



# **Rooting out Hunger in Malawi with Nutritious Orange-Fleshed Sweetpotato**

**Year 4 Project Proposal:  
November 2012–October 2013**

**With a Supplement for the Final 6 Months:  
November 2013 – April 2014**

**REVISED VERSION**

*Submitted to:*

Irish Aid

*Submitted by:*

International Potato Center (CIP)

## I. PROPOSAL OVERVIEW

**Country:** Malawi

**Title:** *Rooting out Hunger in Malawi with Nutritious Orange-Fleshed Sweetpotato*

**Document Status:** Funding request for the fourth year of a 4.5-year program, with a supplement for the remaining 6-month program period

**Overall Aim:** This is the fourth year of a 4 year program, with 6 additional supplement months, which seeks to improve vitamin A and energy intake for at least 70,000 rural households with young children (the group most vulnerable to vitamin A deficiency (VAD) using orange-fleshed sweetpotato (OFSP). By using a “1-2-3” seed system, combined with nutrition and market-based approaches, the project aims to stimulate demand for OFSP and ensure that by the end of the project, at least 20% of households growing OFSP will earn at least US \$100 per year from OFSP sales and their yields will increase by 50%.

The project aligns with the Agriculture Sector Wide Approach to food and nutrition security, and crop diversification. With Irish Aid support, CIP initially worked in partnership with government agencies and three NGOs as implementing partners (IPs) and targeted the four districts of Chikhwawa, Dedza, Phalombe and Zomba. The project established a “1-2-3” seed multiplication system, with clean planting material produced at a primary multiplication site, and decentralized vine multiplication sites (DVMs), doing multiplication at the community level. DVMs run by individuals or groups of farmers, with access to irrigation, were established by the IPs and supervised by district extension staff. Multiplication at the DVMs was termed secondary (vine production using rapid multiplication) or tertiary (production of both roots and vines, particularly during the hungry season). A subsidized voucher system was used by partners to allow at-risk households to purchase sweetpotato planting material from DVMs. Promotion, awareness campaigns and training/sensitization were held in each district to stimulate demand for OFSP. By February 2012, the project reached 34,903 households in 5 districts (including Mulanje) with subsidized vouchers, and an additional 27,522 beneficiaries through non-voucher sales. In total, 62,425 households grew OFSP in Malawi during the 2010 to 2012 growing seasons. This figure shows that we have achieved 89.2% of the 4 years and six month target number of households, after just 2 years of project implementation. In the 2012/2013 rainy season, 35,053 households have been registered for vouchers in the five districts of Dedza, Zomba, Phalombe, Mulanje and Chikhwawa under the management of Concern Universal (CU), Catholic Development Commission (CADECOM) and Millennium Villages Project (MVP). An additional 1,000 households in Balaka District, under CU, are eligible to receive vouchers since this is among the disaster areas in Malawi that have experienced a serious food shortage (maize). This makes a total of 36,053 household beneficiaries who have been registered and will receive subsidized vouchers. By the end of 2012, the project will have 7 IPs and 15 districts, but it will remain primarily focused in 5 districts relating to the 7 IPs.

The target number of households to be reached through the voucher system in Year 4 is 9,000 households, as compared to 15,000 households in Year 3. In addition, we observed that DVMs now earn 44% of their incomes from selling vines through local marketing to individual farmers and other development agencies. Thus, during Year 4 and the 6 supplemental months, we want to document and analyze this development closely with a focus on identifying a phasing out strategy for the subsidized voucher system. We expect that at the end of Year 4, the program target of 70,000 households will have been achieved.

The dissemination of OFSP with subsidized vouchers and local marketing in Malawi has so far reached more than 62,000 farming households through six integrated strategies:

1. Strengthening the partnership with relevant government agencies, NGOs, FAO and farmer organizations.
2. Using the 1-2-3 Seed Multiplication Systems.
3. Sensitization, visits, and field days.
4. Demand creation campaign through behavior change communication (theatre, dance, poetry, songs, and chitenje/wrapping clothes, flyers, posters, etc).
5. Using the program voucher system.
6. Training on sweetpotato seed multiplication, production, pest and disease management, postharvest, processing and utilization, and small-scale marketing.

Major efforts on nutrition awareness and market development for both fresh and processed OFSP products are supporting community-based capacity development to improve production and postharvest practices. Internal Monitoring and Evaluation of the program is on-going and will be further strengthened in Year 4, following the recruitment of an M&E Specialist and a Marketing Specialist.

In this proposal we include a supplement to cover the remaining six months of this first Phase from November 2013 to April 2014. The budget for this 6-month period has been prepared in a separate table.

**Sector(s) Focus:** Agriculture and Nutrition

**Implementing Partners:** International Potato Center (contractor), the National Agricultural Research and Extension Services, Concern Universal, Chikhwawa-CADECOM and the Millennium Village Project (sub-contractors). In addition, the following organizations are co-investing in collaborative activities under this program: Farmers Union of Malawi, FAO, WALA-CRS and Kachele Club.



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## 1. BACKGROUND AND JUSTIFICATION

### 1.1 Introduction

The project “Rooting out Hunger in Malawi with Nutritious Orange-fleshed Sweetpotato” funded by Irish Aid, is currently entering its fourth year of a 4.5-year program. This is the last request for funding under Phase I of this project. The project seeks to improve vitamin A and energy intake by at least 70,000 rural households with young children (the group most vulnerable to vitamin A deficiency) using OFSP. The project uses a 1 (“primary”), 2 (“secondary”), 3 (“tertiary”) vine multiplication system. Primary multiplication provides clean planting material and is managed by researchers at Bvumbwe Research Station; secondary and tertiary multiplications take place on farms and are managed by farmers under the supervision of government and extension personnel from nongovernmental organizations. This *decentralized vine multiplication* (DVM) approach has been tested and refined by this past year. DVM is carried out by either individual farmers or groups of farmers who supply clean OFSP vines to farmers in a catchment area of about 9km radius. In Malawi, this corresponds to the area of a Geographical Village Head (or *Group Village Head*). DVM sites are also used as locations for on-farm and demonstration trials. The 1-2-3 seed system is well aligned with the sweetpotato growing calendar in Malawi which has a uni-modal rainfall pattern. This system enables vine multipliers to supply sweetpotato vines and support root production throughout the year, thus expanding the growing season for this crop.

From an initial core of four districts, by January 2012, the project has covered 15 districts in all three regions of Malawi: southern, central, and northern. These 15 districts are Mzimba, Kasungu, Dowa, Lilongwe, Salima, Dedza, Balaka, Machinga, Zomba, Chiradzulu, Phalombe, Mulanje, Thyolo, Chikhwawa, and Nsanje. Our Implementing Partners Concern Universal (CU), Millennium Villages Project (MVP), Catholic Development Commission (CADECOM), Farmers Union of Malawi (FUM), FICA-FAO and Kachele Club are coordinating activities in their respected districts. A total of 169 DVMs (with a total of 28.04 ha under vine production) are ready to disseminate clean OFSP planting material by this coming rain season starting November/December 2012. While the expansion of OFSP areas is a clear indication of growing demand for quality vines, the Project will deepen its focus on the initial four districts and to some extent on Mulanje during Year 4 and the 6 supplemental months. In addition, the Program supports primary multiplication of six OFSP varieties on 6.5 ha at Bvumbwe Research Station. Primary multiplication continues to be important for backstopping DVMs with clean planting materials and for expanding the range of varieties available to these multipliers.

Vine multiplication is accelerated through use of the rapid multiplication method. By reducing the planting distance to 20 cm x 10 cm (50 plants per m<sup>2</sup>), vine multipliers can harvest up 1.5 million vine cuttings (30 cm long) after 2 months from 1 ha of Zondeni, the predominant OFSP variety in Malawi. They can harvest 6 times per year, thus producing 9 million vine cuttings from 1 ha in a year. This rapid multiplication method is practiced by primary and secondary multipliers. Tertiary multipliers are practicing modified conventional sweetpotato multiplication, doubling conventional plant population per area by planting in ridges at 15 cm x 75 cm intervals. This modified system serves a dual purpose by producing roots, as well as planting material.

At this moment, a primary multiplication is at Bvumbwe Research Station in Thyolo District Southern Region under the Department of Agricultural Research Services (DARS). The DARS is working to expand the primary multiplication sites to Central and Northern Malawi. Breeding activities on improving orange-fleshed and other sweetpotato varieties take place at Bvumbwe Research Station. This research station is equipped with a tissue culture laboratory, screen house and fields with irrigation. Six OFSP varieties have been released through this station. One of these improved OFSP varieties, Zondeni, is now widely grown by farmers in Malawi. Results from Zondeni yield estimate plots in the five implementing districts of Dedza, Zomba, Phalombe, Mulanje, and Chikhwawa in 2011 give an average yield of 18 metric ton/ha across the five

districts. This yield is significantly higher than the national average yield of sweetpotato reported in Malawi, which is 6 metric ton/ha (CIP, 2012).

## 1.2 Progress towards meeting target number of households

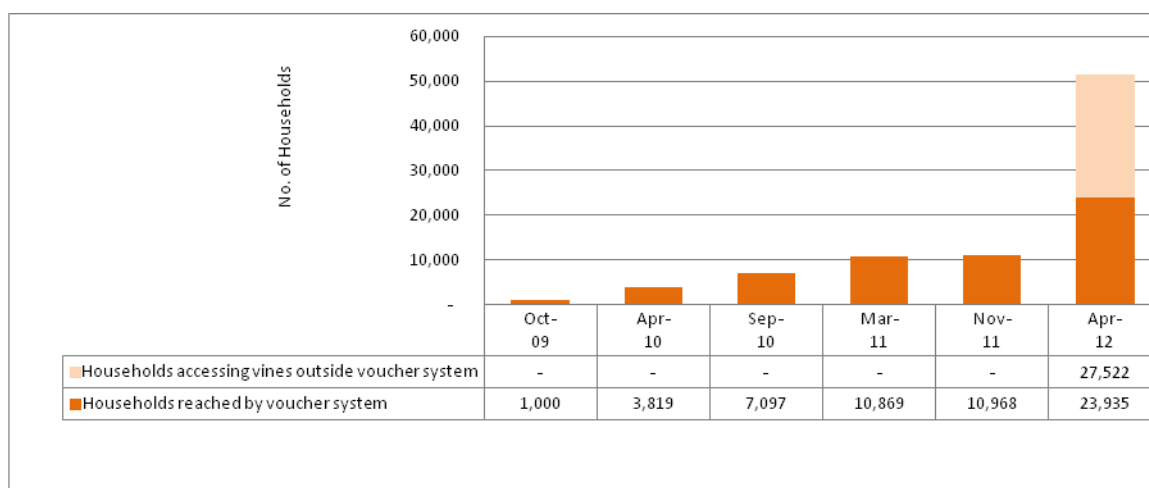
Year 1 of the project focused on setting up strategies and building capacity. There were only 1,000 beneficiaries targeted in the project proposal of this first year. No OFSP planting materials were available. The seed systems were unclear. A number of priorities were set up, including building up the 1-2-3 seed systems, capacity building on trainings, strengthening the capacity of Bvumbwe Research Station, sensitization, selection of multipliers, conducting awareness campaign on the importance of OFSP, and selection of beneficiaries to receive the OFSP planting material. By September 2010, 7,097 HH beneficiaries were interested in and registered to grow OFSP in the rainy season of 2010/2011. Eventually 10,968 beneficiaries received subsidized vouchers and all of them planted the OFSP (i.e., an increase of 3,871 HH above the initial number registered). The increasing numbers were due to an awareness creation campaign conducted in October 2010. In the rainy season of 2011/2012, this number increased tremendously. Currently, more than **35,000** HHs have been registered in 5 districts to receive the subsidized vouchers (Table 1). Furthermore, multipliers were able to sell the OFSP planting materials to local farmers and various organizations through the non-voucher scheme, and this contributed to the increase of the total number of households growing OFSP in the 2011/2012 rainy season. This trend is expected to continue in the 2012/13 rainy season as well, and further augment the number of subsidized households growing improved OFSP vines, as indicated in Figure 1.

**Table 1 Numbers of Beneficiaries Receiving OFSP Planting Materials through Subsidized Vouchers during the 2010/2011 and 2011/2012 Rainy Seasons and Projected for Year3 and Year4**

Partner	District	2010/11 rainy season (Y1)		2011/12 rainy season (Y2)		2012/13 rainy season (Y3) (projected)		2013/14 rainy season (Y4) (projected)	
		No. of hh	Area (ha)	No. of hh	Area (ha)	No. of hh projected	No. of hh registered	No. of hh	Area (ha)
Concern Universal	Dedza	4,733	32.0	3,000	20.3	3,000	3,500	1,800	-
Concern Universal	Phalombe	859	5.8	3,235	21.8	3,000	7,053	1,800	-
Concern Universal	Mulanje	-	-	3,492	23.6	3,000		1,800	-
Millennium Village	Zomba	3,250	21.9	8,000	54	3,000	17,000	1,800	-
CADECOM	Chikhwawa	2,126	13.7	6,208	41.9	3,000	7,500	1,800	-
<b>Total</b>	<b>5 districts</b>	<b>10,968*</b>	<b>73.4</b>	<b>23,935†</b>	<b>161.6</b>	<b>15,000</b>	<b>35,053**</b>	<b>9,000</b>	

\*5,562 females (51%) and 5,406 males (49%); †15,168 females (63%) and 8,767 (37%) males. \*\*Balaka District under Concern Universal has requested to have 1000 household beneficiaries to cover the people who have affected by prolonged drought this year.





**Fig. 1 Number of households accessing vines through voucher scheme and outside this scheme. Figures for 2009 are targeted farmers, for 2010 registered farmers, and for 2011 and 2012 farmers actually reached.**

Through the strong commitment by all partners, the program made rapid progress in meeting the target number of households. After two years, we reached a total of 62,425 households (HH) who grew sweetpotato from vines delivered through the subsidized voucher scheme and through local marketing. The program has a final target of reaching 70,000 HH after 4.5 years in April 2014. We have so far achieved 89.2% of this target after just two years of implementation.

The rainy season for 2012/2013 is expected to start in November, with early signs of rain having appeared districts like Mulanje, Chiradzulu, and Blantyre. At the moment, registration of beneficiaries for the subsidized voucher scheme is on-going with a seasonal target of 15,000 HH as budgeted in the Year 3 budget. Initial figures will be reported in the final 2012 Annual Report, and comprehensive figures in the 2013 Midyear Report.

A total of 4,075 lead farmers, government, and NGO extension staff have been trained since the project was launched in October 2009. From this total, 47% were females and 53% males. In the first 6 months of 2012 alone, 572 lead farmers and extension staff have been trained on OFSP production, multiplication, crop protection, postharvest handling, and OFSP processing. These were from the new expansion areas in Mzimba, Kasungu, Dowa, Lilongwe, Dedza, and Salima. Following this training, each trainer will train another 5–10 people in their communities. This method has been demonstrated to work well in Dedza, Phalombe, Mulanje, Zomba, and Chikhwawa through the Implementing Partners Concern Universal, Millennium Village Project, and Catholic Development Commission, respectively (CIP, 2012).

Strengthening small-scale business skills was included in the OFSP processing training module, in support of the income generation objective of the program. All participants received simple bookkeeping training. During the field day, groups of farmers successfully practiced the selling of OFSP products in Zomba, Phalombe, Mzimba, Salima and Kasungu. During the Salima field day on 5 July 2012, for example, the farmers club was able to market OFSP chips and chicken for MK 150 a portion (with a profit of Mk 80) and *mandazi* for Mk 25 per piece (with a profit of MK10). Farmers were grateful to have had this experience (CIP, 2012).

### 1.3 Gaps

During the first two and half years of implementation, the project made excellent progress towards meeting its objectives and targets. However, gaps in knowledge and delivery are emerging in a few areas where progress has been slower and on a few critical issues that weren't anticipated during project design. These gaps include effective partnerships with the private sector in seed multiplication, as OFSP seed systems will expand from their current nucleus to other districts guided in part by the DARS initiative to establish a further seven primary multiplication centers across all regions of Malawi. Secondly, the project needs to start

addressing nutrition education and communication more systematically to be able to target vulnerable households effectively and measure progress in this area. Thirdly, in many of the more remote areas, the capacity and conditions for small-scale business development and value chain upgrading are much more limited than in peri-urban environments, and the project needs to design and implement more nuanced approaches to enabling farmers, including the poor, in these areas to identify and seize opportunities along the sweetpotato value chain. This will need to be done in the last phase of the project. Finally, further research is required to verify and support farmers' own innovations in sweetpotato production (such as intercropping with soybeans), pest and disease management, and postharvest handling and storage.

#### 1.4 Alignment with Malawi's Agriculture Sector-wide Approach (ASWAp)

The project is closely aligned to Malawi's Agriculture Sector-wide Approach (ASWAp) and supports the achievement of the national Comprehensive Africa Agriculture Development Programme (CAADP) goals (Malawi Government 2010). Table 2 below summarizes the project's specific contributions to ASWAp Strategic Objectives. Overall, the project's main contributions are in the areas of strengthening nutrition security and awareness, expanding sweetpotato production, improving land management and strengthening institutional and productive capacity. With respect to the wider CAADP agenda, the project helps strengthen national research-for-development capacity and knowledge dissemination (Pillar IV) and enhances food and nutrition security (Pillar II). In doing so, the project furthers Malawi's progress towards achieving the Millennium Development Goals (MDGs), in particular in the areas of nutrition and health, education, gender, environment, and governance (MoAFS 2008).

**Table 2 Project contributions to Malawi's ASWAp Strategic Objectives**

Project Objectives	Corresponding ASWAp Strategic Objectives	Project Achievement (1 October 2009–30 June 2012)
1. To improve vitamin A intake for rural vulnerable groups in central and southern Malawi through effective establishment of DVMs and a media-based demand creation campaign.	<p><b>1.2.1.c:</b> Increase productivity of cassava, sweetpotato, yellow-fleshed sweetpotato, and Irish potato in relevant areas</p> <p><b>1.2.2.a:</b> Promote dietary adequacy</p> <p><b>1.2.2.b:</b> Improve quality of diets for the most vulnerable groups</p> <p><b>1.2.2.c:</b> Intensify nutrition education</p>	<p><b>1.2.1.c:</b> Number of farmers cultivating improved OFSP from clean vines totals <b>62,425 farmers</b> in Dedza, Zomba, Phalombe, Mulanje, and Chikhwawa districts by 2011/2012 planting season. Further expansion beyond project target numbers expected through project activities in Year 3 and Year 4 and through linked activities by FAO, FUM and local farmer clubs. Productivity of <i>Zondeni</i> sweetpotato variety reaches <b>18 mt/ha</b> under farm conditions with clean vines, tripling the national sweetpotato average of 6 mt/ha (1995), 8.7 mt/ha (1996) and 14.2 (2010) (FAO/FEWS 1995-2007 in Chipungu <i>et al.</i>, 2011).</p> <p><b>1.2.2.a:</b> Awareness campaigns in October 2010 and in Year 2 covering over 22 villages in five districts. Radio programs, field days and agriculture shows Current weekly radio broadcasts (Saturdays) organized by FUM and Zodiac Radio Broadcasting of Malawi, previously by NASFAM, have reached wide audiences throughout Malawi. Focus on nutrition value of OFSP, sourcing of vines, and good agronomic practice. Demand for quality vines has strongly increased and several vine multipliers are generating significant income from OFSP vine sales.</p> <p><b>1.2.2.b and 1.2.2.c:</b> Nutrition awareness through sensitization, training, and field days on the utilization and storage of roots and leaves is taking place at the district and extension planning area (EPA) levels. Three newly prepared modules for TOTs on utilization have been successfully tested in Mzimba, Kasungu, Dowa, Lilongwe, Dedza, and Salima districts from mid-February up to end of June 2012.</p>



Project Objectives	Corresponding ASWAp Strategic Objectives	Project Achievement (1 October 2009–30 June 2012)
<p><b>2.</b> Increase effective demand by changing the perception of sweetpotato and develop fresh root marketing chains for OFSP in the Blantyre market and reduce fluctuations in overall sweetpotato supply to the fresh market.</p>	<p><b>Key support service 2.a:</b> Conducting results and market-oriented research on priority technology needs and provision of technical and regulatory services</p> <p><b>Focus area 2.3.a:</b> Improve PPP for broader growth of the agriculture sector</p>	<p>Additional research expertise in marketing and M&amp;E has been recruited into the project on a cost-sharing basis with the Potato Program and will further support DARS programs in these technical areas.</p> <p>Universal Industries, a private food processing company, has committed investments in the OFSP value chain, testing different varieties provided by DARS for production of OFSP crisps and biscuits. Procurement of commercial equipment has been delayed due to macroeconomic situation in Malawi but is expected to proceed shortly.</p>
<p><b>3.</b> Increase the productivity and quality of sweetpotato in intensifying farming systems to ensure surplus production for sale and decrease the length of the hunger season.</p> <p><b>4.</b> Increase the capacity of DARS to produce clean, TC sweetpotato plantlets, maintain primary multiplication sites, and design and conduct seed systems and ICM research.</p>	<p><b>1.2.1.c:</b> Increase productivity of cassava, sweetpotato, and yellow-fleshed/OFSP, and Irish potato in relevant areas</p> <p><b>Key support service 1.a:</b> Institutional strengthening and development</p> <p><b>Key support service 1.b:</b> Capacity building</p> <p><b>Focus area 2.3.a:</b> Improve the PPP for broader growth of the agriculture sector</p> <p><b>Focus area 3.1:</b> Sustainable agricultural land management</p>	<p>Improved agronomic practices such as intercropping of sweetpotato with maize and soybeans, and improved 1-2-3 Sweetpotato Seed System are at various stages of research and dissemination and all have scope to contribute significantly to improved land management, generate surplus production and bridge hunger season at national scale.</p> <p>The Project is strengthening institutional capacity for research-for-development at Bvumbwe Agricultural Research Station (DARS) through infrastructure investments, training and collaborative research programs involving national and international scientists. This includes support to the tissue culture laboratory and establishment of a screen house and maintenance of 6.5 ha of land for primary multiplication of Zondeni OFSP variety and five other recently released OFSP varieties. These facilities are managed by DARS with backstopping by CIP. The Project supports secondary and tertiary multiplication by farmers under the supervision of NGO and government extension staff.</p> <p>The Project further provides partial support for the PhD research work of Ms. Piliirani Pankomera, a DARS scientist working on postharvest handling and storage of sweetpotato.</p>

### 1.5 Alignment with Scaling-up Nutrition 1,000 Special Days

“The Scaling-up Nutrition (SUN) 1,000 Special Days” initiative was launched in July 2011 by the Government of Malawi. Based on the recognized value of OFSP in meeting SUN nutrition goals, the Project was actively involved in the design of this initiative and was able to have OFSP prominently included among the six food groups in the Malawian diet<sup>1</sup>.

The project will also be closely linked into the SUN implementation process through several of our partners, including Concern Universal and the Farmers Union of Malawi, whose capacity for OFSP dissemination we have built and will continue to strengthen. Secondly, working from our five core districts, the Project has established links with SUN activities in the neighboring districts of Mzimba, Kasungu (under FAO), Dowa, Lilongwe (under FUM) and Salima (under Kachele Club). The direct aim of this collaboration is to assure that farmers involved in SUN activities can access improved OFSP planting material from the DVMs in neighboring districts. These are neighboring districts where the project has trained government extension (DAES), NGO extension staff and lead farmers in OFSP multiplication, integrated OFSP production, pests and diseases management, post harvest handling and OFSP processing, utilization and value chains (CIP, 2012).

In Year 4, we will expand our nutrition training-of-trainers to 50 Health Surveillance Assistants and 10 District Health Officers in the core districts. These trainers are expected to train another 5-10 people at the district level in OFSP storage, processing and utilization as has been successfully demonstrated in previous Project Years (CIP, 2011b, 2012).

<sup>1</sup> As an example, see the SUN counseling cards:

([http://xa.yimg.com/kq/groups/8890406/1989591493/name/Full%20Set%20of%20CC\\_24.7.2012\\_final.pdf](http://xa.yimg.com/kq/groups/8890406/1989591493/name/Full%20Set%20of%20CC_24.7.2012_final.pdf)).

## 2. OVERALL GOAL AND OBJECTIVES

The overall objective of the 4.5-year project is to improve vitamin A and energy intake for at least 70,000 rural households with women and young children using OFSP-based approaches, and to ensure that at least 20% of households growing OFSP earn at least \$100 per year from OFSP sales and increase their average sweetpotato yields by 50%.

Specific project end objectives include:

1. To improve vitamin A intake for rural, vulnerable groups in Malawi through effective establishment of DVMs and media-based demand creation.
2. Increase effective demand by changing the perception of sweetpotato, and develop fresh root marketing chains for OFSP in the Blantyre market and reduce fluctuations in overall sweetpotato supply to the fresh market.
3. Increase the production and quality of sweetpotato in intensifying farming systems to ensure surplus production for sale and decrease the length of the hunger season.
4. Increase the capacity of DARS to produce clean, tissue culture sweetpotato plantlets, maintain primary multiplication sites, and design and conduct seed systems and ICM research.

In support of these objectives, activities in **Year 4** (and in some cases for the final 6 months of the project) include the following:

### **Objective 1 (improve vitamin A intake through DVMs and demand creation):**

1. *Train Health Surveillance Assistants (HSAs).* Training 10 District Health Officers and 50 HSAs as trainers in the importance of Vitamin A OFSP processing and utilization by children and vulnerable households. It will be focused in the five districts of Dedza, Zomba, Phalombe, Mulanje and Chikhwawa where these districts are already advanced in OFSP production and utilization.
2. *Produce and broadcast radio programs on nutrition benefits of OFSP.* Conduct radio programs by interviewing knowledgeable farmers on OFSP and implementing partners in various implementing districts, DARS staff and Malawi Government like OPC - Nutrition Department.
3. *Consolidate and update M&E tools and implement intensified M&E plan.* Conduct beneficiary assessment survey. Develop M&E Plan, including tools for tracking progress. Conduct monthly M&E field visits for data validation & triangulation; Conduct periodic review (M&E) meetings with implementing partners.
4. *Survey of feeding practices and dietary habits of young children.* Conduct Survey assessments and produce Video Documentary in collaboration with Irish Aid and Bunda College. The video will focus on young child feeding practices and dietary.
5. *Produce and distribute promotional materials.* Print T-shirts and distribute during special occasions to prize farmers who realized more income through OFSP roots or vine sales. Manufacture wrappers (Chitenje) and sell to farmers through NGOs partners (the work is programmed for the additional 6 months activities). Print OFSP CIP Calendars in Chichewa and distribute this as a prize to those who win on competition of OFSP recipe.

### **Objective 2 (Increase effective demand and develop marketing chains for OFSP)**

6. *Provide ToT for Extension Staff and DVMs on OFSP processing* for the new implementing NGOs that are remaining in 8 districts and refreshing knowledge for Old DVMs by implementing partners in their respected district.
7. *Design and implement a Sweetpotato Value Chain Study.* Conduct Value Chain Analysis for Sweetpotato in Malawi.

**Objective 3 (Increase the production and quality of sweetpotato to ensure surplus production and decrease the length of the hunger season)**

8. *Provide ToT for Extension Staff and DVMs in five core districts on vine multiplication.* Train Extension Staff and DVMs (ToT) of implementing NGOs on multiplication, production, pest and disease management.
9. *Promote 'Triple S' technology drip irrigation kits for vine production in dry areas.* It is likely that Chikhwawa and Salima districts are experienced with erratic rainfalls. From our lessons learned in Years 2 and 3, introducing the Triple S and Drip irrigation kits have been benefitting farmers in this type of agro-ecological zone.
10. *Provide technical support to DVMs in five core districts for multiplication of newly released OFSP varieties, and provide DVM guidelines to DARS for dissemination in their new expansion districts.* This effort will enable DVMs in the five core districts to multiply newly released varieties and backstop DARS newly established primary multiplication sites. DARS will establish 7 primary multiplication sites in Southern, Central and Northern Regions of Malawi.

**Objective 4 (Increase the capacity of DARS for clean plantlets, primary multiplication, and seed systems and ICM research)**

11. *Multiply at least 20,000 clean plantlets in screen house to backup the availability of clean planting material for primary multiplication at Bvumbwe when needed.* Maintain 6 ha of OFSP at primary multiplication at Bvumbwe (Zondeni and five newly released varieties). This activity is related to the activity no. 9 that aims at strongly backstopping DARS.
12. *Continue pit and sand trials to improve storage of fresh OFSP roots.* Pit and Sand trial for fresh OFSP roots on station (Bvumbwe) and on-farm (Mzimba), the research is currently conducted by a PhD research from NARS and supported by the project.
13. *Conduct sweetpotato and soybean Intercropping Trial on station.* Conduct sweetpotato and soybean Intercropping Trial on Station with sweetpotato harvest at 3 different months. Soil sampling and analysis will be done before planting and after harvest.

### **3. TARGET GROUPS**

The principal target groups of the project are poor, rural women and their young children (6 months–5 years of age) in sweetpotato-producing areas. All implementing partners subscribe to these basic target group characteristics, but they may include additional selection criteria for their target groups such as income, health status (e.g. HIV), and access to water, according to their local priorities. Although children and women are a primary target group of the project, men will not be excluded from nutrition education and variety dissemination activities. This will ensure that they understand the importance of investing in nutritionally rich foods and good care-giving practices, as they influence what decisions are made and how well decisions are implemented at the household level. A second target group is urban consumers, many of whom rely on purchased foods. Slums in major Malawian cities and their associated peri-urban areas are expanding, and poor urban women and children would particularly benefit from a nutrient-rich root. The project engages with this target group in a more indirect way through value chain development and awareness creation and education. Understanding the range of preferences among high and low income consumers, concerning fresh roots, will enable farmers to better target their variety selection and marketing strategies to specific areas and target groups, and by doing so, will obtain more revenue from sweetpotato sales.

The project seeks to stimulate private sector investments in OFSP seed systems, production, processing and marketing. While private DVMs have quickly taken up business opportunities on

a small scale, investments in other segments of the value chain have been slower to materialize, in part because of unfavorable macro-economic conditions in Malawi over the past few years. Nevertheless, commercial OFSP vine and root producers are emerging in Blantyre and Kasungu and a commercial bakery is expected to move ahead with its investment in utilizing OFSP as wheat substitution now that conditions for importation of processing equipment are improving.

## **4. MAINSTREAMING OF POLICY PRIORITY AREAS**

### **4.1. Gender**

Gender is of central importance in the Rooting out Hunger project activities. Both female and male farmers will be equally involved in program implementation, including trainings and meetings. Most female farmers in remote project locations are illiterate, providing a potential constraint to their full participation in some of the trainings (CIP, 2012). Nevertheless, through targeted efforts the program managed to achieve close to equal participation, with females making up 47% of trainees and males 53% (out of a total of 4,075 individuals). Among farmers participating in Decentralized Vine Multiplication, 48 were females and 52 were males, during the 2010/2011 rainy season, while the numbers changed to 38 women and 62 men in 2011/2012. However, among project beneficiaries receiving OFSP vines from these multipliers, the ratio of females has increased over the two years. In 2010/2011, 5,562 females and 5,406 males received vines, while in 2011/2012 the project reached 15,168 females and 8,767 males. This is an indication that implementing partners have prioritized the participation of women in line with the overall project objectives, and that they have been successful in targeting women as vine multipliers and vine recipients. Beyond promoting the participation of women in agricultural innovation, the project also emphasizes the importance of better understanding the gender dimension of OFSP production, marketing and consumption. In Year 4, this will become a particular focus in the participatory value chain assessment and in the upgrading of the M&E tools and framework.

### **4.2. Improved Nutrition for People with HIV and AIDS**

The HIV/AIDS crisis has affected the availability of adult labor in many SSA countries (Lisk 2002, Chaminuka *et al.* 2006, Arrehag *et al.* 2010). Compared to many other crops, sweetpotato with its flexible planting and harvesting times, requires few inputs and relatively less labor, making it particularly suitable for households threatened by diseases such as HIV/AIDS for better managing their food needs (Jayne, *et al.*, 2004). All sweetpotato varieties are good sources of vitamins C, E, K, and several B vitamins but only OFSP has pro-vitamin A. Research in South Africa (Jaarsveld, *et al.*, 2005) has demonstrated the efficacy of OFSP as a bio-available source of vitamin A, and community-level research in Mozambique (Low, *et al.*, 2007) has shown that an integrated approach using OFSP can reduce VAD within a resource-poor population.

The Government of Malawi is strongly committed to supporting improved nutrition security as a pillar in the national strategy to combat HIV/AIDS spearheaded by the Department of Nutrition, HIV and AIDS in the Office of the President and Cabinet (OPC). The project is working closely with the DON to ensure that the nutrition benefits of OFSP become available to large numbers of People Living with HIV/AIDS (PLHIV) through national programs. At the community level, this partnership has generated successful examples of farmer groups comprising PLHIVs who have improved their dietary diversity and nutrition security through OFSP, often led by women who have become economic and social role models in their communities. In Year 4 and the 6 supplemental months, the project will follow through with further technical support to these groups to facilitate their transition towards market-based vine multiplication and distribution and their links with nutrition and education programs as a way to access sustained technical advice for their members. At a programmatic level, the project is producing technical guidelines, training models and enhanced capacities amongst agricultural and health/nutrition staff that supports the broad dissemination of OFSP as a nutrition component in national HIV/AIDS programs.

### 4.3 Environment

Climate change, through rising temperatures and greater variability of rainfall, is significantly affecting agricultural productivity and production in Malawi and the wider Southern African region with potentially far-reaching implications for food and nutrition security, and for the livelihoods of the rural poor. In this context, sweetpotato is considered a robust crop that is already well adapted to production requirements in vulnerable locations, and that has great scope for further adaptation to changing climatic conditions through varietal development and improved agronomic practices. Breeding for drought resistance is the core priority of the project's breeding program in Malawi, delivered through DARS's National Sweetpotato Program, and supported by parental populations developed through CIP's sub-regional sweetpotato platform for Southern Africa. In Year 4 and the 6 supplemental months, the project will sustain this support to the National Program, focused on the project's five core districts and Bvumbwe Research station, while also providing quality assurance support to DARS's expansion program into new districts. In the longer-term, and depending on additional resources, CIP is interested in supporting DARS to establish adaptive research capacities throughout the country that will be able to fully exploit the food and nutrition security potential of OFSP across different climatic and ecological conditions.

In addition to the breeding work, the project also supports improved agronomic practices to enhance resilience and productivity of local farming systems under changing climatic conditions. So far, activities have included integrated crop management, intercropping of maize and sweetpotato, and introducing drip irrigation. During Year 4 and the 6 supplemental months, the project will extend this work to soybean – OFSP intercropping and disseminating 'triple S' (root storage for vine production) technologies in drought-prone areas of Project core districts.

### 4.4 Governance

As an agriculture research-for-development effort, the project pays close attention to mainstreaming good governance into its activities and partnerships to ensure that research outputs can lead to sustained development impacts. There are two levels at which the project promotes good governance:

- (i) Internally, through its management structure and processes: The project provides technical oversight by the Ministry of Agriculture and Food Security to ensure that activities are in line with government policies and priorities. CIP provides additional scientific backstopping through its national, regional and global offices in support of the national agenda. This relationship sets an example for proper national oversight of international agricultural research in Malawi. In terms of operational and financial accountability, the Project builds the capacity of local implementing partners to adhere to internationally acceptable standards in planning, implementation and reporting. This support contributes to improving governance among rural development agencies in Malawi.
- (ii) Along the research-for-development value chain: The project promotes and documents participatory research approaches that support accountability of research investments to farmers and other primary stakeholders. While individual research activities continue to take place at specific research locations, such as research stations or farmers' fields, the project ensures that relevant stakeholders contribute to identifying the research agenda, are kept informed of research progress and share in the discussions of research results and dissemination strategies. Tools for achieving this stakeholder ownership include farmer field days and researcher-farmer meetings to solicit and discuss feedback on varietal development and agronomic trials, public forums to present and discuss research results and future priorities, and regular communications through media to strengthen public awareness of on-going agricultural research.

## 5. YEAR 4 IMPLEMENTATION PLAN

The Year 4 implementation plan includes the continuation and scaling up of research and development activities initiated in Years 1, 2 and 3, as well as the start-up of several new activities. No major changes to the original project document are proposed. The main emphasis during Year 4 will be on strengthening capacity for vine multiplication among DVMs and on-station, and on understanding and harnessing opportunities arising from the expansion of the OFSP value chain in Malawi. We will continue with the dissemination of Zondeni OFSP variety through DVMs in target districts, but will also start the release of new OFSP varieties from Bvumbwe. We will assess selected agronomic and post-harvest innovations by farmers growing Zondeni, analyze local markets for improved OFSP vines and roots, evaluate emerging private sector initiatives in OFSP product development, and support nutrition awareness and education efforts to build further demand for OFSP. In support of these activities, and guided by the new Monitoring and Evaluation Specialist, the project will consolidate and update its M&E tools and practices involving all Implementing Partners. This will help strengthen our evidence base and facilitate learning among project partners, in preparation for scaling-out activities during a Second Phase of the project. The main technical components of the Year 4 work plan are as follows:

*Primary multiplication* At Bvumbwe Research Station, we will continue to strengthen capacity for in-vitro multiplication and maintenance of clean planting material. The 6 ha of land for field multiplication of clean planting material will be maintained for a constant flow of clean planting material to the DVM system, and to support the DARS breeding and research program. Plantings for newly released varieties will be established using material from the in-vitro laboratory, and a trial will be conducted to compare the performance of newly derived (G0) material with planting material obtained from the second year multiplication (G1 and G2). Furthermore, hill selection will be used to evaluate the potential of selecting superior plants, which will be transferred to in-vitro as mericlones to be returned to the field for performance testing in the 2013/2014 rainy season. Following DARS release of new OFSP varieties in September 2011, priority will be given to multiplying these materials so that farmers have a choice between at least two different OFSP varieties.

*Decentralized Vine Multiplication* Secondary DVM sites will use rapid multiplication, while tertiary DVM will use adjusted conventional multiplication to allow production of both planting material and storage roots for consumption. Training materials have been developed for use at DVM sites and these will be used for capacity building of vine multipliers in new locations as well as resource/ training centers on sweetpotato. During Year 4, training will refocus on DVM locations in the five core districts of Chikhwawa, Dedza, Mulanje, Phalombe and Zomba.

*Voucher System* The project will expand its subsidized voucher system to an additional 9,000 beneficiary households. As in previous years, DVM farmers will be contracted to supply clean OFSP planting material to beneficiaries. During 2012, independent procurement of OFSP vines from DVM sites by local farmers and by other projects has increased and has contributed to the expansion of OFSP production. This could happen with the involvement of the private sector. Meanwhile, in 2012, the expansion of the program occurred. Three NGOs in 10 respected districts have joined the OFSP program. A number of DVMs have been established. We expect that the mass dissemination of OFSP could reach many more Malawians. With sharing information on the monitoring of the household beneficiaries who have received and planted the OFSP, it is possible to achieve the number of beneficiaries greater than 70,000 households. Simultaneously, the project will continue the dialogue with related projects and programs that are sourcing vines from DVM sites to ensure harmonized approaches and joint monitoring of subsidized vine distribution in additional districts.

*Value chain development* There are strong opportunities to develop the OFSP value chain in Malawi to serve both rural and urban market demand. A Marketing Specialist has been



recruited (cost-shared with the Potato Program) to lead the assessment of these opportunities during Year 4. The project has already established specific interests by Universal Industries Ltd. in utilizing OFSP for vitamin A-rich biscuits and crisps. The project will continue to promote fresh OFSP roots in higher value markets through supermarkets (Food Zones, Lilongwe) and hotels (Sunbird, Annie's Lodge, Victoria Hotel).

*Nutrition awareness* We will expand and upgrade project activities to increase awareness of the nutrition benefits and effective utilization of OFSP. In Year 4, we will train rural Health Surveillance Assistants (HSAs) on the importance of Vitamin A and OFSP processing and utilization to support pregnant and lactating women and their young children. The focus will be on areas of established OFSP production in the five districts of Dedza, Zomba, Mulanje, Phalombe and Chikhwawa. A range of promotional materials and broadcast media radio will be used to encourage production and consumption of OFSP. The Marketing and M&E Specialists will support the project leader in designing and monitoring this set of activities.

*Impact assessment* With the recruitment of the Monitoring and Evaluation Specialist (cost-shared with the Potato Program, but based at Bvumbwe) the project is now strongly positioned to consolidate and update its M&E tools and approaches. All Implementing Partners will participate in the design and implementation of M&E activities to document and analyze the performance of the project's vine multiplication scheme, value chain development and awareness creation activities. This will include closer assessments of both DVM farmers and beneficiary households. Towards the end of Year 4, the project will carry out an external end of project evaluation in consultation with Irish Aid.

Table 3 lists the key activities to be undertaken in Year 4 and the final 6 months of the project, together with the related outputs and program outcomes expected.

**Table 3 Project activities, and expected Outputs for Year 4 and the final 6 months of the project**

<b>Project Goal after 4.5 years</b>	<b>Improve vitamin A and energy intake for at least 70,000 rural households with young children use orange-fleshed sweetpotato-based approaches, ensure that at least 20% of households growing OFSP earn at least \$100 USD per year from OFSP sales, and increase average sweetpotato yields among participants 50%.</b>	
<b>Objective 1</b>	<b>To improve vitamin A intake for rural households with young children and adults in Malawi through effective integration of OFSP into multi crop food security programs.</b>	
<b>Year 4 + 6months Activities</b>	<b>Outputs</b>	<b>Indicators which are going to track to assess progress</b>
<b>1.1</b> Train Health Surveillance Assistants in the Importance of Vitamin A, OFSP processing and utilization by children and vulnerable households.	<b>1.1</b> Increased knowledge of Health Surveillance Assistants on the importance of Vitamin A to under five children and pregnant women.	<b>1.1</b> 50 HSAs and 10 District Health Officers are going to be the trainers in the respective district, i.e. Dedza, Zomba, Phalombe, Mulanje and Chikhwawa. Each trainer will train another 5 to 10 people.
<b>1.2</b> Produce and broadcast radio programs on nutrition benefits of OFSP, featuring farmers, implementing partners, DARS and nutrition agents.	<b>1.2</b> Increased public awareness and knowledge of OFSP.	<b>1.2</b> By choosing the widely covered radio program (all over Malawi), i.e. Zodiac and MBC, many more Malawians are aware of the benefits of OFSP and the role of Vitamin A.

<b>1.3</b> Consolidate and update M&E tools and implement intensified M&E plan with all implementing partners.	<b>1.3</b> Improved monitoring of activities and documentation of project impact.	<b>1.3</b> Enhanced capacity for evidence based policy and support services.
<b>1.4 End of the project evaluation</b>	<b>Improve understanding of project lessons and impact</b>	<b>Feeding the lessons into the programming next phase</b>
<b>1.4</b> Provide ToT for Extension Staff and DVMs on vine multiplication, production, pest and disease management.	<b>1.4</b> Enhanced capacity of extension staff and DVMs to support OFSP vine multiplication and production.	<b>1.4</b> Improved access to clean OFSP vines by smallholder farmers.
<b>1.5</b> Provide ToT for Extension Staff and DVMs on OFSP processing and utilization.	<b>1.5</b> Enhanced capacity of extension staff and DVMs to support OFSP processing and utilization.	<b>1.5</b> Improved OFSP processing and utilization at community level.
<b>Objective 2</b>	<b>Increase effective demand by understanding current young child feeding practices and dietary habits, changing the perception of sweetpotato and more efficient fresh root markets in Blantyre area and reduce fluctuations in supply to the fresh market.</b>	
<b>Activities</b>	<b>Outputs</b>	<b>Indicators which are going to track to assess progress</b>
<b>2.1</b> Design and implement survey of feeding practices and dietary habits of young children.	<b>2.1</b> Improved understanding of feeding practices and diets of young children.	<b>2.1</b> Many young children are found healthy
<b>2.2</b> Produce promotional materials, including T-shirts, chitenje and calendars, and distribute these through recipe competitions and farmers clubs to raise awareness of OFSP role in improving child nutrition.	<b>2.2</b> Increased public awareness of OFSP role in improving child nutrition.	<b>2.1</b> Increased demand for OFSP by a wide range of stakeholders.
<b>2.3</b> Design and implement a Sweetpotato Value Chain Study in Malawi. This will include an assessment of market demand, marketing practices, gross margins, enterprise linkages, and gender in the value chain. Value chains for vines, fresh roots and processed products will be included.	<b>2.3</b> Sweetpotato value chain in Malawi analyzed and better understood by stakeholders. Entry points for support and investment in OFSP value chain development identified together with farmers and private sector businesses.	<b>2.2</b> Revenues from sweetpotato sales for farmers linked to market increased. At least half of those increased revenues accruing to women.
<b>Objective 3</b>	<b>Increase the productivity and quality of sweetpotato in intensifying farming systems to ensure surplus production for sale and decrease the length of the hunger season</b>	
<b>Activities</b>	<b>Outputs</b>	<b>Indicators which are going to track to assess progress</b>
<b>3.1</b> Provide technical support to DVMs in five core districts for multiplication of newly released OFSP varieties, and provide DVM guidelines to DARS for dissemination in their new expansion districts.	<b>3.1</b> DVMs capacitated to multiply new OFSP varieties.	<b>3.1</b> Farmers have access to 6 OFSP varieties and have opportunities to choose the varieties that they prefer.
<b>3.2</b> Promote 'Triple S' technology for vine production in drought prone areas to support timely planting after long dry seasons.	<b>3.2</b> Good practice 'Triple S' technology identified, adapted to drought prone areas in Malawi.	<b>3.2</b> Farmers in drought prone locations improve their OFSP production through timely planting.
<b>3.3</b> Conduct trials to optimize the	<b>3.3</b> Best options identified and	<b>3.3</b> DVMs and farmers improve

use of small-scale irrigation, using drip irrigation kits, for vine and root production.	documented for vine and root production using drip irrigation kits.	and intensify vine and root production.
<b>Objective 4</b>	<b>Increase the capacity of DARS to produce clean, tissue culture sweetpotato plantlets, maintain primary multiplication sites, and design and conduct seed systems and integrated crop management research.</b>	
<b>Activities</b>	<b>Outputs</b>	<b>Indicators which are going to track to assess progress</b>
<b>4.1</b> Multiplying at least 160,000 clean plantlets in screen house at Bvumbwe.	<b>4.1</b> Bvumbwe Research Station has established and manages capacity for producing 54,000,000 clean planting material per year.	<b>4.1</b> Reliable supply of clean planting materials for primary multiplication in Malawi.
<b>4.2.</b> Maintain 6 ha of 6 OFSP varieties at primary multiplication at Bvumbwe Research Station and provide guidelines for establishing new primary multiplication sites as part of DARS expansion.	<b>4.2</b> Adequate primary multiplication capacity at Bvumbwe maintained and sound technical advice provided for expansion sites.	<b>4.2</b> Reliable supply of clean planting materials for secondary and tertiary multiplication through DVMs and farmers.
<b>4.3</b> Continue pit and sand trials to improve storage of fresh OFSP roots on station (Bvumbwe) and on-farm (Mzimba), as part of PhD research by NARS scientist.	<b>4.3</b> Improved technologies and practices identified to enhance storage of fresh OFSP roots.	<b>4.3</b> Post-harvest handling and storage of OFSP improved.
<b>4.4</b> Conduct sweetpotato and soybean Intercropping Trial on station.	<b>4.4</b> Performance of sweetpotato and soybean intercropping assessed by DARS in response to farmer demand.	<b>4.4</b> Farmers' agronomic innovations involving OFSP assessed and supported by DARS.

Table 4 provides a timeline for activities during Year 4 and the final 6 months of the project.

**Table 4 Gantt Chart of Project Activities in Year 4 and Final 6 months (1 Nov. 2012–30 April 2014)**

Activity	2012		2013												2014			
	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A
<b>Objective 1: To improve vitamin A intake for rural households with young children and adults in Malawi through effective integration of OFSP into multi crop food security programs.</b>																		
<b>1.1</b> Train Health Surveillance Assistants.																		
<b>1.2</b> Produce and broadcast radio programs on nutrition benefits of OFSP.																		
<b>1.3</b> Consolidate and update M&E tools and implement intensified M&E plan.																		
<b>1.4</b> End of program evaluation																		
<b>1.5</b> Provide ToT for Extension Staff and DVMs on vine multiplication.																		
<b>1.6</b> Provide ToT for Extension Staff and DVMs on OFSP processing.																		
<b>Objective 2: Increase effective demand by understanding current young child feeding practices and dietary habits, changing the perception of sweetpotato and more efficient fresh root markets in Blantyre area and reduce fluctuations in</b>																		

<b>supply to the fresh market.</b>																			
2.1 Survey of feeding practices and dietary habits of young children.																			
2.2 Produce and distribute promotional materials.																			
2.3 Design and implement a Sweetpotato Value Chain Study.																			
<b>Objective 3: Increase the productivity and quality of sweetpotato in intensifying farming systems to ensure surplus production for sale and decrease the length of the hunger season</b>																			
3.1 Provide technical support to DVMs in five core districts, and guidelines for DARS expansion.																			
3.2 Promote ‘Triple S’ technology for vine production in dry areas.																			
3.3 Conduct trials on drip irrigation for vine and root production.																			
<b>Objective 4: Increase the capacity of DARS to produce clean, tissue culture sweetpotato plantlets, maintain primary multiplication sites, and design and conduct seed systems and integrated crop management research.</b>																			
4.1 Multiply at least 20,000 clean plantlets in screen houses at Bvumbwe.																			
4.2. Maintain 6 ha of OFSP at primary multiplication at Bvumbwe.																			
4.3 Continue pit and sand trials to improve storage of fresh OFSP roots.																			
4.4 Conduct sweetpotato and soybean Intercropping Trial on station.																			

## 6. MANAGEMENT ARRANGEMENTS

### 6.1. Administrative Structure and Reporting Mechanism

CIP will have overall technical, management and financial responsibility for the project, and will ensure that all implementing partners follow international standards of accountability. The CIP Regional Finance Officer conducts annual internal audits of the project, including project components implemented by partners. As the contracted entity, CIP will provide all financial and technical reporting to Irish Aid through mid-year and annual reports. Stakeholders will hold an annual stakeholders meeting to assess project progress. As in previous years, a CIP Senior Scientist will serve as Project Leader and will ensure technical quality of the research and capacity building work, foster partnerships with relevant stakeholder groups, oversee day-to-day management, and ensure that results are disseminated locally, nationally, and in international fora and publications.

The M&E Specialist will support the project leader in designing research activities, in designing a common monitoring tool for varietal dissemination, measuring nutritional and income, and conducting a gender assessment. The M&E Specialist will facilitate the design for the project leader, and will implement the monitoring and evaluation system. The role of the Communication Specialist is to support the project leader in designing a quality Information Education and Communication (IEC) materials and promoting the OFSP project funded by Irish Aid to be recognized worldwide.

Implementing Partners will meet and design a common monitoring tool so that varietal dissemination is captured, nutritional and income indicators measured, and gender integration can be assessed. The new M&E Specialist, based at CIP in Blantyre, at the Bvumbwe Research Station, will facilitate sessions and design and implement the M&E system.

In marketing activities, the new Agricultural Economist at CIP in Lilongwe, plays an important role in monitoring the participation of women to ensure that men do not “take over” as sweetpotato becomes a more commercialized crop. A baseline survey has been conducted at the beginning of the project, and an impact assessment will be conducted in the last 6 months of the project. All aspects of the project will be assessed by both specialists, with special attention paid to reaching output targets stipulated in Table 3. As part of the evaluation, a workshop with all stakeholders (farmers, traders, researchers, implementation partners, Irish Aid, government officials) will be held at the end of the year to present the project’s phase one findings, and to discuss proposed activities for phase two. In phase one, a cost-effective model for going to scale will be designed and tested, and if successful, will be followed by a detailed study of the cost-effectiveness of going to scale.

## **6.2 Financial and Technical Contribution from Partners**

**Contribution from CIP:** CIP provides the technical backstopping, overall coordination, and financial management on all aspects of the project, including:

- Contracting and coordination of implementing partners, project management and administration, accounting services, and capacity strengthening.
- A bank account for revolving fund from vine sales by DARS should be created. The sweetpotato planting material has produced and maintained with the project funds. This money is to be used only to sustain the production of quality seed so DARS will not depend on the project funds in the future. The account will be shared with the potato project with a clear separate record.
- Science leadership: Senior Sweetpotato Specialist (full-time), Marketing Specialist (50% of time), and Monitoring and Evaluation Specialist (50% of time)<sup>2</sup>.
- Research design and implementation to improve OFSP vine multiplication, production and utilization; market feasibility studies;
- Training of Trainers in collaboration with DARS.
- Supply of OFSP populations for national breeding program to incorporate.
- Test kits for virus detection and others.
- Preparation of technical and financial reports.

**Contribution from DARS:** The GoM will provide through its national research program:

- A national sweetpotato breeder, who will be the principal counterpart of the CIP Senior Scientist.
- Access to tissue culture facilities for maintaining clean germplasm.
- Land for primary multiplication of material.
- At least two research officers who will help ensure the quality of primary and secondary multiplication and monitoring.
- At least two technicians to assist in field trials.
- At least two technicians to be trained in tissue culture and germplasm maintenance.

**Contribution from the Public Sector and NGO Extension Services (DAES):** The MoAFS will permit public sector extension agents in sweetpotato-growing sites to be trained in improved agronomic practices and help identify and train seed multipliers. NGOs already involved, or

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<sup>2</sup> The Marketing and M&E Specialists are cost-shared (50%) with the CIP Potato Program also funded by Irish Aid.

intending to engage in sweetpotato production, nutrition education, and/or marketing activities will provide extension personnel to be trained by project personnel, and provide subsequent logistical support to enable agents to implement what they are taught. Small-scale irrigation infrastructure provided by Concern Universal is well appreciated and it will be used in vine multiplication in Year 4 as far as technically feasible. The Department of Nutrition, HIV and AIDS will contribute to the design of the nutrition component and to the organization of seminars and other media events to promote food-based approaches utilizing OFSP. The activities will be aligned with the SUN 1000 Special Days initiative.

For Year 4, we intend to partner with related but independent initiatives promoting OFSP in Malawi. These include programs by CRS-WALA, FAO, the Farmers Union of Malawi and Kachele Club (a local farmer association) for OFSP multiplication, dissemination and promotion as follows:

- WALA-CRS is the lead agency and grant holder on a food security program implemented by a consortium of seven partners: Africare (working in Mulanje district), Emmanuel International (in parts of Zomba and Machinga district), Project Concern International (in Balaka and parts of Machinga districts), Total Land Care (in Nsanje district), Save the Children (in Chiradzulu and parts of Zomba districts), World Vision (in Thyolo district), and ACDI/VOCA (providing agribusiness technical support).
- FICA-FAO is interested using OFSP in their food and nutrition security programming in Kasungu and Mzimba target districts.
- The Farmers Union of Malawi (FUM) is a lead stakeholder in the Scaling up Nutrition initiative and in raising public awareness of the importance of bio-fortified crops. Their target districts for OFSP related activities are Dowa, Lilongwe (Mitundu Trading Center) and Dedza (Mayani Trading Center).
- Kachele Club is a farmers' club in Salima (10 men and 37 women) growing vegetables on a 15 acre communal plot of land irrigated from 10 wells through treadle pumps. Kachele club has participated in DVM training and established several OFSP multiplication plots. They have now started to reach out to local farmers and institutions, including schools, for selling vines and have provided training to other local farmers clubs for secondary and tertiary multiplication.

### **6.3 IRISH AID**

Irish Aid is being asked to provide financial support and also to assist in technical guidance to this project for the remaining 18-month period. We also are asking Irish Aid to support advocacy for improved nutrition with national and regional policy makers and promote the value of OFSP in international hunger fora.

## **7. Exit Strategy and Sustainability**

### **Training**

- A total of 4,075 lead farmers, government, and NGO extension staff have been trained since the project was launched in October 2009. From this total, 47% were females and 53% males. In the first 6 months of 2012 alone, 572 lead farmers and extension staff have been trained on OFSP production, multiplication, crop protection, postharvest handling, and OFSP processing (Referred to Section 1.2). The detailed information on this training could be found in the Midterm Report of Year 3 submitted in July 2012.

### **Strengthening partnership**

- By January 2012, the project has covered 15 districts scattered along the three regions of Malawi (i.e., southern, central, and northern). These 15 districts are Mzimba, and Kasungu under FAO; Dowa, Lilongwe and Dedza under FUM; Salima (Kachele Club), Dedza and Balaka under CU; Machinga, Zomba, Chiradzulu, Phalombe, Mulanje, Thyolo, Chikhwawa, and Nsanje (WALA-CRS); Zomba (MVP); Chikhwawa (CADECOM). By



introducing the OFSP program in the ten new districts, one would contribute to the Millennium Development Goals and the Agriculture Sector Wide Approach (ASWAp), which focuses on food and nutrition security in Malawi.

It is noticed that Mzimba, Dowa, Lilongwe, Salima and Dedza are the districts where the pilot program of the “SUN 1000 Special Days” initiative is taking place. The IPs who are managing these districts are involved in the SUN project activities as well. In this way, the *Rooting out Hunger* project activities strongly align with the program of SUN in Malawi.

Mulanje, Thyolo, and Lilongwe districts (Mitundu Trading Center) comprise the so-called “sweetpotato belt” in Malawi. White- and yellow-fleshed sweetpotato varieties are predominantly grown and commercialized in these areas. Thus, we have to introduce and disseminate the OFSP into these areas. At the last three trainings for postharvest handling and OFSP processing, the chief of this area declared and encouraged his people to grow OFSP and took care of the planting materials. *The Rooting out Hunger in Malawi* project has shown evidence of strong partnerships at all levels.

### **Establishment of 1-2-3 Sweetpotato Seed Systems**

- At the primary multiplication, we have six OFSP varieties. One OFSP variety, Zondeni, has been widely disseminated whereas the other five are yet to be distributed to all DVMs by this coming rain season. The new varieties were released by the Department of Research Services (DARS) on 8 September 2011. The names of varieties are Anaakwanire (“enough for children”; original name was BV07/028), Chipika (“big log”; original name was LU06/0527), Mathuthu (“big heap of roots”; original name was LU06/0146), Kadyaubwerere (“eat and come back to eat again”; original name was LU06/0252) and Kaphulira (“early maturity”; original name was LU06/0428). The Secondary (“2”) and tertiary (“3”) vine multiplications were established when the project was launched in Malawi (Year 1)—that is, 1 October 2009–30 September 2010. The DVMs could only provide the OFSP clean planting materials for the first in the 2010/2011 rain season, which started in November 2010. The total number of DVMs was 133 and covered 5.8 ha. During the second year of the project (1 Oct. 2010–31 Oct. 2011), we increased them to become 146 and covered the land of 26.5 ha for the distribution of the rain season of 2011/2012, exactly in December 2011. Assuming this system goes well, we can expect to have the clean OFSP planting material and produce the sweetpotatoes throughout the year. Monitoring on pest and disease incidence at DVM level is strikingly important. Good teamwork amongst relevant government departments, researchers, extension staff, and farmers/private sectors is contributing to the success of the seed system. Currently, the attempt to achieve this success is still underway. During phase one, emphasis is placed on building technical and management capacity essential for assuring sustained sweetpotato vine production by establishing DVMs aimed at having sustainable seed systems. Some important components of sustainable OFSP seed systems were determined (Figure 2).

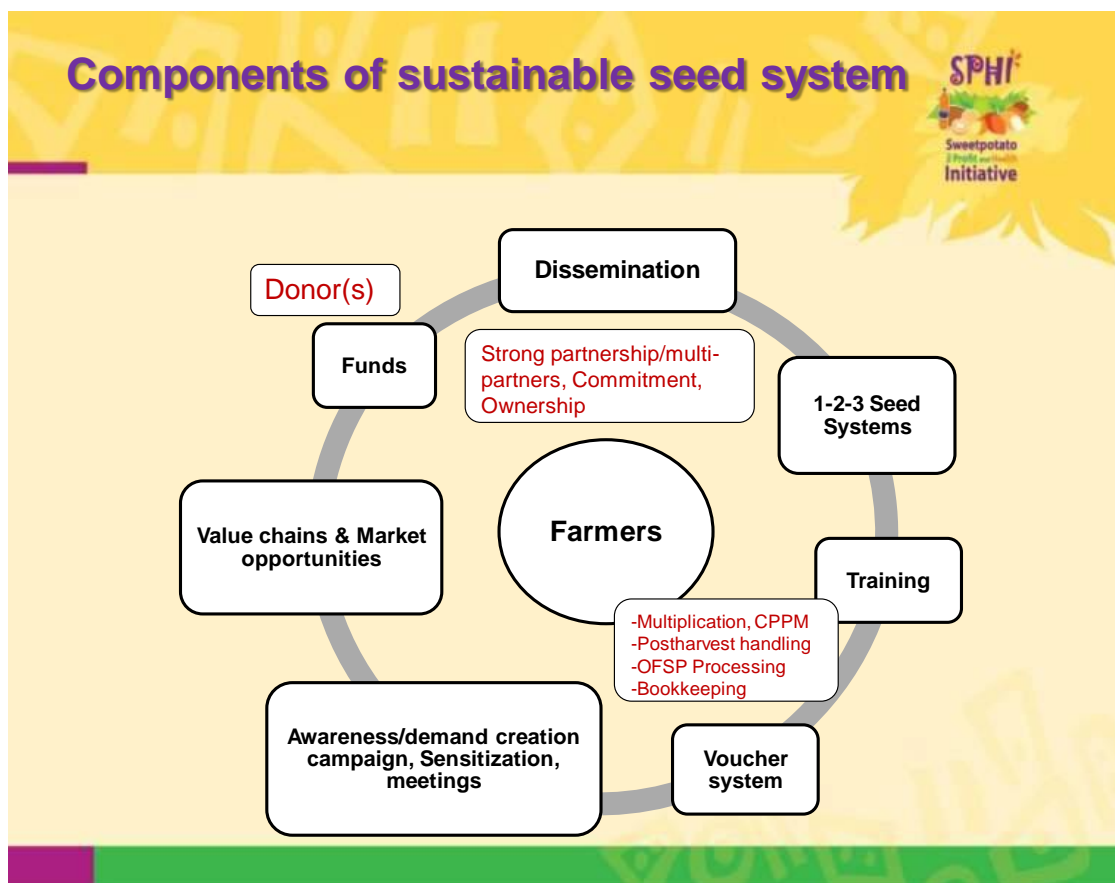


Figure 2

### Investment at Department of Agricultural Research Services (DARS) at Bvumbwe Research Station (BRS)

- CIP backstopped the primary vine multiplication based at BRS. This includes the maintenance of 6 ha of land covered by OFSP Zondeni and 5 newly released varieties. BRS has the potential to generate income from vine sales. Primary multiplication is a source of clean planting material to provide multipliers and sweetpotato growers. Out of 1 ha of land covered by Zondeni variety, one can harvest 1.5 million vine cuttings 30 cm long. Thus, 9 million vine cuttings per year can be produced. We can calculate how much money they can earn from selling vines. This indicates that BRS is able to develop to become the commercial vine producer for its sustainability. The Rooting out Hunger project has built one screen house and equipped the TC laboratory with two air-conditioners and some chemicals for maintaining the clean plantlets. The screen house enables the clean plantlets from the TC laboratory to multiply before growing them in the field. At this moment, a manageable number of clean Zondeni plantlets are maintained in this laboratory. We expect to receive a number of virus-free plantlets of five new OFSP varieties from Public Quarantine Research (PQS) in Nairobi by this year. Other varieties for the breeding program led by DARS are also kept in the laboratory.

### Public-private partnership

- The strong partnership with the relevant government and NGOs have been recognized. At this moment, the project is expanding its collaboration to private sector and farmers' organization including the youth organization. The effort is particularly on vine multiplications for self-consumption and commercialization. This partnership occurs in Salima, Kasungu and Blantyre. Universal Industries Ltd. will be approached for value chains on vitamin A rich Biscuit and OFSP crisps. They have already done some research on it.

### **Revolving fund**

- As mentioned elsewhere in this project proposal, a revolving fund will setup at Bvumbwe Research Station. The project will work with the Potato project that is also funded by Irish Aid in Malawi. This effort is particularly on vine sale.

### **AGRA project**

- CIP has backstopped Dr. Felistus Chipungu the national sweetpotato breeder and also the National Coordinator for Horticulture to have an AGRA project for sweetpotato breeding program in Malawi.

The sustainability of the entire system will be driven by the demand for adequate food and nutritional security, along with the profitability alongside all points in the chain of the sweetpotato sector. Farmers knowledgeable in producing quality sweetpotato will obtain higher prices; farmers knowledgeable in storage will be able to manage seasonal price fluctuations.

## **8. Mitigate Risks**

The project assumes that the Malawian Government will retain its commitment to its crop diversification strategy, which emphasizes the promotion of roots and tubers as alternative energy sources to maize, the promotion of agro-processing to capture value-added, and greater cultivation of vegetables and fruits and increased livestock holdings to ensure a healthy, diversified diet.

In any agricultural project, the greatest risk is loss of production due to unpredictable weather. Malawi is subject to cyclical drought and in some areas, floods. The Malawian government and its partners have been heavily investing in treadle pumps and other irrigation strategies to mitigate that risk. Irrigation for maintaining supplies of vines during the dry season may be key to obtaining adequate vine supply in drought-prone areas. Drip irrigation kits (350 kits) were introduced by the project this year to 15 districts. A positive result was noticed from Chikhwawa, Salima and some dried areas in Kasungu districts. These are the areas where dry-spells catastrophe consistently happens. Triple S (Storage in Sand and Sprouting) method for vine production is one of the strategies to fit well in the dry and hot areas. So, farmers can readily have OFSP planting materials in the onset of rainy season.

Introducing an appropriate pit storage and storage in sand one of method to solve the problem of alleviating the food shortage and reduce the hunger months in Malawi. The hunger months are usual start from December up to April.

Exchange rate fluctuation and erratic fuel supply significantly influence the project implementation. We would have expected to deliver more achievement than that of what we have had today.

## **9. BUDGET (US\$)**

The total funding requested from Irish Aid is in a separate document.

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