is the number of indirect beneficiaries through the sharing of vines among neighbours in the intervention kebeles. (The original target was set at 60,000, with a multiplication factor of four indirect beneficiaries per direct beneficiary HH.) Monitoring data indicate that a more realistic estimate of the multiplication factor is 0.07. This means that we need to make an additional effort to stimulate horizontal dissemination.

The team will test alternative methods for ensuring broader dissemination of vines, including market-based sales events and actions outside the original target area where sharing may be more acceptable culturally. Given the fact that the project is already in Y4 of implementation, we recommend that the target of 60,000 indirect beneficiary HH be lowered to 40,000.

In 2019 QDBH worked with five OFSP varieties ('Kulfo' and four new ones) that are superior in terms of DM, yield, and beta-carotene content but were not officially released until November. Unfortunately,

consumer response to 'Kulfo' has been very negative. This puts serious constraints on the project's ability to promote the adoption of the new OFSP cultivars, as their dissemination and marketing could only take place within the framework of participatory research (baby trials) and piloting. These constraints affected primarily the opportunities for the development of urban markets, with promotion of the new cultivars being kept at a low key. An 8-weeks marketing pilot reached an estimated 11,000 individuals, which is well below the 61,000 target; however, in 2020 a major effort will be made to reach urban consumers. The 61,000-beneficiary target therefore remains feasible.

A detailed summary of the project's progress against outcome, output, and activity indicators can be found in the updated logframe in Annex A.

In addition to Annex A the report contains the following annexes:

- Annex B: An Updated Action Plan for Future Project Activities
- Annex C: Beneficiaries/Affiliated Entities and Other Cooperation
- Annex D: Visibility

**Table 1. Annual progress against key milestones (woredas, kebeles, FTCs, DVMs, HLCs, direct beneficiary HH, and amount of cuttings disseminated)**

Milestones		Y1 (2017)		Y2 (2018)		Y3 (2019)		Y4 (2020)	Total	Comment
		Planned	Achieved	Planned	Achieved	Planned	Achieved	Planned	Planned	
No. of woredas	Cumulative	3	3	3	4	3	4	3	<b>3</b>	
No. of kebeles		13	13	29	24	41	42	41	<b>41</b>	
No. of FTCs established as vine multiplication sites		10	13	20	24	32	42	32	<b>32</b>	
No. of DVMs established as vine multiplication sites		3	13	9	24	9	42	9	<b>9</b>	
No. of HLCs/multiplier (FTC or DVM)	Annual	2	2	4	4.5	5	5.0	4		HLCs operate for 9 months
No. of HLCs established and trained		26*	26	116	109	205	210	164	<b>511</b>	Over target to allow for contingency
No. of HH targeted (30/HLC)		780	778	3,480	3270	6,150	6,300	4,920	<b>15,330</b>	
No. of cuttings to be provided for each HH		600	150	600	600	600	600	600		To cover 100 m <sup>2</sup>
Total no. of cuttings		468,000	165,600*	2,088,000	1,962,000	3,690,000	3,780,000	2,952,000	<b>9,198,000</b>	
No. of cuttings/multiplier required		36,000		72,000		90,000	92,200	72,000		

\*1,104 HH received vines.

# 1. RESULTS AND ACTIVITIES

## 1.1 INTRODUCTION AND MODIFICATIONS TO THE ORIGINAL PLAN OF INTERVENTION

The Sustained Diet Quality Improvement by Fortification with Climate-smart, Nutrition-smart Orange-fleshed Sweetpotato in Southern Nations, Nationalities and Peoples' Region (SNNPR), Ethiopia project is a 4.5-year initiative (the project) funded by the European Union (EU). The project, also known under the short-hand moniker Quality Diets for Better Health (QDBH), is being implemented by the International Potato Center (CIP) and partners People in Need (PIN) and the Rollins School of Public Health at Emory University (Emory) in the Sidama and Gedeo zones in SNNPR in Southern Ethiopia. The project is structured around one intermediary outcome and four outputs (discussed below). The intermediary outcome is an increased intake of vitamin A and improved food security by 15,000 rural households (HH) and 61,000 urban consumers. The four outputs are summarised as follows:

- Some 53 vine multiplication sites provide 15,000 local HH with inputs and know-how for production of orange-fleshed sweetpotato (OFSP)
- At least 15,000 women and 10,000 men are aware of the nutrition benefits of OFSP and of essential child nutrition practices
- At least 61,000 urban consumers benefit from improved supply of fresh and processed OFSP
- The project's successful intervention models are beginning to be integrated into SNNPR's agricultural and health extension systems

At inception QDBH was expected to operate in 41 kebeles in three woredas (Aleta Chuko, Dilla Zuria, and Wonago). In early 2018 it became clear that some of these kebeles were not suitable for sweetpotato farming or were benefitting from other, overlapping actions. For that reason, and at the request of the local governments, several kebeles were substituted and a new woreda (Kochere) added to accommodate the change. In this way it was possible to maintain the total numbers of kebeles in both zones. Table 2 contains a full list of the kebeles and woredas with the year of the start of the project's intervention there. The colouring refers to the treatments in the longitudinal study carried out by Emory and the cross-sectional study carried out by CIP.<sup>2</sup>

Similar to 2018, the year 2019 was characterised by political instability and unrest. In 2018 Gedeo zone had to face an influx of more than 820,000 internally displaced persons, of which about 225,000 were in project woredas and Dilla Town. Over 2019 most of these received help to return to their areas of origin in Oromia. In the meantime, in Sidama zone, people called for regional status leading to civil unrest and violence in July 2019. QDBH was forced to interrupt its activities and close the office for 2 weeks. In November the government accepted the results of a referendum showing that 98% of the voters supported the new region; tensions have since diminished. However, uncertainty remains about the future of SNNPR regional institutions located in Sidama territory, including key project partners such as the Southern Agricultural Research Institute (SARI) and the Hawassa Agricultural Research Center (HARC).

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2. Full treatment (green) refers to healthy living clubs (HLCs) where beneficiaries receive OFSP, nutrition training, and a bowl and slotted spoon in a so-called healthy baby toolkit. Partial treatment (orange) implies that the HLC members receive OFSP and nutrition training, whereas control (yellow) means that they do not receive any benefit until after the study is over. The remaining kebeles are not covered by the longitudinal and cross-sectional studies. For more details see the description under A.1.4.5.1.

**Table 2. Kebeles covered by the project by year of the start of the intervention, by treatment (colour) and woreda (between parentheses)**

Y1 (2017)	Y2 (2018)	Y3 (2019)
Andida (DZ)	Anchebi (K)	Shakiwa (DZ)
Holena (DZ)	Biloya (K)	Gola (DZ)
Amba (DZ)	Buno (K)	Bula (DZ)
Tokicha (W)	Chichu Woyama (AC)	Akesho (DZ)
Dangora Eleicho (AC)	Chiko Woyama (AC)	Deko (W)
Dibicha (AC)	Gure (AC)	Dangora Kebado (AC)
Miridicha (AC)	Halo (AC)	Gunde (AC)
Chichu (DZ)	Hase Haro (W)	Shigedo (DZ)
Sisota (DZ)	Jeldo (K)	Tumticha (DZ)
Bele Bukisa (W)	Kara Soditti (W)	Gambela (AC)
Rufo Waema (AC)	Lela Honcho (AC)	Tesso (AC)
Dangora Morocho (AC)	Mekela (AC)	Loka Dama (AC)
Loko Haytala (AC)	Mekonisa (W)	Debeka (AC)
	Otilcho (DZ)	
	Sigiga (K)	
	Tumata Chirecha (W)	

Green = full intervention; orange = partial intervention; and yellow = control.

Woredas: AC = Aleta Chuko; DZ = Dilla Zuria; K = Kochere; and W = Wonago.

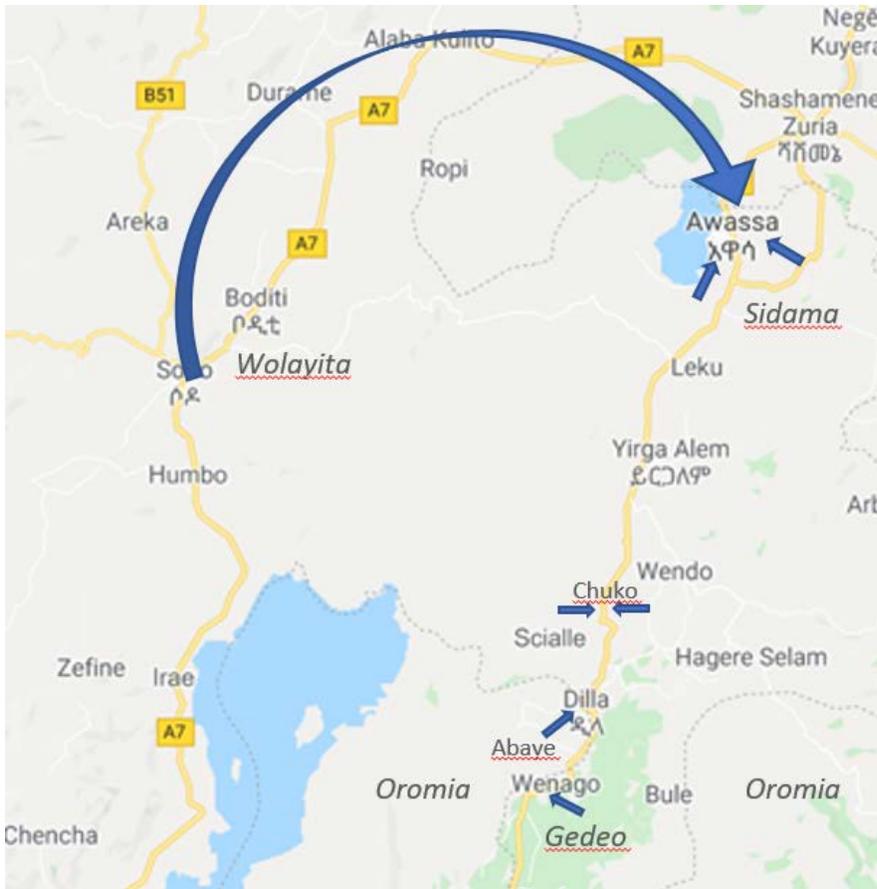
SARI holds the national mandate for sweetpotato pre-basic seed production. Through its experimental station at HARC it is also the only place in Ethiopia with a sweetpotato-breeding program, which is supported by CIP. One of the tasks QDBH had assumed on top of its original activity plan was the participatory evaluation of new OFSP cultivars. These are expected to replace the only officially released orange-fleshed cultivar, 'Kulfo', which at least in SNNPR is not widely accepted at the production and marketing levels. QDBH contributed to the selection of four candidates that were submitted to the Ministry of Agriculture for release in early 2019. After repeated delays, three proposed cultivars were approved on November 7th 2019. These new cultivars are more drought tolerant and resistant to viruses, have a higher dry matter (DM) content, are better yielding than 'Kulfo' (Table 3), and are expected to be more widely adopted by farmers and consumers. A 1-day public event was held with press coverage to highlight the release of the new varieties and the fact that two of them were bred by an Ethiopian scientist in Ethiopia.

**Table 3. Key characteristics of the three released OFSP cultivars in comparison with the existing OFSP variety 'Kulfo' on the basis of the verification trials**

Cultivar Name (key parents in parentheses)	Characteristics				
	Root Yield (t/ha)	DM (%)	Beta-carotene (mg/100g)	Flesh Colour	Resistance to Virus
Alamura (Ukr/Eju-10)	28.7	31.9	12.4	Deep orange	Moderate
Dilla (Ukr/Eju-13)	26.8	31.4	9.5	Deep orange	Moderate
Kabode (SPK004/6/6)	20.2	30.3	8.5	Intermediate orange	Resistant
Kulfo	17.0	22.9	8.3	Pale orange	Susceptible

Source: Fekadu Gurma, SARI, pers. comm.

Another important change concerns the project’s intervention area. QDBH is expected to improve the intake of vitamin A in urban areas by providing OFSP to at least 61,000 urban consumers. The main urban centres are Hawassa City (400,000 inhabitants), Dilla Town (120,000 inhabitants), and Chuko Town (35,000 inhabitants). The number of residents of Wonago town is unknown, but clearly less than the other three. Research of the sweetpotato supply chains shows that only the relatively small markets in the towns of Wonago and Chuko are supplied locally. The Dilla and Hawassa markets are not supplied by local farmers, but farmers from other woredas. Abaya, in Oromia, is the main source of roots for Dilla Town, whereas the largest urban market, Hawassa City, receives roots from different woredas in the Sidama and Wolayita Zones (**Error! Reference source not found.**).



**Figure 1. Map of the supply areas for the markets of Awassa, Chuko, Dilla, and Wonago.**

Given the way in which the supply chains to the urban centres are organised, maintaining the original design and concentrating actions in the original intervention area would most probably not lead to reaching the project’s target. Therefore, we added a fifth woreda to the intervention area: Hawassa Zuria. In 2019, 800 farmers in this woreda received enough material to plant 100 m<sup>2</sup> each (the additional area planted in the new woreda is 8 ha). If the crop is agronomically and commercially successful, farmers can be expected to expand their areas as they integrate the sweetpotato and maize farming cycles. The area is enough to sustain the annual consumption of about 80,000 urban consumers, assuming that they maintain their current level of sweetpotato consumption.

In Hawassa Zuria, QDBH focuses on the expansion of the production of OFSP and does not replicate the nutrition-training activities undertaken in the original intervention area. In addition, planting

material of the new varieties was supplied to the farmer training centres (FTCs) and farmers in other districts and zones as part of the project’s ambition to scale out and incorporate OFSP into the commodity chains linking farmers with urban consumers.

## 1.2 RESULTS

The discussion in section 1.2 follows the logframe and presents the project’s achievements from its inception to 31 December 2019.

### *Intermediary outcome 1*

*Increased intake of vitamin A and improved food security among 15,000 children and 15,000 women of reproductive age and at least 61,000 urban consumers in three urban centres, achieved through an improved delivery of nutrition-sensitive agricultural and health extension services*

QDBH provides integrated nutrition-sensitive and health extension training through HLCs, which are groups of around 30 HH. Training sessions are facilitated by health development army (HDA) members, volunteers who are trained for 3 days so that they are familiar with the HLC curriculum. Each month, before a session, a refresher is organised to ensure that they are fully versatile with that session’s topic. HDAs are supervised by health extension workers (HEWs) and receive support from community facilitators (CFs). The latter are recruited by PIN to support the implementation of the project at grassroots level.

Table 4 summarises the number of development agents (DAs) and HDAs from the four intervention woredas who since the start of the project have participated in its four main trainings: (1) “Everything You Ever Wanted to Know about Sweetpotato” training of trainer (ToT) course; (2) the step-down training for DAs; (3) the behaviour change communication strategy (BCCS) training for HEWs; and (4) the HLC facilitation/curriculum training for HEWs and HDAs. The figures Table 4 give a clear image of the project’s effort to build capacity among these three groups of grassroots extension workers as the total number of participants increased over the QDBH implementation period to reach 679 in total.

**Table 4. Summary of numbers of DAs and HDAs trained since the start of the project**

Category	Type of Training	2017	2018	2019	Cumulative
DA	ToT “Everything You....”	13	11	27	51
DA	Step-down	13	25	44	82
HEW	BCCS training	24	25	86	135
HEW	Curriculum training	-	23	43	66
HDA	Curriculum training	26	109	210	345
<b>All</b>		<b>76</b>	<b>193</b>	<b>410</b>	<b>679</b>

NOTE: DAs and HEWs are government employees; HDAs are volunteers.

In Aleta Chuko, Dilla Zuria, and Wonago, the Y3 activities were a continuation of those initiated in Y1 and expanded in Y2. In Kochere it was the first year of intervention. In Y1, 26 HLCs were established with 778 members in 13 kebeles. In Y2, 109 HLCs with 3,270 members were established in 24 kebeles. In Y3 another 210 HLCs were established with 6,300 members in 42 kebeles. The total number of direct beneficiary HH in rural areas is now 10,348, which is just 62 below target.

The 2019 coverage was achieved despite political disturbances and instability. If the political situation remains stable, it is likely that by the end of 2020 we will reach the original target for the number direct beneficiaries.

Impact on nutrition on beneficiary HH is measured via a longitudinal study of the members of the HLCs that were established in 2017 in the first 13 intervention kebeles (Table 2) and of a group of HH in seven control kebeles. In the intervention kebeles, HH would receive OFSP plus basic training (partial intervention) and/or OFSP plus basic training and a so-called healthy baby toolkit (full intervention). HH in the control kebeles did not receive any benefit from the project until after the conclusion of data collection for the longitudinal study.

Results of the longitudinal study covering the 2017 HLC members show that during the food-insecure season (July–August), food security and nutrition knowledge of the project’s beneficiary HH were significantly better than those of non-beneficiary HH. Results also showed significantly greater HH and children’s dietary diversity, with results for children’s dietary diversity being significantly greater for those in the full intervention.

QDBH has raised the intake of OFSP. At the time of the endline survey of the longitudinal study, just over 10% of partial and 25% of full intervention children and caregivers consumed OFSP roots in the previous 7 days compared with none in controls. During 2019 approximately 11,000 residents of Hawassa City were able to access OFSP roots through a market development pilot study. In addition, 6,700 residents of the urban centres (Chuko, Dilla, Kochere, and Wonago) in the rural area where most of the project’s intervention takes place are estimated to have consumed OFSP during or shortly after promotion events. Before the intervention, OFSP was not available on these markets.

### Output 1.1 (Op 1.1)

Fifty-three decentralised OFSP vine multiplication sites, operated by trained DAs from FTCs, and selected private farmers, provide 15,000 local HH with the inputs and know-how required for homestead production of OFSP.

In total 83 demo plots were set up on FTCs and private farms in all 42 kebeles in the four woredas (**Error! Reference source not found.**). The FTCs were evaluated and equipped with appropriate water-harvesting and irrigation technologies to ensure that planting material in the future will be available at the end of the dry season (see Table 13 for details). FTC staff were trained in sweetpotato multiplication, farming and nutrition, and in financial management. Individual farmers (ie, decentralised vine multipliers, or DVMs) were provided with planting material and trained in vine multiplication to produce quality planting material.

**Table 5. Number of demo sites until the end of 2019 at FTCs and model farmers per woreda**

Woreda	Demo Site Establishment till End of 2019					Comment
	Plan	FTCs	Model Farmers	Total	Achieved (%)	
Aleta Chuko	36	18	18	36	100	One site in school compound instead of FTC
Dilla Zuria	24	12	12	24	100	1 demo site in Akasho School and 1 in Tumata Health Center compound
Wonago	14	6	7	13	93	One FTC did not have enough land and no replacement could be found
Kochere	10	5	5	10	100	
<b>Total</b>	<b>84</b>	<b>41</b>	<b>42</b>	<b>83</b>	<b>99</b>	

Nineteen FTCs (up from 3 in Y2) and 21 farmers (up from 4) provided vines for HLCs and for scaling out. In 2018 these local sources provided 16% of all vines; in 2019, 88% (see Table 20 for more details).

The amount of vines they produced increased by a factor of 11.7—from 0.3m cuttings to 3.8m. This amount served 6,300 HLC member HH and around 2,000 scaling-out farmers. It is sufficient for an estimated total area of 83 ha.

Whereas QDBH is close to having achieved the target for multiplication sites, we do not think this capacity is sustainable when demand shrinks after the end of the project's lifespan. QDBH is making an effort to assist those with the best capacity to move towards the second level and become root and vine businesses, possibly through joining them in associations. In this way they can meet the legal requirements for quality declared seed (QDS) production and supply markets outside the current project intervention area.

In 2019 project assistance to the sites that had been set up in 2017 was scaled down. CIP staff still visited these sites and provided advice, but no longer interfered directly in management decisions nor made any operational advance payment for labour or inputs. This strategy has two goals: phasing out support to encourage independent management by the trained FTC staff and freeing project staff time so that they can support the demo plots in the 18 new kebeles. This strategy will be continued in 2020 for the FTCs established in 2018.

QDBH has also been promoting Triple S (storage in sand and sprouting) technology. This innovative and cheap technology allows farmers to preserve planting material across the dry season without exposing it to risks such as drying out, grazing, and contamination by viruses.

### **Output 1.2 (Op 1.2)**

*At least 15,000 women and 10,000 men are aware of climate-smart OFSP's benefits, recipes for their everyday use, and essential child nutrition practices, gained through participating in 500 HLCs managed by trained CHWs.*

Residents of the project's intervention area with young children are mobilised to participate in HLCs. One HLC has 30 member HH and both parents (mothers and fathers) are encouraged to participate. HLC members receive OFSP planting material and are trained in OFSP and essential infant and young child-feeding (IYCF) techniques during nine monthly sessions. During HLC sessions, participants are informed about sweetpotato farming and the importance of vitamin A and diversified diets. There are also cooking demos with recipes for leaf and root preparation, emphasising their integration with other ingredients to produce a well-balanced complementary food for young children.

From August to December 2017, in the first 13 intervention kebeles 26 HLCs were established (Table 6). These HLCs were preferentially composed of HH with children aged under 4 months to allow for a longitudinal study of 12 months to assess the impact of the HLC programme on IYCF practices and impact on intakes of vitamin A-rich foods and different food groups. Total enrolment in these HLCs was 778.

Eleven kebeles were added in 2018 to the intervention and another 109 HLCs were established with 30 members each (3,270 additional beneficiaries). Their programme had to be interrupted as a result of political instability and was concluded in August 2019.

**Table 6. Kebeles covered by the project and number of HLCs established by woreda and year of intervention**

Woreda		2017	2018	2019	Cumulative
Aleta Chuko	Kebele	6	6	12	18
	HLC	12	54	90	156
Dilla Zuria	Kebele	5	1	6	12
	HLC	10	29	60	99
Wonago	Kebele	2	4	1	7
	HLC	4	26	35	75
Kochere	Kebele	0	0	5	5
	HLC	0	0	25	25
All	Kebele	13	11	18	42
	HLC	26	109	210	345

The HLC members participated in a graduation ceremonies with role-playing, testimonials by mothers and fathers, and clear recognition of the work of the HDA volunteers who facilitated the HLC sessions (Photo 1). In most cases, besides kebele representatives from the woreda Bureau of Agriculture and Natural Resource Development (BANRD) attended the sessions.



(PHOTO: EDGET SINTAYEHU)

(PHOTO: MIHIRETEAB SAMUEL)

**Photo 1. HLC graduation ceremonies in August 2019. (Left): Halo in Aleta Chuko testimonial by one of the fathers; (right): Mekonisa in Wonago, gathering in festooned kebele hall.**

In 2019 the project added another 18 kebeles and established 210 new HLCs (6,300 new beneficiary HH). These HLCs were created in two rounds to allow for regrowth of vines at the multiplication sites. They started their training sessions in October/November with a session about sweetpotato farming, followed by sessions in November and December about nutrition. These HLCs are expected to complete their training around July or August 2020.

Figure 2 shows the evolution of attendance of the batch of HLCs that was initiated in 2018 and ended their programme in August 2019. On average, 82% of the member HH attended the sessions (measured from session 2 onwards). On average, 2,300 mothers and 1,922 fathers participated in each session. Attendance was lower at the start, but increased over time.

Overall, attendance in 2018–2019 was lower than in 2017–2018. One reason is probably that there are more HLCs per kebele, so it is more difficult for CFs to mobilise the members. Another factor might be that in the first group of HLCs children were very young. Among the group that participated in 2018, the target children were older (up to 24 months, but some children were past that age) so that some of the sessions might have appeared less relevant.

Figure 3 summarises the number of sessions attended by HH. It appears that 1,140 HH (35%) attended all eight nutrition sessions and 90% attended five sessions or more. Only 5 HH (0.1%) did not attend any session.

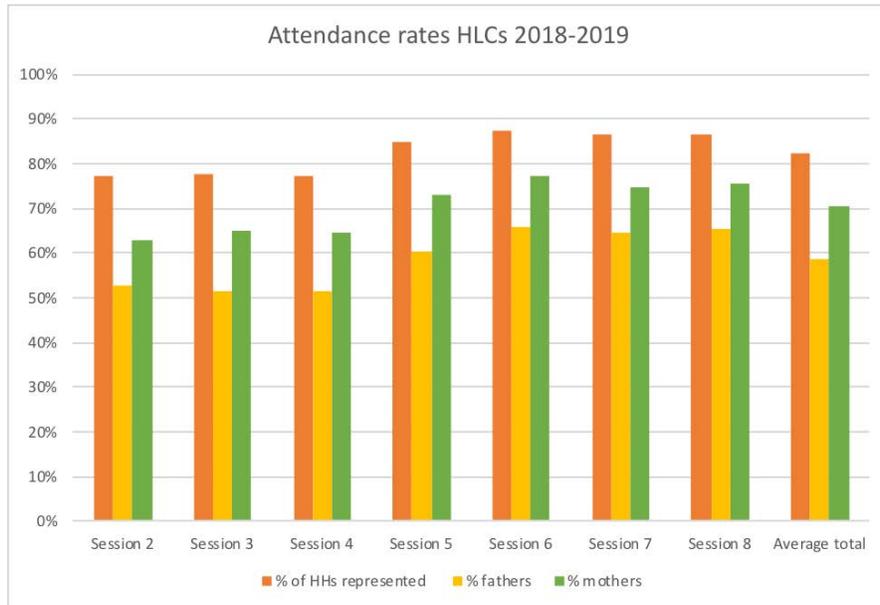


Figure 2. Evolution of attendance of the second batch of HLCs over 2018–2019.

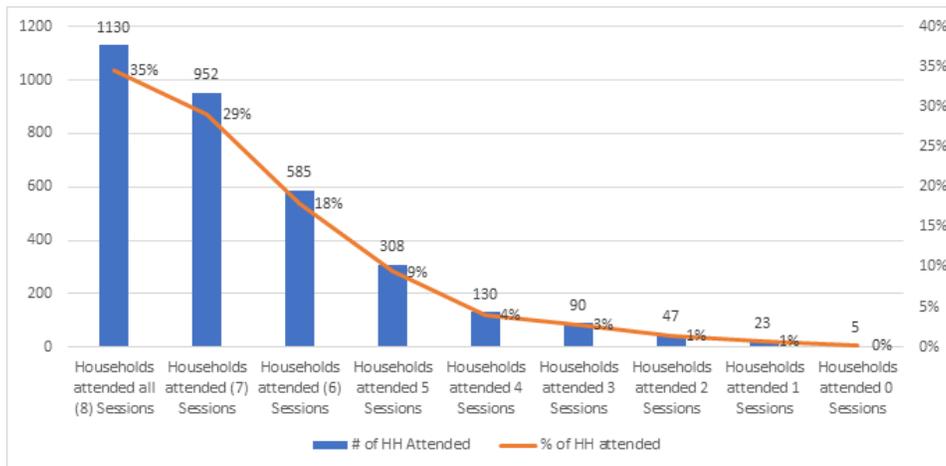


Figure 3. Distribution of 2018–2019 HLC member HH by the number of sessions they attended.

HLC sessions are facilitated by DAs and HDAs who are trained via a step-down model.

QDBH has successfully increased the target population’s awareness of OFSP roots and leaves as an option to improve one’s diet. Data from follow-up visits to HLC member HH show that on average 46% of the mothers and 43% of the children had eaten OFSP in the month prior to the visit. The adoption of sweetpotato leaves is slightly lower (32% for both).

A preliminary analysis of data collected as part of the longitudinal study, following the HH who participated in the HLCs that were initiated in 2017, indicates that during the food-insecure season key YCF practice indicators improved significantly. Minimum dietary diversity and minimum acceptable

diet were achieved by about 22% among beneficiary HH compared with 9% among those who did not benefit (control).

### Output 1.3 (Op1.3)

*Improved supply of and demand for OFSP products in the urban areas with the increased consumption of at least 61,000 beneficiaries.*

Since September 2017 the project monitors the markets Dilla, Chuko, Wonago, and Hawassa City monthly. Monitoring covers sweetpotato, major staple foods, and specific vitamin-rich foods. Data provide basic information about availability and price, and will allow for a comparison of the costs of calories and vitamin A from different sources.

Until late 2019, the data showed that there was no OFSP on the monitored markets, confirming the rejection of the only existing OFSP varieties disseminated earlier ('Kulfo') by farmers and consumers. Hence, only small-scale marketing activities were undertaken to pilot the four pipeline varieties.

The design of QDBH assumed that promoting OFSP farming under HLC beneficiaries and their neighbours would automatically increase supply to urban markets. However, market monitoring showed that the target woredas are not important for the urban markets of Dilla and Hawassa. For that reason additional actions needed to be undertaken to ensure market supply.

In July 2019 the project provided planting stock of the new OFSP varieties to FTCs and farmers in woredas outside the original project area that were identified as root suppliers to these two markets. We assumed that if farmers in these areas see that the new OFSP varieties are at least as good as the available white-fleshed varieties, they will include OFSP in their cropping system and introduce them into the chains connecting these production areas with urban consumers. In these areas, woredas were selected with linkages to CIP through some of its other initiatives—for example, the CGIAR Research Program on Roots, Tubers and Bananas (RTB) Scaling-out project; the Sweetpotato Action for Food Security and Health in Africa (SASHA) project, funded by the Bill and Melinda Gates Foundation; and the Irish Aid-funded project—and in alignment the Agrarian Growth Programme (AGP). In total 1,450 beneficiaries (FTCs and HH) were selected. However, due to civil unrest in the Sidama zone the status of the planting material sent to Wondo Genet may have become compromised and the material lost (Table 7). Data regarding the gender of the beneficiaries are incomplete. In 2018 the same woredas had been invited to participate in the ToT on "Everything You Ever Wanted to Know about Sweetpotato".

Among these woredas QDBH prioritised Hawassa Zuria, which is close to Hawassa City. The predominant crop is maize, which is more susceptible to variation in rainfall than sweetpotato. For that reason, OFSP is a promising option for HH food security<sup>3</sup> and for commercial production. The farmers who were selected received enough vines to plant about 8 ha. With an estimated yield of 20 tonnes/ hectare (t/ha), this should lead to an addition of 160 t to the sweetpotato market of Hawassa per growth cycle.

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3. To increase the capacity at these woredas to provide technical support to their sweetpotato farmers experts were invited to the 2018 ToT.

**Table 7. Number of beneficiaries who received planting material of the new OFSP varieties in woredas outside the original project area in alignment with other intervention efforts (July 2019)**

Woreda	Aligned with	No. of Beneficiaries			
		All	FTC	Female Farmer	Male Farmer
Misrak Badiwacho	RTB Scaling	120	12	8	100
Mirab Abaya	RTB Scaling/SASHA	120	12	4	104
Hawassa Zuria	RTB Scaling/SASHA	800	0	52	748
Sodo Zuria	SASHA/Irish Aid	40			
Humbo	SASHA/Irish Aid	50			
Loko Abaya	Irish Aid	40			
Boricha	Irish Aid	40			
Damot Gale	Irish Aid	40			
Bona	AGP	80			
Wondo Genet	AGP	80	0	0	0
Bursa	AGP	40			
Gedeb	AGP	0	0	0	0
Yirgachefe	AGP	0	0	0	0
<b>Total*</b>		<b>1,450*</b>	<b>24</b>	<b>64</b>	<b>952</b>

\*(410 unspecified)

In Aleta Chuko 14 farmers showed interest in planting OFSP for commercial production. Most planted small acreages, but one was able to free a large area and planted over 10,000 m<sup>2</sup>. In total, in this woreda almost 1.7 ha are dedicated to OFSP production for the market with the potential to yield about 34 t of OFSP per growth cycle (Table 8).

**Table 8. Farmers in Aleta Chuko who planted OFSP to supply to the market by kebele with varieties and acreages (2019)**

No. of Farmers	Kebele	Varieties				Total Area Planted (m <sup>2</sup> )
		Alamura	Dilla	Vita	Kabode	
3	Loko Haytala	0	1,508	1,098	0	<b>2,606</b>
4	Dongoro Elilcho	0	1,279	0	0	<b>1,279</b>
6	Mekella	2,538	0	0	0	<b>2,538</b>
1 (private investor)	Kserecha	2,500	2,000	2,000	3,800	<b>10,300</b>
<b>Total</b>		<b>5,038</b>	<b>4,787</b>	<b>3,098</b>	<b>3,800</b>	<b>16,723</b>

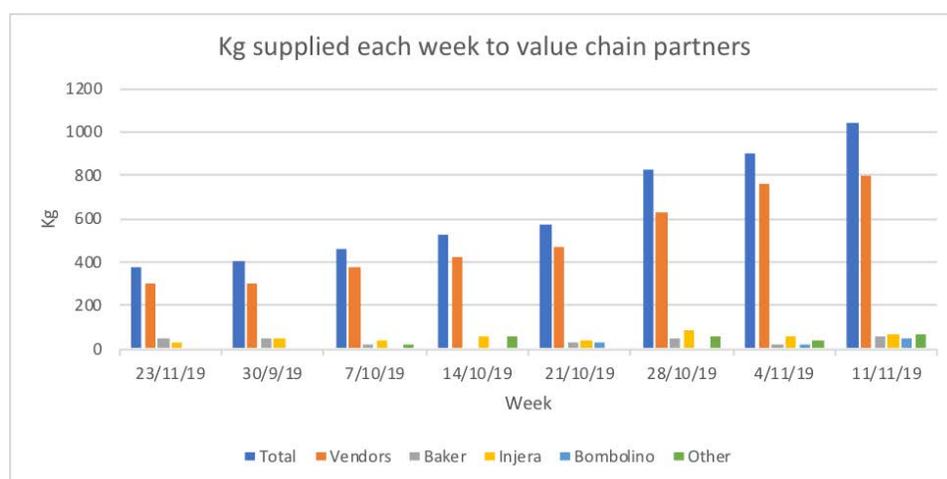
In September 2019, 340 farmers (33 females) in Abaya (Oromia region) received vines to cover a total area of 3.4 ha. Market monitoring had showed that this woreda is the main supplier of the sweetpotato root market in Dilla Town. Beneficiaries were selected together with the local BANRD.

Total additional area achieved through this strategy is about 19.6 ha with the potential to supply around 390 t per growth season to the market *if* they would put all their produce on the market. Assuming that annual consumption is about 2 kg per capita per year, this should be enough to meet annual demand of about 195,000 consumers, three times the project's target.

QDBH has also taken actions to improve demand. A consumer study carried out in Hawassa City in 2018 revealed that although sweetpotato is widely known, only about one-fifth of the population is

aware of OFSP. Per capita consumption of (white-fleshed) sweetpotato is around 2–3 kg per year. The results suggest an increase in OFSP demand requires a campaign that highlights the nutritional value of OFSP relative to white-fleshed sweetpotato, cereals, and Irish potato and that shows OFSP can be eaten in different ways than boiled.

To test the role of nutrition information and knowledge about recipes in the increase of demand, in 2019, 30 retailers were enlisted in a pilot to test OFSP promotion strategies. Exposing retailers to cooking demos and dissemination of pre-tested and validated leaflets via retailers to their customers increased the customers' appreciation and consumption of OFSP. The amount that was supplied to the vendors increased from 300 to 800 kg per week (Fig. 4). The promotion effort lasted 8 weeks in total. One goal was to get both vendors and customers "hooked" on the product. Whilst this did happen, it also appears that making vendors shift from receiving for free to procuring themselves will require an extra effort.



**Figure 4. OFSP supplied (in kg) to value chain partners during marketing pilot.**

As per its original design, in 2018 QDBH identified and started to work with interested small food industries. In April 2019 CIP invited 15 small businesses to a workshop to adjust and learn the production of street foods such as bombolino (doughnuts) and staples such as ambasha (flat bread), dabo (bread with yeast), and injera (a sourdough-risen flatbread and the national dish of Ethiopia). In these recipes 30–40% of the cereal flour was replaced by OFSP, with the goal of making the product more nutritious with a lower cost of production than the existing product. Two bakers, two injera makers, one ambasha maker, and one bombolino maker took on the business. Unfortunately, as of July 15th, OFSP root availability for that season finished and the processing activity stopped. Later, one baker and one injera maker resumed the activity on a regular basis in September 2019.

During the 8 weeks summarised in Figure 3, participating processors would receive roots under the same conditions as the vendors (ie, the project strove to supply as many roots as they could handle). That the amounts these businesses processed hardly changed over the period between September 23rd and 11th November suggests the market for processed products is less elastic than the market for fresh roots.

#### Output 1.4 (Op1.4)

*After evaluating the effectiveness of the intervention during the first 3 years, recommended value-for-money models for large-scale OFSP dissemination (based on R1 & R2 experience) begin to be*

*integrated into the SNNPR's agricultural extension and health promotion systems, with a potential to reach at least 3 m women and children at risk of vitamin A deficiency (VAD).*

QDBH has made progress with the collection and documentation of evidence regarding the impact of the interventions on key outcome indicators. At the triennial meeting of the African Potato Association it presented posters with the first results of the longitudinal study, relying mainly on the baseline and midline data Emory collected in January, July, and August 2019. In the meantime, Emory has made noteworthy progress with the analysis of the endline data collected at the beginning of 2019. Results are mixed, with significant improvement in nutrition practices and status at midline during the hunger season but less so at endline, during the harvest season.<sup>4</sup>

Stakeholder meetings and other contacts with local government have generated positive interest among woreda authorities outside the project's initial intervention area. Six woredas in Sidama zone have submitted formal requests for support by QDBH (Table 9).

**Table 9. Woredas in Sidama zone and SNNPR that approached CIP for future support**

No.	Name of Woredas	Participated in ToT
1	Dara Kebado	No
2	Dara Otililcho	No
3	Aleta Wondo	No
4	Dale	No
5	Loko Ababya	Yes
6	Bilate Zuria	No

Finally, QDBH has used the “Everything You Ever You Wanted to Know about Sweetpotato” ToT to add potential partners. The newly engaged partners were three Agricultural Technical and Vocational Education and Training (ATVET) colleges from Tigray. Their participation was supported by the project within CIP and financed by Irish Aid.

In 2020 a cost-effectiveness study, combined with the outcome of other research activities, will help to assess which of the project's components (vine dissemination, nutrition education, root supply to the market, root processing, and social marketing) are ready for scaling out. This will help us determine in the future how to reach 3m women and children in risk of VAD.

### 1.3 ACTIVITIES

#### ***A.1.0.1 Inception: Recruitment, staff training, office, set-up in Hawassa, and project launching workshop***

In April 2019 the CIP team had one of its key members take a different job. His replacement was recruited within 2 months. In recruitment, emphasis was placed on the candidates' potential to pull value chain development, as this component was the one with the least progress.

In June 2019 PIN recruited 18 additional CFs—Aleta Chuko (6), Dilla Zuria (6), Wonago (1), and Kochere (5)—to respond to the expansion of the project into new kebeles. In August one additional field officer

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4. For the full baseline report see: <https://www.sweetpotatoknowledge.org/files/quality-diets-for-better-health-longitudinal-baseline-report/>

(FO) for Kochere was hired. However, PIN's FO for Aleta Chuko resigned, and her replacement was selected in January 2020.

#### ***A.1.0.2 Hold monthly project progress review and planning meetings with consortium staff***

CIP and PIN managers have continued their biweekly meetings to ensure communication and coordination. Frequency is modified depending on availability and urgency. Emory is no longer participating in these meetings as of February 2019. They do not have any staff residing in Hawassa due to the completion of the field work for the longitudinal study.

#### ***A.1.0.3 Hold annual stakeholders meetings, presenting project progress and receiving feedback***

As part of QDBH three stakeholders meetings were organised. Zonal-level meetings took place on March 6th and 7th 2019 in Chuko and Dilla towns, respectively. The project invited officials from the zonal and woreda sector offices from finance and economic development, agriculture, health divisions and from the woreda administrations, DAs, HEWs, kebele chairmen, and kebele managers. In total 259 people (49 women) participated, consisting of 109 (19 women) from Sidama and 150 (30 women) from Gedeo. The number of attendees in 2019 was more than twice the number of the attendees in 2018 as a result of the expansion of the project's intervention area.

The regional stakeholders meeting was held on July 2nd in Hawassa City. There were presentations by SARI, CIP, PIN, and Emory (sent by email). The meeting was attended by 46 people (three women) from the regional government, Gedeo and Sidama zonal governments, woreda governments, Sodo ATVET college, SARI, and Hawassa University. At the request of the regional government, a field visit was organised which was attended by two regional government staff.

Feedback from attendees was very positive. A major desire expressed was that the activities should be expanded, especially stepping up the development of the OFSP market and accelerate scaling out to more communities.

#### ***A.1.1.1 Design and implement qualitative research on women's and men's roles along the OFSP value chain***

The report on the study on the role of women and men along the OFSP value chain was finalised and published as a CIP working paper in December 2019. It is available via the CGIAR website.<sup>5</sup>

The project's main achievement specific to gender is the engagement of women in the agricultural trainings and of men in the health/nutrition trainings. It has tried to engage women in the value chain development (eg, engaging female-managed bakeries and injera makers). In Dilla Zuria the project supports a group of women who have started vine multiplication.

QDBH has directed most of its energy to address the its prime objectives in terms of reaching beneficiaries with improved varieties and promoting behavioural change in IYCF practices. Its capacity to address the wider social issue of gender inequality is limited, but male integration into the HLCs has

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5. Mudege, N.N., Temesgen, B.B., and Brouwer, A.R. 2019. Gender situational analysis of the sweetpotato value chain in selected districts in Sidama and Gedeo Zones in southern Ethiopia. Lima: Peru. International Potato Center. 111 p. Social Sciences Working Paper No. 2019-1. DOI: <https://doi.org/10.4160/02568748CIPWP20191>. <https://cgispace.cgiar.org/handle/10568/106237>.

been a truly positive achievement. Ethiopia has a low score on gender equality (173 on the gender development index).<sup>6</sup>

### ***A.1.1.2 Establish demo trials of OFSP in major sites and assess acceptability***

All 42 kebeles have demo plots at FTCs and private farmers. The sites are used to demonstrate agricultural practices and the characteristics of OFSP varieties. They are also used for cooking demos.

Photo 2 shows examples of demonstration annex multiplication site and of private multipliers established under QDBH. Table 10 lists all FTCs with the year of the start of the intervention and their location and elevation.



(PHOTO: ASRAT WOLDEGIORGIS)

***Photo 2. (Left): Demo plot, Chuko Weyama FTC, in Aleta Chuko; (right): vine multipliers meet in Chuko.***

**Table 10. FTCs by zones, woredas, years of the start of the intervention, and location data**

Zone	Woreda	FTC	Year Start	Latitude	Longitude	Altitude (masl)
Gedeo	Dilla Zuria	Chichu	2017	N06.21.65,1	E038.18.49,6	1517
Gedeo	Dilla Zuria	Andida	2017	N06.24.21,6	E038.20.67,6	1870
Gedeo	Dilla Zuria	Holona	2017	N06.21.46,4	E038.21.01,5	2137
Gedeo	Dilla Zuria	Sisota	2017	N06.23.09,2	E038.19.36,6	1673
Gedeo	Dilla Zuria	Amba	2017	N06.20.31,1	E038.20.21,4	1970
Gedeo	Wonago	Tokicha	2017	N06.24'10.1	E038.23'17.3	1722
Gedeo	Wonago	Bele Bokisa	2017	N06.17.92,4	E038.17.04,8	1747
Sidama	A. Chuko	Rufo Wayno	2017	N06.18.68,7	E038.15.25,1	1810
Sidama	A. Chuko	Miridicho	2017	N06.16'42.2	038013'34.6'	1660
Sidama	A. Chuko	Dibicha	2017	N06.18'15.1	038017'14.9'	1633
Sidama	A. Chuko	Dongoro Elilcho	2017	N06.20'12.7	038016'34.6'	1794
Sidama	A. Chuko	Dongoro Morocho	2017	V06.18'03.8'	038013'32.0	1713
Sidama	A. Chuko	Loko Haytala	2017	N06.33.91,5	E038.19.65,9	1698
Sidama	A. Chuko	Chuko Woyama	2018	N06.34.67,2	E038.16.60,1	1857
Sidama	A. Chuko	Mekela	2018	N06.30.09,8	E038.18.75,5	1783
Sidama	A. Chuko	Lela Honcho	2018	N06.39.31,0	E038.20.35,4	1833
Sidama	A. Chuko	Hallo	2018	N06.39.37,3	E038.18.11,1	1932
Sidama	A. Chuko	Gure	2018	N06.37.06,7	E038.17.29,0	1876
Sidama	A. Chuko	Chichu Woyama	2018	N06°35.227'	E038°18.276'	1681
Gedeo	Wonago	Hase haro	2018	N06°30.529'	E038°22.445'	1645
Gedeo	Wonago	Tumata Cherecha	2018	N06°35.839'	E038°21.804'	1579
Gedeo	Wonago	Kara Soditi	2018	N06°35.331'	E038°16.570'	1860

6. <http://hdr.undp.org/en/countries/profiles/ETH>

Zone	Woreda	FTC	Year Start	Latitude	Longitude	Altitude (masl)
Gedeo	Wonago	Mekonissa	2018	N06°33.122'	E038°23.086'	1899
Gedeo	Dilla Zuria	Hotilcho	2018	N06°31.098'	E038°20.302'	2083
Sidama	A/Chuko	Dangora Kebado	2019	N06039.36'	E038021.06'	1810
Sidama	A/Chuko	Gunde	2019	N06038.02'	E038018.34'	1739
Sidama	A/Chuko	Loko Dama	2019	N06036.35'	E038017.72'	1716
Sidama	A/Chuko	Tesso	2019	N06031.34'	E038019.24'	1735
Sidama	A/Chuko	Gambella	2019	N06032.7'	E038019.26'	1794
Sidama	A/Chuko	Debeka	2019	N06033.53'	E03817.23	1731
Gedeo	D/Zuriya	Akesho	2019	N06019.307'	E038018.84'	1890
Gedeo	D/Zuriya	Bula	2019	N06018.494'	E038020.216	2003
Gedeo	D/Zuriya	Tumticha	2019	N06020.245'	E038019.491	1998
Gedeo	D/Zuriya	Gola	2019	N06024.103'	E038019.96'	1767
Gedeo	D/Zuriya	Shigedo	2019			
Gedeo	D/Zuriya	Shakua	2019	N06022.560'	E038021.311	2148
Gedeo	Kochore	Buno	2019	N06000.703'	E038008.610	1679
Gedeo	Kochore	Biloya	2019	N06003.33'	E038008.42'	1715
Gedeo	Kochore	Anchebi	2019	N05059.49'	E038009.18'	1702
Gedeo	Kochore	Jeldo	2019	N05057.31'	E038011.07'	2015
Gedeo	Kochore	Sigiga	2019	N06000.15'	E038010.10'	1813
Deko	Wonago	Deko	2019			

In December 2017 there were cooking demos at 13 FTCs; in October and November 2018 in all 24 FTCs, and in November and December 2019 demo sessions were organised in the remaining 18 kebeles. These demos were supported by a specialist from HARC and by a local NGO, Egna Le Egna. Table 11 summarises the number of participants by gender by woreda and kebele.

**Table 11. Number of HLC members who participated in cooking demos and varietal assessment by gender, kebele, and woreda (2019)**

Participant from		HDAs	HLC Member HH		Woreda & Kebele Level Officials		Total
Woreda	Kebele		Men	Women	Men	Women	
Dilla Zuria	Sakowa	5	40	54	6	4	109
	Akesho	5	56	50	4	2	117
	Sigedo	5	30	48	4	2	89
	Bula	5	32	45	4	4	90
	Tuitca	5	27	51	6	4	93
	Gola	5	39	51	6	3	104
Subtotal		30	224	299	30	19	602
Wonago	Deko	5	75	105	6	3	194
Subtotal		5	75	105	6	3	194
Aleta Chuko	Gambela	5	68	46	4	3	126
	Debeka	5	79	35	5	2	126
	Gunde	5	66	38	6	2	118
	Loko Dama	5	67	40	6	2	120
	Tesso	5	65	19	3	2	94
	Dongora Kebado	5	64	45	4	4	122
Subtotal		30	409	223	28	15	705
Kochere	Jeldo	5	109	98	2	4	218
	Sigiga	5	116	83	6	4	214

Participant from		HDAs	HLC Member HH		Woreda & Kebele Level Officials		Total
Woreda	Kebele		Men	Women	Men	Women	
	Anchebi	5	73	91	6	4	179
	Buno	5	121	119	4	2	251
	Billoya	5	89	74	6	2	176
Subtotal		25	508	465	24	16	1,038
<b>Grand Total</b>		<b>90</b>	<b>1,216</b>	<b>1,092</b>	<b>88</b>	<b>53</b>	<b>2,539</b>

In 2017, 1,009 persons (448 females) participated in the cooking demos; in 2018, 1,858 persons (929 women) participated; and in 2019 the cumulative number reached by cooking demos rose to 2,967 persons.

The figures in Table 11, however, underestimate the real impact as many people who witness the events are not HLC members and hence, their names were not registered. The cooking demos attract a lot of attention. In one case, more than 500 people attended. Photo 3 shows some of the attendants and the dishes prepared for a demo in Gambela (Aleta Chuko).



*Photo 3. Cooking demo in Gambela (Aleta Chuko), October 2019.*

#### ***A.1.1.3 Prepare and conduct ToT course for extension personnel concerning OFSP***

The key training tool used by the project is a course developed by CIP for sub-Saharan Africa (SSA). The training, "Everything You Ever Wanted to Know about Sweetpotato," has an extensive manual which covers 14 different topics, ranging from sweetpotato farming to marketing and processing to gender and adult education. The manual exists already in English, Kiswahili, French, and Portuguese. It was translated into Amharic for the training. In 2019 the final review of the draft Amharic version was completed.

In 2017, 13 DAs from 13 kebeles participated in the 10-day "Everything You Ever Wanted to Know about Sweetpotato" ToT in Hawassa and Sodo. The training also involved staff of the zonal BANRD. A total of 30 people (seven females) were trained.

In 2018 the ToT had trainees from 11 woredas in three zones in SNNPR (Gedeo, Sidama, and Wolayita) as well as staff from government offices and ATVET colleges in Tigray and SNNPR. In total there were 34 participants (four females). All classes were given at Sodo ATVET College and its experimental fields, except for some field practical exercises which were done at a nearby FTC and at a private sweetpotato vine multiplier in Bilate. The last day had to be cut short because of safety concerns.

Because of these concerns, the 2019 ToT was organised in Hawassa City in April and in Dilla Town in September. The interval between both sessions was longer than foreseen due to political tensions in Sidama. At both locations there was access to field sites for the practical classes: experimental fields and kitchen at HARC and the demo/multiplication site at the Chichu FTC.

There were 41 participants from three regions (Tigray, Oromia, and SNNPR). In SNNPR people came from three zones (Gedeo, Sidama, and Wolayita); most trainees was supported by the project. In addition, the CIP project financed by Irish Aid covered the expenditures of the eight instructors from the Tigray and Wolayita ATVET colleges who participated in the training (Table 12).

**Table 12. Participants in the 2019 ToT by category, source of finance, and area of origin**

Category	Financed by	Tigray	Oromia	SSNPR			All
			West Guji	Gedeo	Sidama	Wolayita	
Crop expert			2				2
DA	EU			14	13		27
Expert	EU				1		1
Extension officer	EU			3			3
Instructor	Irish Aid	3				5	8
<b>Grand Total</b>		<b>3</b>	<b>2</b>	<b>17</b>	<b>14</b>	<b>5</b>	<b>41</b>

The 10-day training relied on eight trainers: four from CIP, two from HARC, and two from Sodo ATVET college. It covered the entire range of topics, from farming through seed system through marketing and gender (Photo 4).



(PHOTOS: ABIYOT ARAGAW)

**Photo 4. "Everything You Ever Wanted to Know about Sweetpotato" ToT training sessions. (Left): Results of looking for crop diseases in the field; (right): market monitoring exercise in Dilla.**

The ToT has a standard procedure for assessing knowledge gained by the participants. In 2019 this strategy was adopted for other trainings as well. The training was not foreseen in the original design of QDBH, but it was added to the project to strengthen the opportunities for scaling out in the future.

#### ***A.1.1.4 Training and material support to the target FTCs and farmers-entrepreneurs producing and multiplying OFSP vines***

FTCs were assessed as to their water sources and needs, as previous experience has shown that sustained vine supply requires a reliable source of water. Table 13 shows which types of water sources and suggested technologies for water-lifting and irrigation have been selected for all 41 beneficiary

FTCs. Table 14 provides an overview of the current status of the 18 FTCs added in 2019 with their respective water source and proposed technologies for water-lifting and irrigation.

**Table 13. Water resources and selected irrigation technologies for the FTCs in the selected kebeles of intervention districts**

Types of Water Sources	No. of FTCs	Suggested Water-Lifting and Irrigation Technologies
River or spring	14	Solar water pumps integrated with either drip irrigation or manual irrigation using a bucket or a hose (bunch irrigation)
Shallow wells	5	Rope and washer pump for water-lifting from the wells integrated with bunch irrigation
Water-harvesting from roof tops and ground catchments with irrigation equipment	23	Geomembrane-lined trapezoidal underground tanks (average storage capacity 50 m <sup>3</sup> ) and fiberglass surface tanks for rainwater storage and hand pumps or treadle pumps for water-lifting. All the FTCs will use bunch or furrow irrigation techniques.

In 2017 procurement was slow and the rainwater harvesting installations were only completed after the rains had stopped. In 2018 procurement was still slow, but it was possible to complete the building and equipment during the rainy season. As a result, they could be used for irrigation during the dry months at the start of 2019. In 2019 there were again procurement problems, which were partially associated with the departure of the irrigation specialist from the CIP team. As there was a discrepancy between the requirements and the availability of certain types of pumps, not all water-lifting equipment was acquired before the end of 2019. These investments will be completed early 2020 (Table 14).

One concern is the impact and the sustainability of the investments in irrigation equipment. In 2019 a local workshop in Dilla offered training on how to repair solar pumps. It carried out three repairs in 2019 of one rope-and-washer and two solar pumps. Because the irrigation specialist left the team, it was not possible to repeat these trainings in 2019.

**Table 14. Investments in FTCs added in 2019 with their water sources, water-lifting/irrigation technologies, and status by woreda and kebele**

Woreda	FTC/Kebele	Water Source/Storage Equipment	Capacity (m <sup>3</sup> )	Water Lifting/Irrigation Equipment	Status End 2019
A. Chuko	D. Kebado	Water-harvesting pond	50	Solar pump with 50m hose	Filled with water
A. Chuko	Gunde	Water-harvesting pond	50	Hand pump with 50m hose	Filled with water
A. Chuko	Loko Dama	Water-harvesting pond	50	Hand pump with 50m hose	Filled with water
A. Chuko	Debeka	Water-harvesting pond	50	Solar pump with 50m hose	Filled with water
A. Chuko	Tesso	Water-harvesting pond	50	Treadle pump with 50m hose	Filled with water
A. Chuko	Gambella	Water-harvesting pond	50	Solar pump with 50m hose	Filled with water
Dilla Z.	Akasho	Water-harvesting pond	50	Hand pump with 50m hose	Completed
Dilla Z.	Bula	Roof water harvesting with above-ground water tank	25	Delivery hose (50m)	Under construction
Dilla Z.	Tumticha	Roof water harvesting with above-ground water tank	25	Delivery hose (50m)	Completed
Dilla Z.	Shigedo	-	NA	Solar pump with 50m hose	Completed
Dilla Z.	Gola	Shallow well excavation	NA	-	Moved to 2020
Dilla Z.	Shakoa	-	NA	50m delivery hose	Completed
Wonago	Deko	-	NA	Solar pump with 50m hose	Completed
Kochere	Buno	Shallow well excavation	NA	Solar pump with 50m hose	Moved to 2020
Kochere	Biloya	Diverting canal	NA	-	Under discussion
Kochere	Anchebe	Water-harvesting pond	50	Solar pump with 50m hose	Filled with water
Kochere	Sigiga	Water-harvesting pond	50	Hand pump with 50m hose	Filled with water
Kochere	Jeldo	Shallow well excavation	NA	Rope & washer pump	Moved to 2020

The project's activity plan foresees the creation of an FTC-managed revolving fund. In 2018 a training was organised to improve FTC's financial management skills base; 67 persons (14 women) from three woredas participated. In 2019 the financial management training was repeated as it appeared that in the previous year, key fund managers had not been involved. Some 93 participants (15 women) from four woredas were trained. In total 41 FTC board members, kebele managers, and cashiers attended. The objective of the training was to improve record-keeping by FTCs and help them to learn to adequately monitor their budget or resources allocated by government or NGOs by applying basic accounting principles. This training was not foreseen in the original design of the project.

To enhance the efficiency of DAs at work, QDBH purchased 82 motorcycles for the agricultural and the health services (Table 15). Motorcycle hand-over took place on December 25th 2019, and was attended by regional bureau, zonal sector department offices and woreda sector offices; representatives and journalists from South TV and Radio Agency attended. The government services will be responsible for their maintenance and running costs.

**Table 15. Motorcycle distribution per woreda**

Woreda	Agriculture/FTCs	Health/HPs	Total
Aleta Chuko	17	17	34
Dilla Zuria	12	12	24
Wonago	7	7	14
Kochere	5	5	10
<b>Total</b>	<b>41</b>	<b>41</b>	<b>82</b>

In Ethiopia, seed production is regulated by law. This regulation also applies to the production of vegetative seed such as sweetpotato cuttings. Multipliers are required to adhere to certain standards; compliance is verified by government inspectors. Only those who pass inspection may produce QDS.

To increase the chances that many DVMs will continue multiplying after it ends, QDBH hired a consultant to draft a manual for private multipliers. The drafting of this manual was followed by a 1-day training in multiplication techniques and the legal requirement for QDS production of 18 participants, among whom four were seed experts and 14 were multipliers (1 woman) from the intervention woredas. The plan is to see if it is possible to assist one or two groups of DVMs with their application for the QDS status so that they can compete on the wider market for planting material.

This activity was not foreseen in the original work plan, but is a logical consequence of the aspiration to create a sustainable seed system in the project's intervention area.

#### ***A.1.1.5 Form groups and train 15,000 female and 10,000 male farmers on OFSP production, storage, and vine conservation by trained agricultural DAs and health extension agents***

##### **HLCs**

The vehicle for training rural women and men in OFSP production, storage, and vine conservation is the HLC. Table 16 provides an overview of the evolution of the number of HLCs per kebele. Photo 5 shows one of the multiplication sites and the harvesting of the vines for transport to HLC members during the second cycle. It highlights the need to improvise when, as in this case, road conditions are too bad for the use of the vehicles.



(PHOTO: ASRAT WOLDEGIORGIS)

***Photo 5. Vine harvesting in Aleta Chuko.***

Despite the aggravation of political instability in the project's main intervention area, the number of HLCs established in 2019 is slightly higher than foreseen in the original work plan. This is largely due to the improvement of the security situation in Kochere. As in 2018, the 2019 HLCs have on average 30 member HH. Cumulatively, QDBH has now reached 10,348 direct beneficiary HH through HLCs.

In 2017 vines were disseminated in August and September and HLC training sessions started in December. In 2018 vines were disseminated in June–July and trainings started in August. In 2019 vines were disseminated in April–May and August–September; trainings started in October.

**Table 16. Number of HLCs per kebele in 2017–2019 per kebele and per woreda**

Kebele	2017	2018	2019	Cum.	Kebele	2017	2018	2019	Cum.
Dongoro Elalcho	2	5	5	12	Andida	2	5	5	12
Miridicha	2	5	5	12	Holena	2	5	5	12
Dibicha	2	5	5	12	Amba	2	5	5	12
Rufo Waeano	2	5	5	12	Chichu	2	5	5	12
Dongoro Morocho	2	5	5	12	Sisota	2	5	5	12
Loko Haytala	2	5	5	12	Hotelicho	0	4	5	9
Halo	0	4	5	9	Shakiwa (DZ)	0	0	5	5
Gure	0	4	5	9	Gola (DZ)	0	0	5	5
Chuko Woyama	0	4	5	9	Bula (DZ)	0	0	5	5
Chichu Woyama	0	4	5	9	Akesho (DZ)	0	0	5	5
Lelancho	0	4	5	9	Shigedo (DZ)	0	0	5	5
Mekela	0	4	5	9	Tumticha (DZ)	0	0	5	5
Dangora Kebado	0	0	5	5	<b>Total Dilla Zuria</b>	<b>10</b>	<b>29</b>	<b>60</b>	<b>99</b>
Gunde	0	0	5	5	Tokicha	2	5	5	12
Gambela	0	0	5	5	Bele Bukisa	2	5	5	12
Tesso	0	0	5	5	Tumata Cherecha	0	4	5	9
Loka Dama	0	0	5	5	Kara Soditi	0	4	5	9
Debeka	0	0	5	5	Hase Haro	0	4	5	9
<b>Total Aleta Chuko</b>	<b>12</b>	<b>54</b>	<b>90</b>	<b>156</b>	Mokonisa	0	4	5	9
Anchebi (K)	0	0	5	5	Deko (W)	0	0	5	5
Biloya (K)	0	0	5	5	<b>Total Wonago</b>	<b>4</b>	<b>26</b>	<b>35</b>	<b>65</b>
Buno (K)	0	0	5	5					
Sigiga (K)	0	0	5	5					
Jeldo (K)	0	0	5	5					
<b>Total Kochere</b>	<b>0</b>	<b>0</b>	<b>25</b>	<b>25</b>	<b>All</b>	<b>26</b>	<b>109</b>	<b>210</b>	<b>345</b>

### Facilitator training

As in the previous years, in 2019 FOs from PIN conducted a step-down training at the woreda and kebele levels (Table 17). The training was conducted from April 1st–5th 2019 in Dilla town and was aimed at the 18 new intervention kebeles; 57 people (13 women) participated. This step-down training is organised for grassroots-level DAs to develop competent knowledge and skills on sweetpotato farming and processing. Training facilitators used the standard training manual “Everything You Ever Wanted to Know about Sweetpotato” and covered all topics in the manual, from sweetpotato agronomic management, marketing and processing, to gender role and guidance for effective training of adults.

**Table 17. Participants of the agricultural step-down training by woreda, category, and gender (April 2019)**

Woreda	Category			Gender		Total
	DAs	PIN	BANRD Experts	M	F	
Aleta Chuko	14	2	3	18	1	19
Dilla Zuria	15	1	2	12	6	18
Wonago	3	1	2	5	1	6
Kochere	12	1	1	9	5	14
<b>Total</b>	<b>44</b>	<b>5</b>	<b>8</b>	<b>44</b>	<b>13</b>	<b>57</b>

Triple S is a three-step technique that makes it possible to carry planting material across the dry season without relying on irrigation and with a reduced risk of contamination by viruses. People basically store healthy roots layered with cool, dry sand in a local container. To promote sprouting, the roots are watered. The sprouted roots are then transplanted to a designated area, ideally fenced, that will provide the cuttings that will be planted in the fields. QDBH has partnered with another CIP project to test the HLCs as a strategy for the scaling-out of this technology. For that aim, DAs, kebele managers, and HEWs are trained in a ToT, who then ensure the step-down training to HLC members. In 2019 the Triple S ToT took place on December 11th–17th, so that it coincided with the main harvest season when people will collect most of the roots and need to prepare for the coming growing season. Table 18 summarises the number of participants by category, woreda, and gender.

**Table 18. Participants in the Triple S ToT by category, woreda, and by gender (December 2019)**

Category	Aleta Chuko	Dilla Zuria	Wonago	Kochere	M	F	Total
No. of kebeles	18	12	7	5			<b>42</b>
DAs	14	10	6	5	34	1	<b>35</b>
Kebele managers	21	12	7	5	44	1	<b>45</b>
HEWs	16	0	5	4	0	25	<b>25</b>
HEWs' supervisor	1	0	0	0	1	0	<b>1</b>
PIN CFs	18	12	7	5	38	4	<b>42</b>
Woreda BANRD	3	2	3	3	11	0	<b>11</b>
PIN FOs	2	2	1	1	3	3	<b>6</b>
PIN Halaba NRM		1			1	0	<b>1</b>
<b>Total</b>	<b>74</b>	<b>38</b>	<b>29</b>	<b>23</b>	<b>132</b>	<b>34</b>	<b>166</b>

Besides the PIN officers assigned to the four intervention woredas, an additional FO from Halaba participated as PIN plans to introduce Triple S in one of its other natural resource management projects.

#### ***A.1.1.6 Design and implement strategy for vine dissemination to HH, provide ongoing technical support, and consolidate lessons for region-wide replication***

During 2019 the design and implementation of vine dissemination were determined by wanting feedback as extensively as possible on the four candidate varieties proposed for release at the beginning of the year. In this context, the baby-trial model that had been used in the previous year was abandoned, and only those varieties proposed for release were disseminated.

The timing of vine dissemination was influenced by the planning of the cross-sectional endline survey. The collection of endline data was to start in November. To avoid that the control kebeles would be contaminated, however, in these kebeles vines were disseminated later in the year, shortly before the implementation of endline data collection. (This was similar to what had been done in 2017 at baseline in the first 13 intervention kebeles.)

As planned, each HH received 600 cuttings of three cultivars: 150 cuttings of 'Kulfo' and 450 of candidate varieties as available. In total 6,300 HH received vines. This is slightly more than planned and helped to recover most of the shortfall incurred in 2018.

Vines were sourced from FTCs and from private farmers in the project woredas and from a commercial vine multiplier in Bilate (Wolayita), who supplied cuttings of 'Kulfo'. Local providers were selected based on the quality and quantity they had available among the FTCs and farmers who had received

support. Among the 83 managers of demo plots/multiplication sites, 19 FTCs and 21 farmers (DVMs) were able to produce adequate quality planting material (Table 19).

**Table 19. Number of cuttings obtained in the project woredas by source and by variety (2019)**

Woreda	Category	N	Alamura	Dilla	Kabode	Vita	Other	Cuttings	ETB
Aleta Chuko	FTC	11	183,729	233,828	125,543	122,710	0	665,810	23,3034
Aleta Chuko	DVM	16	611,050	805,490	285,690	186,460	2,100	1,890,790	66,1777
Dilla Zuria	FTC	3	203,820	168,300	86,740	105,540	0	564,400	19,7540
Dilla Zuria	DVM	3	30,840	33,480	15,240	12,600	0	92,160	3,2256
Wonago	FTC	5	227,540	141,820	76,560	52,750	0	498,670	17,4535
Wonago	DVM	2	110,645	25,505	7,985	9,135	0	153,270	5,3645
Total FTC	FTC	19	615,089	543,948	288,843	281,000	0	1,728,880	60,5108
Total DVM	DVM	21	752,535	864,475	308,915	208,195	2,100	2,136,220	74,7677
<b>Total</b>	<b>All</b>	<b>40</b>	<b>1,367,624</b>	<b>1,408,423</b>	<b>597,758</b>	<b>489,195</b>	<b>2,100</b>	<b>3,865,100</b>	<b>135,2785</b>

The figures in Table 19 show the (1) absence of HARC as a source of planting material and (2) importance of FTCs and farmers for the supply of material of the new varieties.

The acquisition of vines from FTCs and local farmers implies a significant influx of money into these communities. Each cutting is bought at the standard price of ETB 0.35 (\$0.01). This means that each farmer receives a bundle of 600 cuttings valued at approximately \$7.75. In 2018 local farmers received almost \$2,400 and FTCs received almost \$1,900. In 2019 the amount paid locally was more than \$48,000; almost \$22,000 was paid to FTCs and \$27,000 to DVMs (Table 20). The money received by the FTCs is an important contribution to their revolving fund. The commercial multiplier was used to obtain 'Kulfo'.

**Table 20. Amounts received per multiplier type**

Multiplier Type	2018			2019		
	N	\$	Percent	N	\$	Percent
FTC	3	1,877	7	19	21,611	39
Farmer	4	2,376	9	21	26,703	48
Commercial	1	21,934	84	1	6,773	12
<b>All</b>	<b>8</b>	<b>26,187</b>	<b>100</b>	<b>41</b>	<b>55,087</b>	<b>100</b>

DAs are entitled to 40% of the net revenue, which is the gross amount received for their vines minus the costs of labour and other inputs. These costs were generally paid in advanced by the project and subsequently deducted from the payments for the vines. Thus, QDBH has also been a source of income for these DAs, which hopefully will serve as incentive to continue multiplication after the project ends.

Vines from the candidate varieties are distributed in bundles of 150 cuttings. Each bundle is labelled so that the farmer knows which variety she or he receives. Names of beneficiaries and the varieties they receive are registered during distribution.

Table 21 summarises the distribution of cuttings per cultivar per kebele. The most disseminated candidate cultivar was 'Dilla', the least was 'Vita'. Dissemination was carried out in two rounds: one in May–June 2019 with 2,626,920 cuttings for 4,350 HH, and a second in September 2019. The second round targeted the 13 kebeles that serve as the control group in the endline survey. Here, 1,950 HH received 1,169,880 cuttings. A total of 6,300HH have received and planted OFSP. All vines were given to the female HLC members.

**Table 21. Dissemination of planting material to HLC members by woreda and cultivar (2019)**

Woreda	No. of Kebeles	No. of HH	Quantity Disseminated Vine per Variety					Total Cuttings
			Alamura	Dilla	Kabode	Vita	Kulfo	
Aleta Chuko	18	2,700	378,480	593,280	161,400	162,840	324,000	<b>1,620,000</b>
Dilla Zuria	13	1,800	303,360	229,800	161,280	169,560	215,880	<b>1,079,880</b>
Wonago	6	1,050	262,560	111,240	52,080	77,280	126,840	<b>630,000</b>
Kochere	5	750	104,040	188,160	40,200	42,720	91,800	<b>466,920</b>
<b>Total</b>	<b>42</b>	<b>6,300</b>	<b>1,048,440</b>	<b>1,122,480</b>	<b>414,960</b>	<b>452,400</b>	<b>758,520</b>	<b>3,796,800</b>

The difference between Table 19 (cuttings produced) and Table 21 (cuttings disseminated to HLCs) is the amount that was used to set up demo sites and for scaling-out, plus the cuttings of 'Kulfo' obtained from the commercial multiplier.

To complement dissemination of vines, and to ensure that people can carry over planting material across the dry season, CIP promotes the Triple S technique. Triple S trainings have been carried out under QDBH from Y1 onwards.

The number of people exposed to Triple S has gradually increased. In 2017 402 HLC members participated in the training. In 2018, when a new training model applied that uses specially designed training materials (leaflets, flipcharts, videos), 3,285 people attended. On April 26th 2019, Triple S training sessions were organised and conducted at FTCs for HLC members in 18 kebeles (Table 22). These trainings were attended by 1,933 people (949 women). The plan was to cover all HLC members in 24 kebeles, but a technical error forced six kebeles to not facilitate the training. The backlog will be eliminated in 2020.

**Table 22. Triple S training participant by woreda and gender (April 26th 2019)**

Woreda	Kebele	Male	Female	Total
Aleta Chuko	7	308	362	670
Dilla Zuria	5	363	286	649
Wonago	6	313	301	614
<b>Total</b>	<b>18</b>	<b>984</b>	<b>949</b>	<b>1,933</b>

Early November the release committee approved the release of three of the four proposed varieties ('Alamura', 'Dilla', and 'Kabode'). To celebrate the release and promote their acceptance, QDBH organised a 1-day workshop on December 9th. The workshop brought together 31 participants from a range of stakeholders (government, researchers, donors, NGOs, private sector) and discussed issues around variety characteristics, seed system and quality control, and marketing and processing opportunities. It was covered by regional media (radio and TV) (Table 23).

**Table 23. Participants in variety launch workshop by category of participant (December 2019)**

Category	Number	Category	Number
Commercial seed multipliers	4	Irish Aid	1
Processor (bakery)	1	Concern	1
Zonal Bureaus of Agriculture (3 zones)	3	Christian Relief Society	1
Regional Quarantine Authority	3	FAO	1
HARC	4	Media	2
SARI	1	PIN	1
Universities	2	CIP	6
FAO = Food and Agriculture Organisation of the United Nations.	<b>Total</b>		<b>31</b>

### ***A.1.1.7 Plan and implement events to promote dissemination to indirect beneficiaries***

Dissemination to indirect beneficiaries usually happens through sharing among HH. Data collected in August 2018 from a sample of 20 HH in Aleta Chuko suggested that some sharing is taking place. However, that sharing is far less common than in other SSA countries, where on average there are four indirect beneficiaries for one direct beneficiary.

One possible explanation is that sharing is promoted at graduation, which coincides with the end of the rainy season. Perhaps at that moment people are not keen on receiving the material. An assessment of baby-field trials shows that while beneficiaries receive 600 cuttings, they plant on average around 400 cuttings. This means that 200 cuttings are unaccounted for. At least on theory, people should be willing to give these away to relatives and neighbours.

For that reason the vine-sharing strategy was changed and direct beneficiaries were encouraged to give vines at the start of the HLCs when they receive them, rather than at the end at graduation. Thus, during vine dissemination, beneficiaries were asked to indicate at least two other HH with whom they would share their material. They were not required to specify the amount they would give away. Table 24 shows the result of vine-sharing during the first round of dissemination (June–July 2019).

**Table 24. Vines shared between HH during the first round of vine dissemination**

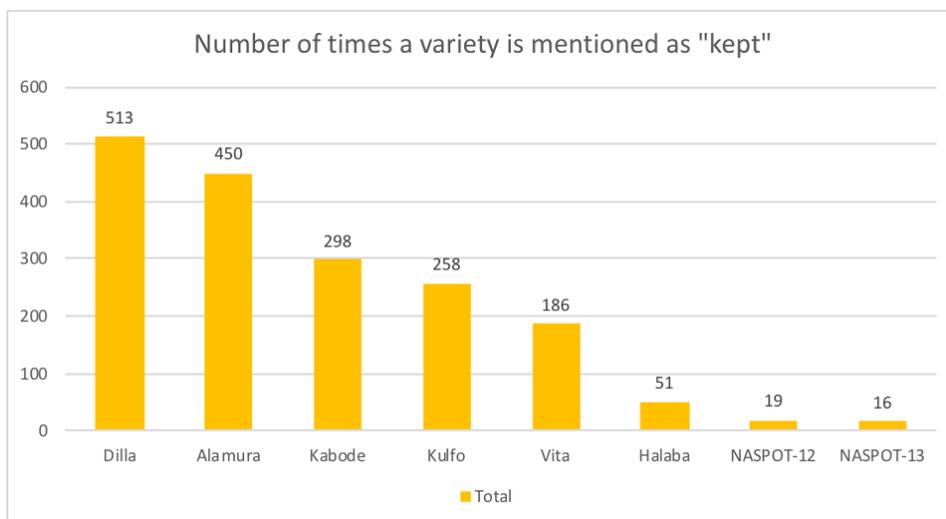
<b>Woreda</b>	<b>Sharing</b>	<b>Not Sharing</b>	<b>Total</b>	<b>% Sharing</b>
Dilla Zuria	102	798	<b>900</b>	11
Wonago	90	810	<b>900</b>	10
Aleta Chuko	78	1,722	<b>1,800</b>	4
Kochere	32	718	<b>750</b>	4
<b>Total</b>	<b>302</b>	<b>4,048</b>	<b>4,350</b>	7

It appears that the change in the timing of when sharing should occur hardly affected sharing behaviour. Out of the 4,350 HH who at that time had received material, only 302 (7%) had shared. Sharing is significantly higher in Dilla Zuria and Wonago. It is unclear why this is the case.

The results indicate that QDBH will find it very difficult to achieve its objective of reaching 60,000 indirect beneficiaries in the four target woredas. The definition of the objective was based on experience in other SSA countries. However, it seems that this experience does not apply to the project's intervention area. QDBH now focuses on trying to reach beneficiaries outside these four woredas to achieve additional beneficiaries. We do not know whether horizontal dissemination through sharing is more common in these woredas.

At least as important as sharing is the retention of the new varieties by farmers. Data collected as part of the endline study indicate that out of 1,053 respondents in the sample who had received OFSP in Y1 and Y2, 745 retained them (71%). Yet retention is not the same for all varieties. Figure 5 shows the numbers of times respondents mentioned a variety as one of the three they kept. It appears that the most popular varieties are 'Dilla', 'Alamura', and 'Kabode'—exactly the three that were proposed and accepted for release. Note that 'Kulfo' is mentioned only 258 times even though all 1,053 HH in the sample had received this variety. 'Vita', the variety that had been proposed for release but was not accepted, occupies the fifth position.

There are some other varieties that people have retained (eg, 'NASPOT-12') that had been disseminated as part of the 2017 and 2018 baby trials. A small number of beneficiaries continue to keep them.



**Figure 5. Number of times a variety is mentioned as “kept” in the endline survey, November–December 2019.**

#### ***A.1.1.8 Integrate OFSP production into the FTCs’ annual production plans and budgets***

To prepare for incorporating OFSP into the annual project plans and budgets in 2019, a second round of financial trainings were organised.

In 2019, 41 FTCs that have established OFSP demo and vine multiplication activities were financially supported from the revolving fund which covered all multiplication-related issues.

Although most FTCs in the intervention kebeles are continuing sweetpotato multiplication, it is not clear how many actually made formal annual production plans that incorporate OFSP. This will be verified during Q1 of 2020.

#### ***A.1.2.1 Conduct formative research on the key barriers and boosters to OFSP production and consumption, and develop behaviour change communication and promotion strategy, including use of the health baby toolkit (bowl/spoon)***

The results of formative research carried out in 2017 were used to develop a social behaviour change communication (SBCC) strategy and incorporated in the HLC curriculum. The SBCC strategy identifies mothers and fathers of infants and young children as the primary audience, with grandmothers, HEWs, and HDA members as secondary, or “influencing”, audiences.

A detailed description of this formative work, including methods and findings, can be found on the Sweetpotato Knowledge Portal (<https://www.sweetpotatoknowledge.org/files/quality-diets-for-better-health-formative-nutrition-report/>).

Findings were used to inform the design of an SBCC strategy and the subsequent HLC curriculum, also available on the portal (<https://www.sweetpotatoknowledge.org/files/quality-diets-for-better-health-healthy-living-clubs-curriculum/>).

An exploratory visit by staff from Emory University in March 2018 suggested that the implementation of the HLC curriculum was not as expected. In July 2018 a process evaluation was carried out to assess the extent of the problems and identify solutions. The process evaluation led to four important changes which have been implemented. One of the recommendations—an improved monitoring, learning,

and evaluation (MLE) system that looks beyond attendance at quality and uptake of HLC lessons—is operational and yields useful insights in the performance and impacts of the nutrition training.

#### ***A.1.2.2 Design, plan, and train health extension personnel on nutrition and behaviour change techniques***

The QDBH training model consists of two steps: a ToT by PIN staff targeting HEWs; a step-down training supervised by PIN but facilitated by the trained HEWs of HDA members (HDAs) and CFs; and finally a training of the HLC members by the HDAs with support from the CFs and supervised by the HEWs.

In this reporting period PIN, in collaboration with the zonal and woreda health offices, conducted a 3-day ToT training in three rounds for HEWs, woreda health extension supervisors, and health centre staff. The first round was held on May 9th–11th; the second on May 16th–18th; and the third on May 30th–June 1st. In total there were 112 (90 women) participants: 86 HEWs from 42 health posts, five nurses from health centres, and 20 health extension supervisors from woreda health offices (Table 25).

**Table 25. SBCC strategy training participants by woreda, organisation, and gender (May–June 2019)**

Woreda	Category			Gender		
	HEWs	Health Centre Supervisors	Woreda Experts	Men	Women	Total
Aleta Chuko	31	4	6	10	31	41
Dilla Zuria	35	1	6	5	37	42
Wonago	14	0	7	5	16	21
Kochere	6	0	1	2	6	8
<b>Total</b>	<b>86</b>	<b>5</b>	<b>20</b>	<b>22</b>	<b>90</b>	<b>112</b>

The training facilitators were zone and woreda health office professionals who were trained on HLC training curriculum and SBCC strategy in 2018.

The SBCC ToT of health professionals was followed in July 2019 by the HLC curriculum training (Table 26). This training is aimed mainly at HDAs and CFs who are directly responsible for the facilitation of the HLCs and at HEWs who provide back-up. The training involved 295 participants (253 women).

**Table 26. HLC curriculum training participants by woreda, organisation, and gender (July 2019)**

Woreda	No. of Kebeles	Organisation			Gender		
		HDAs	CFs	HEWs	Men	Women	Total
Aleta Chuko	18	90	18	18	18	108	126
Dilla Zuria	12	60	12	13	12	73	85
Wonago	7	35	7	7	7	42	49
Kochere	5	25	5	5	5	30	35
<b>Total</b>	<b>42</b>	<b>210</b>	<b>42</b>	<b>43</b>	<b>42</b>	<b>253</b>	<b>295</b>

The step-down training was facilitated by the woreda health experts who received the ToT training in May 2019. To ensure the use of the experience and facilitation skills of the trained HEWs, one HEW per health post was invited to co-facilitate the training with woreda expert staff. The facilitators received the tools (goal cards, diet diversity wheel, etc.) to hand out to the beneficiaries. All trained personnel were provided with standardised sets of job tools, including a branded bag and an umbrella.

HDA receive a monthly follow-up training to prepare them for the next session in the HLC programme. In this way, QDBH seeks to achieve maximum fidelity to the content of the curriculum and quality of the facilitation of the sessions.

**A.1.2.3 Plan and implement series of participatory learning events for 15,000 women and 10,000 men participating in HLCs**

In 2018 the HLC training curriculum was slightly modified to respond to the experiences of the first year of implementation. The 2018 curriculum was maintained in 2019. (See the QDBH 2018 annual report for details about that curriculum.)

**A.1.3.1 Plan and implement rapid market assessment of sweetpotato value chain**

The market assessment was carried out in 2018. The results show that per-capita sweetpotato consumption in Hawassa City is lower than the national average and that OFSP is known by few and eaten by almost nobody.

The value chain assessment carried out in 2017 showed that the Chuko and Wonago sweetpotato markets are supplied by local farmers, whereas Dilla and Hawassa receive roots from neighbouring areas. It also pointed at the concentration of wholesale in Hawassa in the hands of very few people, and at quality issues leading to the loss of a large part of the roots between wholesale and retail. Roots refused for human consumption were sold at a extremely low price for cattle feed.

Monthly monitoring of markets in Chuko, Dilla, Wonago, and Hawassa City started in September 2017 and has continued without interruption. It allows for the establishment of relationships with traders and for obtaining regular data on traded volumes and prices (Fig. 6). It appears that most markets except Chuko have a year-round supply. In Hawassa, supply is from farmers in Wolayita between May and August and from Sidama during the rest of the year. They confirm that OFSP is absent from these markets.

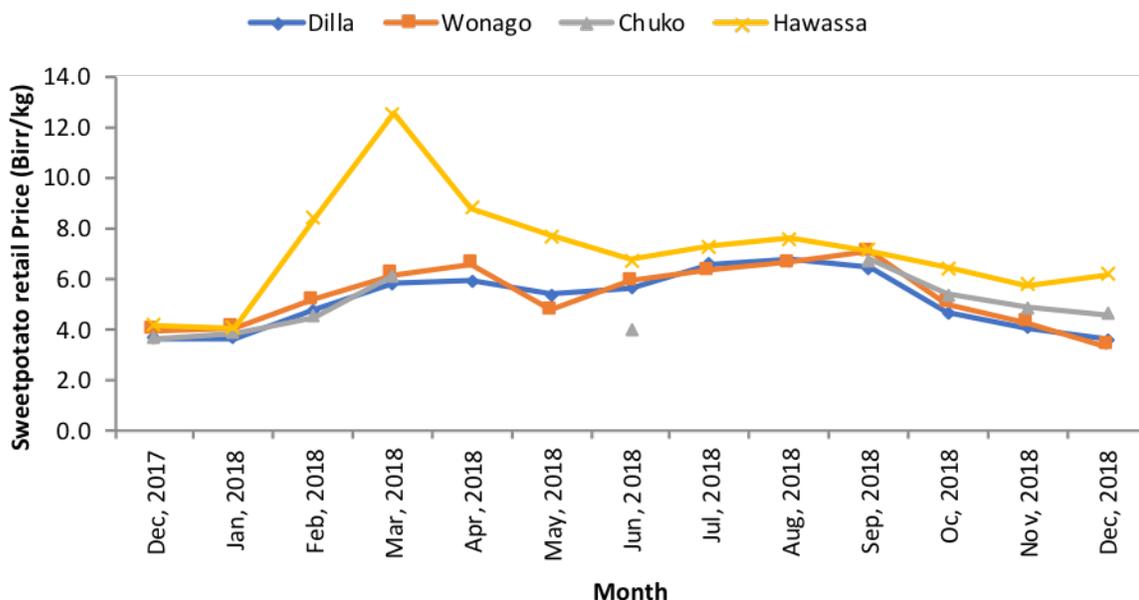


Figure 6. Seasonal variation in the sweetpotato price in 2018.

### ***A.1.3.2 Plan and implement support to improve supply of OFSP to the target urban markets***

Under this heading the project developed action to improve supply, market linkages, and marketing strategies to Hawassa City. Actions were constrained by the fact that the new OFSP varieties were only released at the end of 2019.

QDBH has made the strategic decision to supply planting stock to FTCs and farmers in areas that can supply to the main urban markets (Hawassa City, Dilla Town, and Chuko Town). Of all the planting material produced and acquired, 18% (826,820 cuttings) were used for the OFSP demo plots and the development of market supply capacity by reaching out to potential production areas outside the project's original target districts.

During the reporting period, most roots for market development and processing were obtained from farmers in Hawassa Zuria. Out of the 800 farmers who had received planting material, only 22 actually sold roots. The remainder did not want to sell them because they needed them for home consumption.

Besides roots, leaves are a potential option for dietary improvement. For people who grow OFSP, leaves are easily accessible. For urban consumers, this is not the case as leaves are merely a by-product of root production. Moreover, they are highly perishable and can only be kept fresh for a very short period. The viability of sweetpotato leaves production for urban consumers depends largely on the quantity and quality of what is produced (leaves and roots), which is determined mainly by the number of leaves harvested and the number of plants. For that reason, QDBH has started a trial to determine the optimum leaf-clipping interval and plant density for vegetable production. The experiment was established at a farmer's field in Hawassa Zuria woreda. The experiment assessed the impact of four different leaves-harvesting intervals—at 3, 5, and 7 weeks and no harvesting—and four different plant spacings (at 40 x 20, 40 x 30, 60 x 20, and 60 x 30 cm).

The collected data include the weight of harvested leaves, the culinary quality of these leaves, and the total weight of roots harvested at the end of the growth cycle. Preliminary results show that the length of the harvesting interval is negatively correlated with total leaf yield and positively correlated with total root yield. The role of plant spacing and data regarding the quality of the leaves have not yet been analysed. The experiment will be repeated in 2020. The results will determine to what extent QDBH will take up the promotion of leaf production as an additional activity to increase the supply of OFSP to urban markets.

OFSP is not part of the existing sweetpotato commodity chains. Earlier negative experiences with consumer interest in 'Kulfo' make commodity chain actors reluctant to take up the new OFSP varieties. To encourage the development of market linkages between OFSP producers and potential consumers in the city, QDBH organised a meeting in Hawassa Zuria on November 8th 2019. It was attended by five farmers, six DAs, a marketing officer, a cooperative officer, five experts, three assemblers, and one wholesaler. Its main objective was to establish linkages and personal contacts between the people involved in the chain. During the meeting, Hawassa Zuria's BoA agreed to (1) establish designated assembly points to facilitate bulking and reduce the costs of extracting roots to the market and (2) create a dedicated spot at the Dore market.

A second meeting was organised to link assemblers, wholesalers, retailers, and processors in Hawassa City (Table 27). One objective was to encourage the establishment of connections between the various agents as the parties would meet personally. The attendants agreed on the market potential of OFSP, but complained about the low level of awareness among customers and the narrow profit margins.

**Table 27. Participants in the commodity chain market meeting in Hawassa City on November 14th 2019**

Category	No. of Participants		
	Male	Female	All
Assemblers	2	0	2
Wholesalers	0	2	2
Vendors	7	3	10
Processors	1	2	3
Hawassa University	1	0	1
Sidama Zone BoA	2	0	2
Hawassa small enterprise agro-processing officer	1	0	1
CIP	2	0	2
<b>All</b>	<b>16</b>	<b>7</b>	<b>23</b>

***A.1.3.3 Design, develop, and test up to three OFSP-processed products in collaboration with the private sector***

As part of the preparation of this activity, a two-stage study of potential processors was carried out. Initially, 645 processors and traders in fresh roots were interviewed to assess the opportunities for OFSP incorporation by asking about key ingredients and the colour of the products they produce (Photo 6).



***Photo 6. OFSP-enriched food items at the processors' training workshop.***

This was followed by a training for 12 small food processing businesses (six injera, three ambasha, and three bombolino) and three men. During this training recipes of injera, ambasha, and bombolino were tried and evaluated. A separate training was held at one of the bakeries for the preparation of OFSP bread (dabo) involving one bakery from Hawassa and one from Chuko. At the end of the training, all participants stated that they would use the recipes to replace cereal flour with OFSP puree. Yet in reality only five did so: two injera makers (one female), one bombolino maker, and two bakers (one female).

Three of them were also enrolled in the pilot. This time the objective was not to assess market promotion techniques, but to establish the economic (financial) viability of OFSP processing. Over the 8-week period of the pilot these processors received in total 825kg for free from the project.

Table 28 summarises the results of 10 observations per recipe at the bakery and the injera maker when they would produce the standard (only cereal flour) and OFSP products. It appears that the profit on bread increases from 0.87 ETB to 0.94 ETB and on injera from 1.86 ETB to 2.87 ETB per unit. Note that this profit is only achieved with the new, high DM content varieties and not with 'Kulfo'. Note also that QDBH bought the OFSP from the farmer at a standard price of 7 ETB/kg. At the moment of the

observations, market prices were lower, but on other occasions they may be higher. This fluctuation will obviously affect profitability when the processors buy their raw material themselves.

**Table 28. Unit costs and sales prices of standard and OFSP bread and injera compared**

Parameters	Bread (89g/unit)		Injera (211g/unit)	
	Standard	OFSP	Standard	OFSP
Unit cost of production (ETB)	1.63	1.56	4.13	3.13
Unit sale price (ETB)	2.50	2.50	6.00	6.00
Profit (ETB)	0.87	0.94	1.86	2.87
Gain from use of OFSP (ETB)	0.07		1.01	

Table 29 summarises the amount of OFSP products produced during the pilot, the value they generated, and the extra gains compared with the same amount of the standard product. The data for bread and injera are based on actual observations. The data for bombolino are based on interviews with bombolino makers during an in-depth assessment of the economics of small-scale food-processing business in 2018.

The results in Table 29 show that the estimated total value generated by the processing of OFSP by the three businesses was 16,000–17,000 ETB. The injera maker had the largest turn-over and made the highest profit (6,024 ETB). This is a strong indication that using OFSP in injera is a highly profitable business.

**Table 29. OFSP processed under QDBH with estimated gross revenue**

Product	Bread	Injera	Bombolino*	All
OFSP supplied to processors (kg)	280	440	105	825
Percentage of OFSP in the product <sup>†</sup>	40%	35%	50%	NA
Unit weight of the product (g)	89	211	75	NA
Weight of OFSP in a unit (g)	35	74	38	NA
Number of units produced (calculated)	7901	5979	2800	16680
Value sold (ETB, calculated)	19752	35876	9800	65428
Gains compared with standard product (ETB, calculated)	553	6039	NA	NA

\* Based on data from the processor study. <sup>†</sup>From observation or from training (bombolino).

Even though the financial gains are quite clear, all processors stopped processing as soon as OFSP supply ended, mainly because despite the promises made the commodity chain agents did not yet pick up OFSP. For 2020 QDBH is looking at additional strategies to ensure that supply will kick off.

#### ***A.1.3.4 Identify private sector partner and provide technical support for establishing one OFSP-processed product value chain***

During the implementation of QDBH CIP was able to initiate a parallel project financed by BioInnovate. This project is a partnership between CIP and the School of Nutrition and Food Science of Hawassa University and aims at supporting the start-up of a puree-processing business. In October 2019 the BioInnovate team launched a tender; four bidders submitted a proposal. In December the winner was selected and is expected to receive puree-making equipment in the beginning of 2020 and start processing shortly after. The perspective is that the marketing of puree for bread and injera will provide a viable incentive to the farming and marketing of roots and support an increase in urban consumers.

### A.1.3.5 Design and implement an OFSP promotion campaign in targeted urban areas

During 2019 three important steps were taken in the design and implementation of an OFSP promotion campaign.

In the second half of 2019, over an 8-week period, in total 4,060kg of fresh OFSP roots were donated to vegetable vendors in Hawassa as part of a marketing pilot study (see Figure 4). The objective of the study was to assess the impact of two different promotion strategies: (1) exposing vendors to cooking demos to make them aware of the benefits of OFSP and (2) disseminating two types of leaflets to consumers. One leaflet provides nutrition information and one provides both nutrition information and three OFSP recipes. The study involved 30 vendors (retailers).

The results show that exposing vendors to cooking demos, combined with leaflets, increased significantly the sales compared with those who only receive leaflets and roots and to those who receive roots only. The first group sold on average 176kg over 8 weeks, the second group 116kg, and the last 114kg.

The leaflets have a significant positive impact on knowledge and attitude toward healthy food and the consumption of OFSP (Table 30 and Table 31):

- Of those who had received a leaflet, 92% said that their perception of OFSP had improved, whereas 94% of those who had not received a leaflet said it had remained the same ( $\chi^2(901,1)=630.2023, p=0.000$ ).
- Similarly, of those who had received a leaflet, 80% said that they had increased their OFSP consumption compared with only 5% of those who had not received a leaflet ( $\chi^2(901,1)=507.5978, p=0.000$ ) (Table 30).

**Table 30. Impact of leaflets on the self-reported perception and consumption of OFSP**

Received Leaflet	Perception		Consumption		N
	More Positive (%)	The Same (%)	Increased (%)	The Same (%)	
Yes	92	8	80	20	220
No	6	94	5	95	681
<b>All (N=901)</b>	<b>27</b>	<b>73</b>	<b>24</b>	<b>76</b>	<b>901</b>

Formative research had suggested that one of the reasons for people not eating sweetpotato was their lack of knowledge about sweetpotato recipes. They only know that the roots can be boiled and therefore feel that sweetpotato is “boring”. For that reason, the study tested two kinds of leaflets: one containing only nutrition information and one containing nutrition information and recipes. It appeared that leaflets that contained recipes had a stronger positive impact on the perception of OFSP—99% said that their perception improved ( $\chi^2(208,1)=6.49, p=0.011$ )—but not on the consumption ( $\chi^2(208,1)=1.72, p=0.190$ ) (Table 31).

**Table 31. Impact of presence of recipes in leaflets on the self-reported perception and consumption of OFSP**

Leaflet Contains Recipe	Perception			Consumption			N
	More Positive (%)	The Same (%)	<i>p</i>	Increased (%)	The Same (%)	<i>p</i>	
Yes	99	1	0.011	86	14	0.190	91
No	91	9		79	21		117
<b>All (N=208)</b>	<b>94</b>	<b>6</b>		<b>82</b>	<b>18</b>		<b>208</b>

Unfortunately, the study results do not show how many consumers bought OFSP. This number can be estimated by using the proportion of the number of interviewed clients who received a leaflet over the total number of leaflets that were distributed. During the pilot 20 vendors received 2,000 leaflets. Of these, 220 (11%) were confirmed by the 600 customers who were interviewed. This suggests that the total number of customers of these 20 vendors is  $(2,000 \times 600)/220 = 5,450$  and that the average number of clients per vendor is around 270. As 30 vendors participated in the pilot, the total number of customers reached by the trial is approximately 5,500. Assuming that about half of the client population actually bought OFSP (2,750 clients) and that each client represents one HH with 4.2 members (the average for urban populations in Ethiopia), approximately 11,000 individuals had access to OFSP roots through the pilot.

These figures allow the calculation of average per capita consumption. Over the 8 weeks of the trial, the estimated 11,000 consumers ate 4,060kg, or about 0.4kg/person, the equivalent of approximately 2.4kg/capita per year. This is comparable to the figure estimated based on the consumer study carried out in 2018.

In September 2019, FANA TV, with support of the EU, broadcast two 5-min programmes about both QDBH and OFSP. Feedback from people in the city, processors, and retailers showed that this had a positive (but not measured) impact on knowledge, attitude, and consumption of OFSP. This suggests that television can be a viable strategy for promoting OFSP in urban centres. Therefore, QDBH has begun negotiating with a cooking show to be broadcast nationwide that possibly incorporates OFSP recipes.

Using the opportunity created by the official release of three new varieties early in November 2019, PIN organised promotion events to increase the demand for OFSP and to contribute to reaching 61,000 urban consumers/indirect beneficiaries with increased consumption of vitamin A. The promotion events were conducted in Chuko, Dilla Town, Dilla Zuria, Kochere, and Wonago. The estimated total number of urban residents of these towns is more than 155,000 (38,000 HH).

The events were organised with the active involvement of stakeholders from zonal, woreda, and kebele levels and local farmers. They consisted of a display of the new varieties; the selling of roots and cuttings; cooking demos and tastings of different recipes (eg, injera, bread, sauce with root, sauce with leaves, bombolino, *kocho*, *bursame*, *fosesse*, rice with OFSP, and macaroni with OFSP). The NGO Eгна La Eгна supported the cooking (Photos 7 and 8).



(PHOTO: DAWIT SAHLU X 2)

**Photo 7. Promotion events in Dilla and Wonago. (Left): PIN officer inviting event visitors to test sweetpotato dishes at Dilla town. (Right): Visitors waiting to buy OFSP roots and vines at Chelelektu in Wonago.**

The events gave a boost to OFSP marketing. At the five locations a total of around 3,300kg of OFSP roots were sold. Assuming that a typical client buys about 2kg, this means 1,600 HH (6,700 individuals) benefited from these promotion events.

In addition, 10,250 cuttings were sold. The number of cuttings per client was small (around 40) which means that the project during these events reached about 260 indirect beneficiaries. A leaflet was used to spread nutrition and recipes during the promotion events (Photo 8).

In 2020 these experiences will be translated into a strategy that will consist of the:

- Exposure of retailers/vendors to OFSP cooking demos and recipes
- Use of validated leaflets to raise knowledge, awareness, appraisal, and consumption of OFSP as a healthy food
- Organisation of promotion events in Hawassa, engaging champions such as musicians and sport figures at markets and during other occasions
- Use of FANA television's "Yordanis" cooking show to promote recipes among television audiences
- Work with South TV and FANA FM on the broadcast of messages to reach wider audiences

The strategy will also use branding of retail outlets and branded reusable bags with appropriate slogans to enhance the visibility of OFSP. In addition, to spread the use of OFSP recipes in the gastronomy sector, QDBH will investigate the possibilities of working with the training programmes of both the Selam gastronomy TVET in Hawassa and with Haile Resort training centre.



**Photo 8. Dilla promotion event: vines, dishes, and information material. (Left): Customer buying planting material; (middle): cooking demo with traditional dishes; (right): customer reading information material.**

#### **A.1.4.1 Design and implement monitoring system for R1 and R2 targets**

The monitoring system was designed. Standard collected MLE data include names and contacts of people receiving vines, names and contacts of HLC members, and facilitators.

A specific system was put in place to monitor the HLC training sessions and uptake by HLC partners. During the first round of HLC trainings, monitoring of HLCs only covered attendance. In 2018 the system was revised, and a monitoring system was set up that each month collects data about attendance and the quality of the training sessions. It also includes house visits to 10% of the HLC members to see the uptake of the lessons.

The HLC sessions were monitored on 10 criteria which were assessed by the CF (see Table 32). They show a good level of performance for all criteria (above 90%) except for doing the goal activity (68%) and the quality of the HDA as a group facilitator (88%). The relatively low score for the goal activity is mainly due to the assessment of session 2, which is the first session of the nutrition-training programme, when most participants have not yet had a chance to set their goals. Overall, average scores including those for the HDA performance as a facilitator improved during the training cycle. This is most likely the result of the feedback HDAs receive after each session as part of this monitoring system.

**Table 32. Summary of the assessment of HLC training sessions in 2018–2019**

Item	Session (number and month)							
	2	3	4	5	6	7	8	All
	Nov	Dec	Jan	Feb	Mar	June	July	All
Training materials available	91%	89%	93%	88%	100%	100%	100%	92%
Training materials in good condition	91%	98%	91%	100%	100%	100%	100%	95%
The facilitator (HDA volunteer) carries out all tasks foreseen in the training programme	90%	90%	85%	100%	92%	100%	100%	91%
The facilitator uses all the materials that are should be used	90%	91%	85%	96%	92%	100%	100%	91%
The participants participate in all activities	88%	92%	93%	100%	96%	100%	100%	93%
The participants do the goal activity	6%	79%	87%	100%	100%	95%	100%	68%
The facilitator makes the participants select their goal	98%	100%	100%	100%	100%	100%	100%	99%
The participants actively participate in the session	88%	91%	84%	96%	92%	100%	100%	90%
The lesson is interesting and useful	91%	100%	94%	100%	100%	100%	100%	96%
The HDA is performing well as a facilitator	88%	87%	81%	96%	88%	100%	100%	88%
Overall	82%	92%	89%	98%	96%	100%	100%	90%

The results of the household visits are summarised in Table 33. They show that all households had the key teaching tools (goal card and diet wheel). They also show that about 46% of the mothers had eaten OFSP roots in the month prior to the visit and 43% of the children. Sweetpotato leaves – a rather drastic change in dietary habits as people were only used to eat the leaves of kale and saw sweetpotato leaves as animal fodder – are eaten by about one-third of both the mothers and the children.

**Table 33. Summary of the results of house visits to 3 members of each HLC each month**

Session number	Session							
	2	3	4	5	6	7	8	All
	Nov	Dec	Jan	Feb	Mar	June	July	All
HH has goal card	99%	100%	100%	100%	99%	100%	100%	100%
HH has diet wheel	96%	100%	100%	100%	100%	100%	100%	99%
Mother ate OFSP roots in past month	8%	50%	86%	88%	51%	7%	14%	46%
Mother ate OFSP leaves in past month	10%	36%	50%	63%	16%	18%	31%	32%
Child ate OFSP roots in past month	8%	44%	82%	85%	51%	7%	11%	43%
Child ate OFSP leaves in past month	8%	31%	54%	67%	16%	18%	22%	32%

There is a considerable variation in the consumption data across the training cycle, with the highest being 88% (session 5) and the lowest being 7% (session 7). This variation is related to the crop cycle. Session 5 was in February, when sweetpotato was apparently more abundant. Session 7 was June, when there was little sweetpotato available. This is very important as other data point at this period as the one with the highest food insecurity (Fig. 7). The data suggest that while OFSP is most available and consumed in the period of lowest food insecurity, it contributes to attenuate food insecurity when food insecurity is at its worst.



**Figure 7. Seasonal variation in food security.**  
(Source: data collected by Emory University).

#### ***A.1.4.2 Design system for collecting disaggregated cost data developed, drawing on Phase 1 experience and data collection***

Expenditures are coded by budget line and by activity. This allows for an easy assessment of the total cost of activities per direct beneficiaries reached. Staff-time costing is based on position/responsibility and time allocation as expressed by their job descriptions and by the justifications of their field visits.

The cost effectiveness study was postponed from late 2019 to early 2020.

#### ***A.1.4.3 Plan and implement baseline study on community-level intervention***

Baseline data for the longitudinal (see section 1.4.5.1 for details) and the cross-sectional study were collected between December 2017 and January 2018. The longitudinal study started with a sample of 650 HH, the cross-sectional study interviewed 1,450 HH at baseline. The cross-sectional baseline report was written but not published, and provided the information for the logframe outcome indicator data.

#### ***A.1.4.4 Plan and implement a midline assessment***

As agreed in 2017, no midline study will be carried out. Instead, the endline was brought forward by 1 year to allow for a significant intervention in the control kebeles before the end of the project. This change will also allow the use of findings from the endline to provide evidence to policymakers in SNNPR about the usefulness of the integrated agriculture-nutrition approach.

An external midterm review was carried out in October 2019 under 2FAS. The report was finalised in January 2020, submitted to the EU, and shared with CIP.

The report concludes that QDBH has been implemented efficiently and effectively. It recommends an increase efficiency, effectiveness, sustainability, and impact by, for example, integrating sweetpotato and OFSP into the government’s weekly market assessment and by improving the tailoring of the HLC agronomy training with local farming practices. These include hygiene and food safety topics in processor trainings, and identifying scale-out opportunities at national level (eg, nutrition-sensitive agriculture programme; home-grown school-feeding programme, and the World Food Programme’s model ‘fill the nutrition gap’).

The midterm review also observes that sweetpotato production and consumption in the project’s target area are smaller than expected. This reduces its capacity to significantly increase vitamin A consumption by itself, but leaves unaffected its potential as an experiment from which important lessons can be learned about the viability of biofortification at scale. The QDBH team will seek to adopt these recommendations as far as possible.

**A.1.4.5 Plan and implement endline study on community-level intervention**

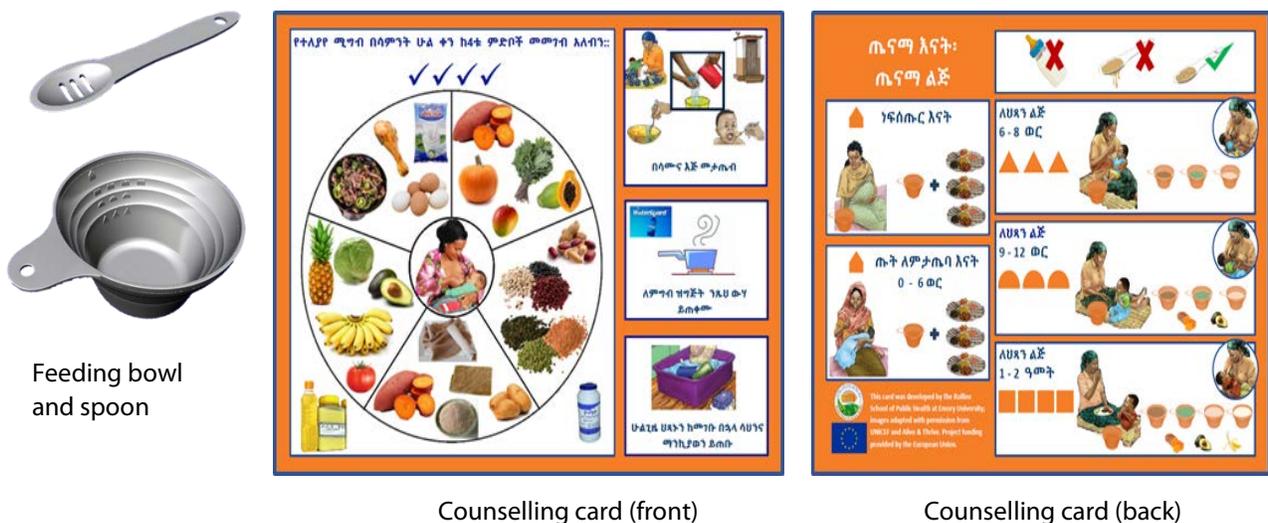
Data for the cross-sectional endline were collected between late October and mid-December. In total 2,605 HH were interviewed in 26 kebeles. The sample was divided into three groups: HH recruited from the membership lists of the 2017 HLCs, HH recruited from the membership lists of the 2018 HLCs, and HH who did not participate in an HLC but had children aged below 30 months. These were recruited from lists prepared by kebele managements containing the names of all the heads of HH and their spouses, plus some basic data about HH composition, their enrolment in HLCs, and their access to OFSP.

The questionnaire was the same as in 2017 except for the section focusing on sweetpotato farming (Module 04). In line with the assessment of the baseline study, this section was drastically modified. Data were entered as soon as they came from the field using CSPro data entry software. Data cleaning and analysis are planned for Q1 of 2020.

Figure 5 (p. 26) shows the retention of OFSP varieties is one of the first outcomes of the endline study.

**A.1.4.5.1 Implement a longitudinal study: Value addition of innovative SBCC component to improve child diets**

As part of the SBCC strategy to achieve nutrition objectives, QDBH tests whether the use of an innovative toolkit designed to improve children’s diets can enhance outcomes beyond the broader nutrition promotion activities. The “healthy baby toolkit”, designed for use by infants aged 6–23 months, consists of a bowl with lines and symbols that cue age-appropriate meal frequency and volume; a slotted spoon that promotes optimal thickness of infant foods; and a counselling card that uses locally adapted images to convey use of the toolkit to achieve optimal IYCF practices as well as messages on dietary diversity, handwashing, and safe preparation of food and water (Fig. 8).



**Figure 8. Healthy baby toolkit with feeding bowl, slotted spoon, and counselling card.**

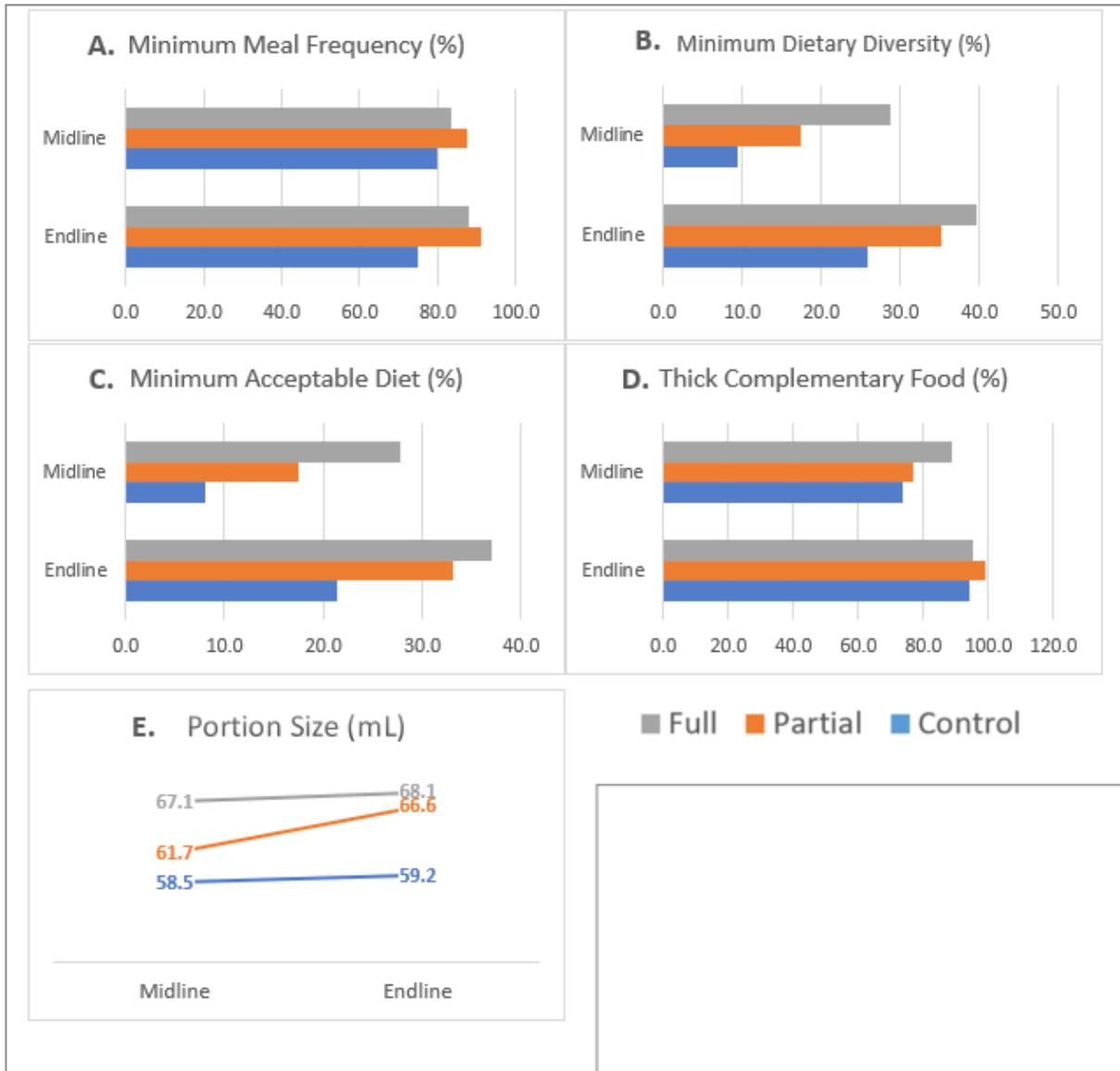
The project evaluation follows a quasi-experimental design with three treatments:

- Full treatment. Beneficiaries receive OFSP planting material, a standard HLC training programme, and a “healthy baby toolkit”.
- Beneficiaries receive OFSP planting material and the standard HLC training programme (partial treatment).
- Those who do not benefit from any intervention (control).

Treatments are organised by kebele. As such there are kebeles with a full treatment, a partial treatment, and no treatment until the endline data are collected (Table 2, p. 2).

The baseline data for longitudinal study were collected in January 2018, midline data in September 2018, and endline data in January 2019. A total of 605 HH were enrolled at baseline; 548 (90.6%) and 523 (86.4%) HH completed the midline and endline surveys. A preliminary analysis of the data indicates that, in particular during the food-insecure season, the intervention has a significant impact on key IYCF practice indicators (eg, minimum dietary diversity, minimum acceptable diet). There also appears to be an impact on the prevalence of diseases. At endline, about 1 year after the HLC participants started their nutrition training, 4 months after their graduation and during a relatively food-secure season, these impacts appear to have attenuated (Fig. 9).

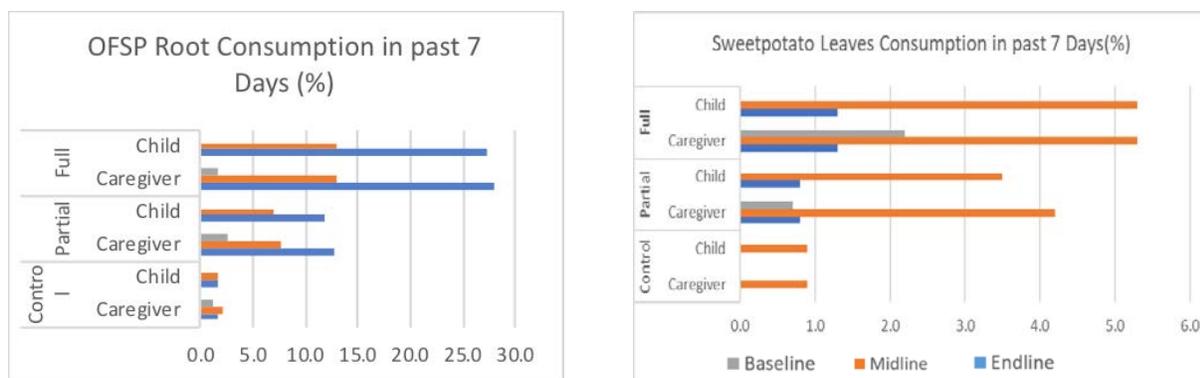
Nutrition knowledge increased significantly in both intervention arms from baseline to midline relative to controls and remained higher at endline. Increases in food insecurity from baseline to midline were significantly greater in the control arm relative to either intervention arm, suggesting a buffering effect of the QDBH intervention. However, by endline groups did not differ significantly with respect to food insecurity.



**Figure 9. Unadjusted IYCF practices. (A) minimum meal frequency, (B) minimum dietary diversity, (C) minimum acceptable diet, (D) thick complementary foods, and (E) portion size in each intervention group at midline and endline.**

(Source: Emory University, longitudinal endline report—preliminary results).

Over 10% of the partial and 25% of the full intervention children and caregivers consumed OFSP roots in the previous 7 days at endline. Sweetpotato leaf consumption in the previous 7 days just surpassed 5% at midline but decreased at endline (Fig. 10). Note that at baseline, none of these HH ate OFSP or sweetpotato leaves.



**Figure 10. OFSP root and leaf consumption in the past 7 days.**  
(Source: Emory University, longitudinal endline report—preliminary results).

Overall, QDBH improved HH nutritional knowledge and appears to have buffered families against seasonal food insecurity. The healthy baby toolkit appears to enhance the QDBH nutrition education activities and promote improved feeding practices above and beyond project activities alone. It has achieved an important change in diet, with OFSP and sweetpotato leaves being eaten by a large section of the population that originally did not consume these food items.

***A.1.4.6 Negotiate agreement with the regional and woreda bureaus of agriculture and health on the integration of OFSP into their official extension systems***

During 2019 six woredas in the Sidama zone submitted written requests to be incorporated into the project. Another six woredas in Wolayita and Sidama (East Badiwacho, Sodo, Gibe, Mirab Abaya, Hawassa Zuria, and Aleta Chuko) have already incorporated OFSP into their plans and budgets. In 2020 scaling-out will be negotiated, drawing on the collected evidence (Y4 of the project).

Project managers believe that the healthy baby toolkit is an innovative product that evidence will demonstrate is worth using nationally in Ethiopia and other SSA countries. In fact, other funded projects outside of Ethiopia expressed interest in utilising the toolkit in their integrated ag-nutrition projects. The bowl and spoon set employed in the longitudinal study was produced by a company in the U.S. and cost \$5 per set. (This price would clearly prohibit wide-scale use, however.) In 2019 we made considerable effort to identify plastic companies in Nairobi, Kenya, with the capacity to make the toolkit at a reasonable cost. Two companies submitted bids, and ADIX plastics was selected. A major cost was making the moulds for the bowl and spoon (\$12,000); however, now the moulds belong to CIP. The actual cost of making the bowl and spoon, both dyed orange, is now less than \$0.30. This means that it is now economically viable to include the healthy baby toolkit in proposals to the Ethiopian government to incorporate the toolkit into regional and national nutrition education efforts.

***A.1.4.7 Plan and implement training for 30 new woredas on OFSP sweetpotato production and proposal writing, and provide technical materials***

This training will be evidence-based and occur in the first half of 2020.

***A.1.4.8 Plan and implement assessment of urban consumer acceptance of OFSP roots and products and frequency of purchase/intake***

The baseline study was carried out in August 2018 and be repeated in 2020 to assess changes.

***A.1.4.9 Plan strategy for final write-up and dissemination of findings; implement the strategy***

The strategy discussion will happen over 2020 and implementation over 2021.

## ANNEXES

### ANNEX A. UPDATED LOGFRAME MATRIX

	Results Chain	Indicators	Baseline	Current Value	Targets	Targets				Sources and Means of Verification	Assumptions
			December 2019			Y1	Y2	Y3	Y4		
Overall objective: Impact	Contribute to the reduction of VAD and improved food security among children and women living in SNNPR of Ethiopia.	1) Amounts of vitamin A and energy consumed by rural children aged 13–15 months (disaggregated by sex) in participant compared to nonparticipant HH 2) Prevalence of reported diarrhoea episodes and other morbidities during past 2 weeks of children aged < 5 years and principal women 3) Food insecurity score at HH level in rural areas	N.A.		1) At least a 50% improvement in vitamin A intake compared with control group and at least a 10% improvement in energy intake (rural only)					1) 24-hr recall consumption study conducted in a representative sub-sample of participant and control children 3) Baseline and endline surveys of principal women and reference children aged <5 years in all HH targeted for nutrition intervention (Questions between brackets)	1) No extreme drought severely deteriorating HH food intake takes place. 2) At least 80% of the mother–child cohorts will not change residence during the intervention period 3) OFSP-processed products developed are culturally acceptable to urban consumers
			17% of reference children suffered of diarrhoea past 2 weeks (M07_13)	-	2) At least a 15% reduction in prevalence of morbidities compared with control group (rural only) <b>Eliminated: This indicator depends on factors outside the Activity's control</b>				14%		
			8.38 HFIAS score (M05_1B M05_9B)	-	3) At least 30% reduction in food insecurity score compared with control group (rural only)				5.87		
Specific objective(s): Outcome(s) (Oc)	Oc 1: Increased intake of vitamin A and improved food security among 15,000 children and 15,000 women of reproductive age and at least 61,000	1) Frequency of intake of vitamin A-rich foods during past 7 days by urban consumers and rural mothers and children aged <5 years	Urban consumers 51% last 24 hr (August 2018)		1) At least a 30% improvement in frequency compared with control group for rural HH; 10% higher index among urban consumers purchasing OFSP roots or products compared with those not purchasing	N.A.				Sources of information and methods used to collect and report (including who and when/how frequently). 1 & 2 & 3) RURAL: Baseline and endline surveys of principal women and reference children aged <5 years in all	Factors outside project management's control that may impact on the outcome-impact linkage. Drought raises prices of all foods, making affordable OFSP access difficult for urban consumers
			Rural mothers 2.19	-							

Results Chain	Indicators	Baseline	Current Value	Targets	Targets				Sources and Means of Verification	Assumptions
		December 2019			Y1	Y2	Y3	Y4		
urban consumers in 3 urban centres, achieved through an improved delivery of nutrition-sensitive agricultural and health extension services.	2) Rural woman's dietary diversity index for past 24 hr, including category for biofortified foods	MDD-W=2.5 (M06_01)M06_20); 2.94	-	2) At least a 20% improvement in the woman's dietary diversity score compared with control group (rural)				3.5	HH targeted for nutrition intervention; 1 & 4) URBAN consumers: Survey at local markets of adult consumers at end of intervention period: OFSP purchasers vs. non-purchasers	Costs of advertising skyrocket or rules restrict promotion campaigns
		Biofortified food 2.5%								
		IYCF=2.6 (M06_01) (M06_20)2.95	-	3) Increase of at least 30% of intervention compared with control children attaining minimal acceptable diet when using healthy baby tool kit; 15% when not using toolkit				3.8		
		% Biofortified food 3.3%						4.3%		
	3) % of rural children <2 minimal acceptable diet	% of children with minimum dietary diversity (≥4 food groups) 34.2%	-					44.5%		
		MAD breastfed 25.32	-				32.9%			
		MAD not breastfed 9.64	-				12.5			
	4) For urban consumers: Awareness of vitamin A and its role in the body & awareness that OFSP is an excellent source of	% Aware of vitamin A	55%	4) At least 30% of urban consumers are aware of vitamin A and that OFSP is a good source of vitamin A; at least 20% of urban consumers know the role				30%		
		% aware OFSP source	3%					20%		

	Results Chain	Indicators	Baseline	Current Value	Targets	Targets				Sources and Means of Verification	Assumptions
			December 2019			Y1	Y2	Y3	Y4		
		vitamin A	% knowing role Vit. A	43%	of vitamin A in the body				20%		
Outputs	Op1.1 53 decentralised OFSP vine multiplication sites, operated by trained DAs of FTCs and selected private farmers, provide 15,000 local HH with the inputs and knowhow required for a homestead production of OFSP	1) % of supported sites supplying local HH with vines at the end of the project 2) Vine multiplication sites provided vines to at least 15,000 HH 3) % of trained HH are able to explain/ demonstrate at least 3 correct OFSP production practices introduced by the extension workers	Planting materials for OFSP available only at national research programme	41 FTC & DVM provide 82% of all planting material	1) 70% of 53 vine multiplication sites established operating at end of QDBH	26	48	48		1) Multiplication site monitoring forms 2) Dissemination records from monitoring system 3) Baseline and endline surveys among HH with children aged < 5 years	There is no devastating drought that severely affects water table Government continues to support and operate FTCs Biofortification remains a priority in government strategies
			0 HH received vines	10,348 HH received vines	2) 15,000 HH are provided with vines	780	4,050	10,410	15,330		
			0 trained HH	10,348 trained HH	3) 75% of trained HH demonstrate adequate knowledge in homestead production of OFSP	0	3,195	7,810	11,500		
	Op1.2 At least 15,000 women and 10,000 men are aware of climate-smart OFSP's benefits, recipes for their everyday use, and essential child	1) % women and % men with improved nutritional knowledge score 2) % women who have shared their knowledge (2 recipes) with other mothers not in clubs (will randomly select their names for verification)	0 (no recipes taught)	5 recipes in cooking demos and HLC trainings	1) Average nutritional knowledge score among women at least 40% higher and among men at least 30% higher in intervention areas than in control areas	0	1,420	3,470	5,110	1 & 3) RURAL: Baseline and endline survey data in rural areas 2) Monitoring data concerning sharing recipes and follow up by HDAs	Men will agree to participate in HLCs Well-collected monitoring data permit attribution of knowledge gain to participation in HLCs
			% shared	23% of sampled HLC members	2) At least 30% of women in HLCs have shared OFSP-based recipes with other non-group members	0	850	2,080	3,066		

	Results Chain	Indicators	Baseline	Current Value	Targets	Targets				Sources and Means of Verification	Assumptions
			December 2019			Y1	Y2	Y3	Y4		
	nutrition practices, gained through participating in 500 HLCs managed by trained community health workers.	3) % of men and women reporting a change in the nutritious foods they grow or purchase	% reporting change	No info	3) At least 20% of women and men report that purchasing patterns have changed and there has been an increase in use of nutritious foods.	0	568	1,249	1,840		
	<b>Op1.3</b> Improved supply of and demand for OFSP products in the urban areas with the increased consumption of at least 61,000 beneficiaries	1) No. of months OFSP appears per year in 3 major urban markets & its price compared to white- & yellow-fleshed sweetpotatoes	No OFSP available	2 (Wonago), 1 (Hawassa), no price difference	1) OFSP in market at least 6 months a year and sells at a price at least as high as white- & yellow-fleshed sweetpotatoes	0				1) Presence and prices of OFSP roots in at least 3 major urban markets collected monthly 2) Monitoring data from company receiving roots from farmers 3) Endline survey of urban consumers at 3 major markets	Agro-processor respects memorandum of understanding requiring company to share sales figure data Market authorities & shopkeepers permit the collection of data Farmers are interested in commercialisation opportunities & OFSP is competitive with alternative crops
		3) No. of rural OFSP producers supplying agro-processors	No processed products	3 processed products	2) At least 500 farmers (50% women) supply agro-processor(s)	0			500		
		3) % of urban shoppers purchasing a baked or fried product during the past week that purchased an OFSP product	0% of urban shoppers	Unknown							
			OFSP seasonally available in limited roadside selling points	0	3) 20% of shoppers in 3 target urban markets	0					

	Results Chain	Indicators	Baseline	Current Value	Targets	Targets				Sources and Means of Verification	Assumptions
			December 2019			Y1	Y2	Y3	Y4		
	Op1.4 After evaluating the effectiveness of the intervention during the first 3 years, recommended value for money models for large-scale OFSP dissemination (based on R1 & R2 experience) begin to be integrated into the SNNPR's agricultural extension and health promotion systems, with a potential to reach at least 3m women and children at risk of VAD	1) No. of additional DAs/HEWs or other government personnel trained about sweetpotato by those trained as ToTs	No trained staff	62 DA staff trained at three ToTs, 26 DAs in step-down, and 26 HEWs in step-down	1) At least 50 additional trained staff members 2) At least 40% of those approached have included OFSP in their plans 3) At least 3,000 additional HH received OFSP vines not provided by the project	23 DA staff trained at first ToT, 13 DAs in step-down, and 13 HEWs in step-down	23	23	50	1) Monitoring data maintained by extension personnel; phone survey follow-up of ToT course participants 2) Monitoring data capturing visits to government officials to discussed sustained production at FTCs and other locations. 3) Monitoring system using dissemination forms developed by project and adopted/ adapted by public sector extension	MoA officials agree that extension personnel can use tools recommended by the project MoA officials permit FTCs to incorporate OFSP into their plans Extension personnel and others have sufficient financial resources to distribute vines in Y4 & Y5
		2) No. of woreda agriculture offices that have been exposed to the results of the intervention that have incorporated OFSP into their own programs.	0	6		0	9	9	20		
		3) No. of HH reached with OFSP vines in Y 4 & Y5 by extension personnel NOT backstopped by project	0	1,354		0	0	0	3,000		
				Y1 (2017)	2019	2019	2020			Assumption	
Activities	A.1.0.1. Inception: Recruitment, staff training, office, setup in Hawassa & Project launching workshop			Completed	N.A.					Funding, office space, candidates available	
	A.1.0.2. Hold monthly project progress review and planning meetings with consortium staff			2 steering committee meetings	Biweekly meetings at Hawassa level					Frequency adequate for implementation	
	A.1.0.3. Hold annual stakeholder meeting,			3	3 meetings in 2019				Meeting reports	Interest in the	

Results Chain	Indicators	Baseline	Current Value	Targets	Targets				Sources and Means of Verification	Assumptions
		December 2019			Y1	Y2	Y3	Y4		
	presenting project progress and receiving feedback		meetings							project
	A.1.1.1. Design and implement qualitative research on women and men's roles along the OFSP value chain		Completed	Published as working paper					Report	Genders have different role and/or levels of control
	A.1.1.2. Establish demo trials of OFSP in major sites & acceptability assessment		26 demo plots in 13 kebeles	83 demo plots in 42 kebeles					Report	FTCs and private farmers interested, land and water available
	A.1.1.3 Prepare and conduct ToT course for extension personnel concerning OFSP		1 training course, 30 participants	3rd training course, 41 participants (not foreseen)					Report	Target group wants to be trained
	A.1.1.4. Training and material support to the target FTCs and farmers-entrepreneurs producing and multiplying OFSP vines		26 DAs trained, FTCs equipped with irrigation equipment	27 additional trained in ToT, 44 in step-down, total 51 and 82 respectively					Report	Equipment available in Ethiopia
	A.1.1.5. Form groups and train 15,000 female and 10,000 male farmers on OFSP production, storage, and vine conservation by trained agricultural DAs and health extension agents		4,048 HH in HCLs	6,300 HH added, cumulative 10,348; 62 short of target					MLE data, activity report	At least 15,000 HH interested in OFSP farming
	A.1.1.6. Design and implement strategy for vine dissemination to HH. Ongoing technical support. Consolidation of lessons for region-wide replication.		4,048 HH received vines through baby trials	6,300 HH added, cumulative 10,348; 62 short of target					MLE and endline data	OFSP varieties officially released
	A.1.1.7. Plan and implement events to promote dissemination to indirect beneficiaries		Sharing at dissemination	Revise target downwards to about 2,000 as people are reluctant to share					MLE and endline data	OFSP varieties released, multiplication on speed; people willing to share
	A.1.1.8. Integrate OFSP production into FTCs annual production plans and budgets		No clear data	FTCs trained in accounting and financial planning					Progress reports	FTCs have market for OFSP
	A.1.2.1. Conduct formative research on the key barriers and boosters to OFSP production and consumption. Develop SBCC and promotion		Completed	Published on Sweetpotato Knowledge Portal					Report available	Knowledge and awareness are barriers for

Results Chain	Indicators	Baseline	Current Value	Targets	Targets				Sources and Means of Verification	Assumptions
		December 2019			Y1	Y2	Y3	Y4		
	strategy, including use of health baby toolkit (bowl/spoon).									adequate IYCF practices
	A.1.2.2. Design, plan, and train health extension personnel on nutrition and SBCC techniques	0 HEW		86 new HEW trained, total is 135; 210 new HDAs, total is 345.					Activity reports	HEW require additional training on nutrition
	A.1.2.3. Plan and implement series of participatory learning events for 15,000 women and 10,000 men participating in HLCs	Learning events planned		9 events for each batch of HLCs (2017, 2018, 2019)					MLE reports	HH willing to participate
	A.1.3.1. Plan and implement rapid market assessment of sweetpotato value chain	Seed system components completed		Draft paper presented					Paper published, material available on the market	Planting stock, vines and roots are marketed
	A.1.3.2. Plan and implement support to improve supply of OFSP to the target urban markets	Not yet		7,540kg supplied to fresh root and processed product markets under pilot & promotion events					Biweekly reports, activity reports	Planting stock, vines and roots are marketed
	A.1.3.3. Design, develop, and test up to 3 OFSP-processed products in collaboration with the private sector	Zero		Dabo, injera, and bombolino piloted on the market					Biweekly activity reports	Products economically attractive for private sector
	A.1.3.4. Identify private sector partner and provide technical support for establishing 1 OFSP-processed product value chain	Not yet		Private sector partner identified via BioInnovate to produce puree.					BioInnovate trip report	Capable entrepreneurs exist
	A.1.3.5. Design and implement an OFSP promotion campaign in targeted urban areas	Not yet		First three events implemented					Activity report	OFSP varieties officially released
	A.1.4.1. Design and implement monitoring system for R1 & R2 targets	In place		MLE system running					MLE reporting	
	A.1.4.2. Design system for collecting disaggregated cost data developed, drawing on Phase 1 experience and collect data	In place, needs testing		Study delayed till early 2020					Expenditure reports, additional study	
	A.1.4.3. Plan and implement baseline study on community-level intervention	Data collection completed		Draft report ready					Baseline report	
	A.1.4.4. Plan and implement midterm assessment	To be skipped		To be skipped					-	Time span between baseline, midline, and endline is sufficient to allow for measurable

Results Chain	Indicators	Baseline	Current Value	Targets	Targets				Sources and Means of Verification	Assumptions
		December 2019			Y1	Y2	Y3	Y4		
										changes
	A.1.4.5. Plan and implement endline study on community-level intervention		To be moved to 2019	Data collected for 2,605 HH					Data set, endline report	
	A.1.4.6. Negotiate agreement with the regional and woreda bureaus of agriculture and health on the integration of OFSP into their official extension systems		Not yet	Six already done. Further negotiations over 2020					Written agreements	Evidence confirms that approach is successful and cost-effective
	A.1.4.7. Plan and implement training for 30 new woredas on OFSP: sweetpotato production & proposal writing and provide technical materials		12 new woredas in 2018	One new woreda from Oromia in 2019					Training reports	Evidence confirms that approach is successful and cost-effective
	A.1.4.8. Plan and implement assessment of urban consumer acceptance of OFSP roots and products & frequency of purchase/intake		Not yet	Done, marketing pilot to validate and assess impact of leaflets					Report (not published)	
	A.1.4.9. Plan strategy for final write-up and dissemination of findings; implement the strategy		Not yet	Not yet						

NOTE: MAD = Minimum acceptable diet

## ANNEX B. AN UPDATED ACTION PLAN FOR FUTURE PROJECT ACTIVITIES

Activity	Year												Implementing body (comment)	
	Half-year 7						Half-year 8							
	1	2	3	4	5	6	7	8	9	10	11	12		
<i>Example</i>														<i>Example</i>
Preparation Activity 1(title)														Beneficiary or affiliated entity 1
Execution Activity 1(title)														Beneficiary of affiliated entity 1
Preparation Activity 2 (title)														Beneficiary or affiliated entity 2
Etc.														
Conclusion A.1.1.1. Design and implement qualitative research on women and men's roles along the OFSP value chain														CIP (report published)
Conclusion A.1.1.2. Establish demo trials of OFSP in major sites & acceptability assessment														CIP (task concluded)
A.1.1.3 Prepare and conduct ToT course for extension personnel concerning OFSP														CIP (2x5 days training)
A.1.1.4. Train and provide material support to the target FTCs and farmers-entrepreneurs producing and multiplying OFSP vines														CIP and PIN (ongoing, no new FTCs added)
A.1.1.5. Form groups and train 15,000 female and 10,000 male farmers on OFSP production, storage, and vine conservation by trained agricultural DAs and health extension agents														PIN (166 HLCs, mostly in Kochere and control <i>kebeles</i> )
A.1.1.6. Design and implement strategy for vine dissemination to HH. Ongoing technical support. Consolidate lessons for region-wide replication.														CIP and PIN
A.1.1.7. Plan and implement events to promote dissemination to indirect beneficiaries														CIP and PIN
A.1.1.8. Integrate OFSP production into FTCs' annual production plans and budgets														CIP and PIN
A.1.2.1. Conduct formative research on the key barriers and boosters to OFSP production and consumption. Develop SBCC and promotion strategy, including use of health baby toolkit (bowl/spoon)														Emory (concluded and available on internet)
A.1.2.2. Design, plan, and train health extension personnel on nutrition and SBCC techniques														PIN
A.1.2.3. Plan and implement series of participatory learning events for 15,000 women and 10,000 men participating in HLCs														PIN
A.1.3.1. Plan and implement rapid market assessment of sweetpotato value chain														CIP (reporting on seed system, assessment root market)

Activity	Year												Implementing body (comment)
	Half-year 7						Half-year 8						
	1	2	3	4	5	6	7	8	9	10	11	12	
A.1.3.2. Plan and implement support to improve supply of OFSP to the target urban markets													CIP
A.1.3.3. Design, develop, and test up to 3 OFSP-processed products in collaboration with the private sector													CIP (second trials)
A.1.3.4. Identify private sector partner and provide technical support for establishing 1 OFSP-processed product value chain													CIP, Hawassa University
A.1.3.5. Design and implement an OFSP promotion campaign in targeted urban areas													CIP, Hawassa University
A.1.4.1. Design and implement monitoring system for R1 & R2 targets													CIP, PIN, Emory
A.1.4.2. Design system for collecting disaggregated cost data developed, drawing on Phase 1 experience and collect data													CIP, PIN
A.1.4.3. Plan and implement baseline study on community-level intervention													CIP (document report)
A.1.4.5. Plan and implement longitudinal study on community-level intervention													Emory (reporting)
A.1.4.5. Plan and implement endline study on community-level intervention													CIP
A.1.4.6. Negotiate agreement with the regional and woreda bureaus of agriculture and Health on the integration of OFSP into their official extension systems													CIP
A.1.4.7. Plan and implement training for 30 new woredas on OFSP sweetpotato production & proposal writing and provide technical materials													CIP
A.1.4.9. Plan strategy for final write-up and dissemination of findings; implement the strategy													CIP

NOTE: This plan will cover the financial period between the interim report and the next report.

## ANNEX C. BENEFICIARIES/AFFILIATED ENTITIES AND OTHER COOPERATION

*1.1 How do you assess the relationship between the beneficiaries/affiliated entities of this grant contract (i.e., those having signed the mandate for the Coordinator or the affiliated entity statement)? Please provide specific information for each beneficiary/affiliated entity.*

QDBH is implemented by three entities: CIP, PIN, and Emory, with CIP having the coordinator position. The operational relationship with PIN is ensured by two mechanisms: PIN is represented on the steering committee by four elements and there are biweekly meetings between PIN project manager and the CIP project manager to ensure coordination in daily operations. These meetings are supplemented by incidental meetings. There is also a direct collaboration, for instance: (1) design and roll-out of irrigation equipment for FTCs, (2) selection of beneficiaries and implementation of vine dissemination, and (3) contacts at kebele level for HH listing and the study of the longitudinal and cross-sectional studies. The aim is to achieve full transparency in the communication.

The third partner, Emory University, no longer has a staff member present in Hawassa as its activities in the field have been completed. Communication with Emory is now ad hoc by email or via Skype. The Emory team participated in the African Potato Association meeting in Kigali. It delivered a keynote address on lessons learned on integrated agriculture-nutrition interventions that included QDBH activities and two posters presenting preliminary results from the longitudinal study.

*1.2 How would you assess the relationship between your and State authorities in the organisation Project countries? How has this relationship affected the Project?*

Interaction with the government covers four levels: regional, zonal, woreda, and kebele. At the regional level and zonal levels, relations with the BANRD are cordial. Zonal staff has been supportive and very much engaged with QDBH's actions. The relation with the ministry of health is less intensive and will be increased in 2020. A representative of the regional level participated in the stakeholder meeting; zonal and woreda and kebele staff participated in the ToTs in Chuko and Dilla organised by PIN. Staff of the BoH has participated in cooking demos.

There are signals that at the woreda and kebele level the coordination between CIP, PIN community facilitators, DAs, and kebele leadership has improved as PIN now provides regular information to the woreda offices. Meetings between CIP and PIN field staff are irregular. As PIN is the main interface of the project needs at grassroots level this has created some misunderstandings. However, all problems were resolved, and they did not have a significant bearing on the outcomes.

The midterm evaluation by the Bureau of Finance and Economic Development was extremely positive and another confirmation of the quality of the project's delivery at community level.

*1.3 Where applicable, describe your relationship with any other organisations involved in implementing the project.*

- The relation with SARI/HARC is intensive as it supplies trainers for the ToT and technical assistance for recipe development and cooking demos. It is the main responsible for variety selection and participated actively in the discussions about vine dissemination and variety assessment and in part of the associated field activities. HARC also participated in the clipping trials. Unfortunately, the HARC staff who has been the main connection has left.

- The relation with the Nutrition and Food Science School of Hawassa University is currently structured by one market promotion study and the setting up of a processor business together with CIP's BioInnovate project.
- Wolayta Sodo ATVET has become a key partner for the implementation of the ToT "Everything You Want to Know about Sweetpotato". In 2019 it again provided two instructors and five trainees. In total 10 ATVET staff have participated in the ToT since 2017. It has also incorporated elements of eight modules of the ToT training in its regular programme. While all lecturers are aware of OFSP, four of them are teaching subjects using OFSP as examples. The ATVET will also host and assume responsibility for the final, 2020 ToT.

*1.4 Where applicable, outline any links and synergies you have developed with other actions.*

- In collaboration with CIP's SASHA project (funded by the Bill and Melinda Gates Foundation), work was done with regard to the understanding of the seed system (traditional planting material production and sales by local multipliers) and the testing and dissemination of Triple S allowing interventions in two additional woredas (Wolayita Sodo and Hawassa Zuria).
- With CIP's capacity-building project financed by Irish Aid, the partnership with Wolayita, Sodo ATVET has been institutionalising the ToT on "Everything You Ever Wanted to Know ...".
- With the CGIAR's Research Programme on Roots, Tubers and Bananas, the project works on the promotion and scaling out of locally adapted Triple S techniques for the conservation of planting material.
- With Hawassa University, work is undertaken to develop an appropriate OFSP marketing strategy for the urban market in Hawassa.

*1.5 If your organisation has received previous EU grants in view of strengthening the same target group, in how far has this Action been able to build upon/complement the previous one(s)? (List all previous relevant EU grants).*

Not applicable.

## ANNEX D. VISIBILITY

The project's first deliverable was a communication strategy that showed how QDBH would ensure the visibility of the EU contribution. In line with this strategy during Y3 the following actions have been undertaken:

- Banners for the stakeholder meeting and the ToT training “Everything You Ever Wanted to Know about Sweetpotato” exposed at the entrance of the venue (three in total)
- Signs at the 42 FTCs benefiting from investments through the project.
- Banners during vine dissemination and HLC graduation events
- All materials that Emory has produced (curriculum, counselling card, dietary diversity wheel, and goal card) include the EU emblem and credit the EU for funding. Informed consent documents for data collection disclose the EU as the funder of the research. All reports, papers, presentations, and theses produced by Emory and derived from this project acknowledge the EU as the funding agency. They are available at <https://www.sweetpotatoknowledge.org/files/quality-diets-for-better-health-formative-nutrition-report/> and <https://www.sweetpotatoknowledge.org/files/quality-diets-for-better-health-healthy-living-clubs-curriculum/> [https://www.sweetpotatoknowledge.org/files/pres15\\_qdbh\\_designing\\_nutrition\\_education\\_for\\_behavior\\_change/](https://www.sweetpotatoknowledge.org/files/pres15_qdbh_designing_nutrition_education_for_behavior_change/) and <https://www.sweetpotatoknowledge.org/files/quality-diets-for-better-health-longitudinal-baseline-report/>
- Presence of QDBH at regional meetings under the Sweetpotato for Profit and Health Initiative.
- Presence at the triennial meeting of the African Potato Association in Kigali (August 2019) with four posters in total and a contribution to one of the keynote addresses.
- The gendered value chain study was published on the CGIAR website: <https://doi.org/10.4160/02568748CIPWP20191>. <https://cgspace.cgiar.org/handle/10568/106237>
- South TV and Radio broadcasting agency gave air time and broadcasting the news to the wider community. On December 9th it dedicated airtime to the launch of the new varieties. On December 27th at 6:40–6:55 am, South FM transmitted a 15-min special radio programme that mentioned project contribution and support in tackling VAD prevalence in the region through nutrition education and introducing new, vitamin A-rich (beta-carotene) OFSP varieties to 15,000 HH and 60,000 urban communities.
- FANA TV prepared and broadcast two programmes about the project as part of EU's visibility activities (Photo 9). The videos are also available on YouTube at <https://youtu.be/sGSxH1JKUXY> and <https://youtu.be/5xRP7ArAX2E>
- Text was prepared for EU's headquarters about the project: [https://eeas.europa.eu/delegations/ethiopia/70131/sustained-diet-quality-improvement-fortification-climate-smart-nutrition-smart-orange-fleshed\\_en](https://eeas.europa.eu/delegations/ethiopia/70131/sustained-diet-quality-improvement-fortification-climate-smart-nutrition-smart-orange-fleshed_en)



*Photo 9. FANA filming at Chuko bakery.*

The European Commission may wish to publicise the results of Actions. Do you have any objection to this report being published on the EuropeAid website? If so, please state your objections here.

No objections

Name of the contact person for the Activity:

Roland Brouwer .....

Signature: *Andy R. Brouwer* .....

Location: ...Hawassa, SNNPR, Ethiopia .....

Date report due: .....

Date report sent: .....



The International Potato Center (known by its Spanish acronym CIP) is a research-for-development organization with a focus on potato, sweetpotato, and Andean roots and tubers. CIP is dedicated to delivering sustainable science-based solutions to the pressing world issues of hunger, poverty, gender equity, climate change, and the preservation of our Earth's fragile biodiversity and natural resources.

[www.cipotato.org](http://www.cipotato.org)



CIP is a member of CGIAR.

CGIAR is a global research partnership for a food-secure future. Its science is carried out by 15 research centers in close collaboration with hundreds of partners across the globe.

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