



# ORANGE-FLESHED SWEETPOTATO (OFSP) INVESTMENT IMPLEMENTATION GUIDE



# Vitamin A deficiency

- **43 million children** under 5 yrs old are vitamin A deficient (VAD) in Sub-Saharan Africa
- Vitamin A deficiency results in:
  - impaired functioning of our immune, visual and reproductive systems
  - reduced immunity to disease, higher rates of disease-related death
  - increased burdening of already stretched health care systems
  - the indirect cost of lost productivity and economic development
- Undernourished children are at high risk of impaired mental development, negatively affecting their country's productivity and growth
- Young children, and pregnant and lactating women are at particularly high risk of VAD due to their need for micronutrients to support their rapid growth



# Why invest in OFSP?

- a. OFSP is a **delicious energy-giving food** that can be enjoyed in **many forms**
- b. OFSP contains high levels of **beta-carotene**, which is converted to vitamin A in our bodies
- c. **43 million children** under 5 years old are vitamin A deficient (VAD) in Sub-Saharan Africa
- d. an area of **500m<sup>2</sup>** of OFSP can provide sufficient vitamin A for a **family of five for a year**
- e. sweetpotato is a **low labour, low input, early maturing**, flexible, **low risk** crop
- f. sweetpotato has always played an important role in **saving people from famine**
- g. sweetpotato produces **more biomass and nutrients per ha than any other food crop**
- h. sweetpotato is grown mainly by **women**
- i. Africa is rapidly **urbanising** which will lead to a growing urban demand for fresh sweetpotato roots and products



# Why invest in OFSP?

Vitamin A deficiency can be addressed in different and complementary ways

## **Vitamin A supplementation**

Provision of vitamin A capsules twice a year to children under 5 increases child survival and reduces child mortality by ~24%

*However:*

- The benefits are short-term (2-3 months)
- It targets the under 5's but not the rest of the population
- Vitamin A supplementation (VAS) campaigns are largely donor dependent and may not be sustainable long-term



# OFSP's role in achieving development goals



- Most nations across Sub-Saharan Africa recognise the importance of investing in agriculture for economic growth
  - and most have few other options for tackling mass rural poverty in the medium-term
- BUT longer-term they are envisioning future economies based on complex service and industrial economies
- Therefore, child malnutrition needs to be addressed now, otherwise the human resources for these economic transformations will be missing
- Agricultural investment and growth does **NOT** automatically reduce poverty, malnutrition and food insecurity
  - more food does not automatically mean better nutrition
- We need to invest in **pro-poor nutrition-sensitive agricultural growth**, e.g. promoting OFSP as part of an integrated food-based approach to addressing malnutrition
- Promoting OFSP can also help rural communities raise their yields, link to markets and produce value-added products



# Reducing vitamin A deficiency through pro-poor nutrition-sensitive CAADP informed investment plans

## I. Extending the area under sustainable land and water management

The area under sweetpotato is already rapidly increasing across SSA, due to its high productivity, low input and widespread suitability. Investments will ensure OFSP promotion includes:

- improved soil management (fertility and moisture capacity);
- crop rotation;
- use of drought tolerant, early maturing varieties;
- reduction of wasteful pre and postharvest losses;
- targeted irrigation for timely planting material production.

Competition for land may occur, but will reduce as OFSP health and income

## II. Improving market access

Investments will promote:

- sustainable OFSP planting material multiplication and dissemination skills and supply chains;
- improved fresh root storage and transport to reduce gluts and losses and extend the market season;
- commercially attractive processed products for different market segments.
- household processing and storage for own consumption throughout the year as well as local marketing.

## III. Increasing food supply and reducing hunger

Investments will promote:

- increased nutritional understanding among rural women who are easily accessed via agriculture;
- reduced hunger season through use of early maturing varieties;
- more diverse food supply and reduced asset depletion, through cultivation of high yielding OFSP varieties and agricultural production and processing training;
- low cost sustainable food-based approaches to addressing micronutrient deficiencies, e.g. VAD;
- incorporation of OFSP into dietary guidelines especially for infant and young child feeding;
- use of OFSP planting materials to rapidly revive agricultural production in post-emergency rehabilitation situations

## IV. Improving agricultural innovation systems

Investments will promote:

- strengthened agricultural innovation systems, whereby multi-sectoral stakeholders from government, private and donor communities have the relevant capacities and are committed to working together to reduce VAD amongst the focal communities by raising nutritional awareness, timely production and dissemination of clean OFSP planting materials, and increasing production and marketing skills among community members using cultural and gender sensitive approaches;
- more coordinated and effective public investments, with high level political support for reducing VAD and child malnutrition in order to boost long-term pro-poor agricultural and economic growth in their nation;
- strengthened research and extension capacity for improving availability of nutrient dense crops.

# Assessing where investment is needed along the OFSP value chain



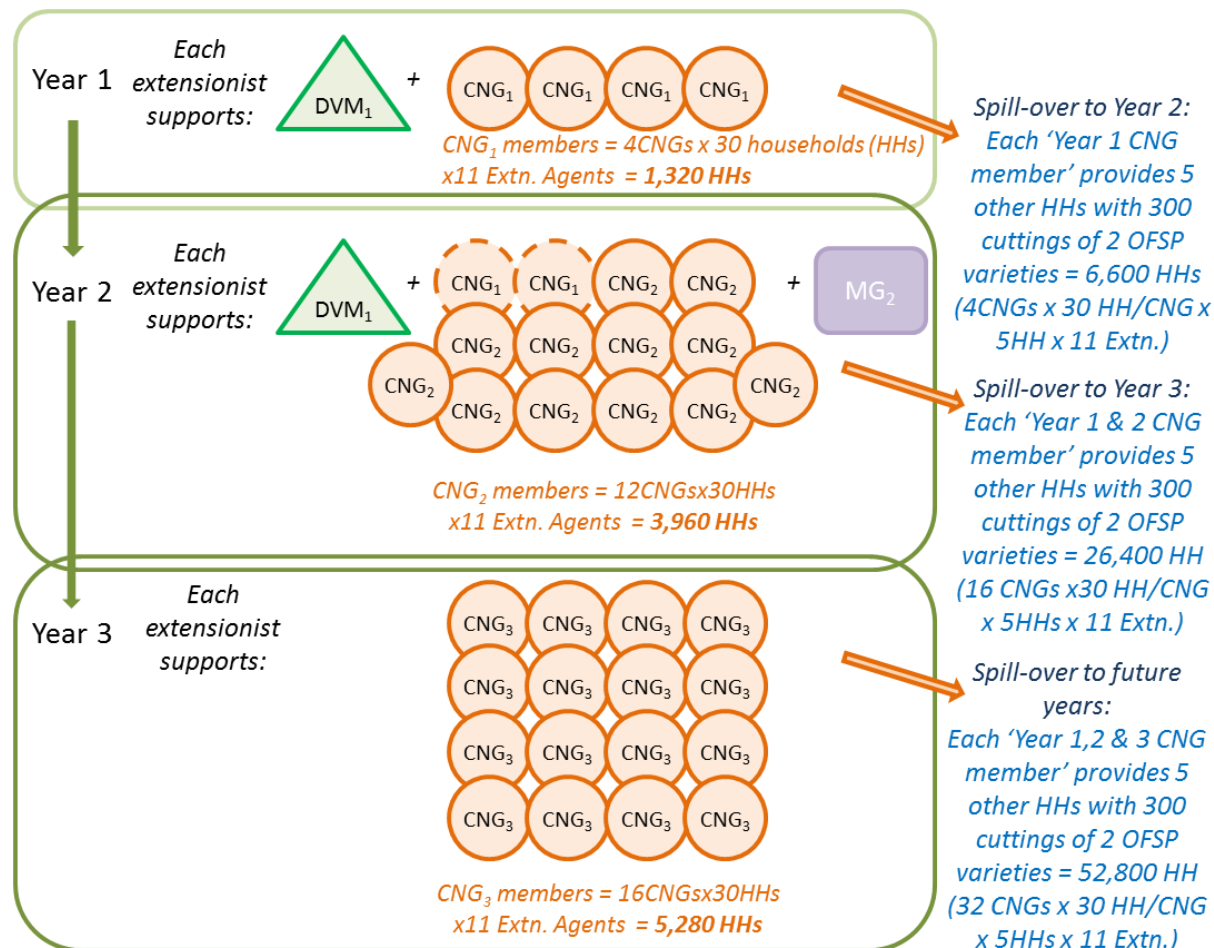
| Decision points along the OFSP value chain        | Description of current situation  | Example |
|---|---|---------|
| Current interventions to address VAD              | No or limited vitamin A fortification of sugar, oil, or flour   |         |
|   | Vitamin A capsule coverage of >60% of under 5 year olds   | X       |
|   | Widespread long-term promotion of food-based approaches to addressing VAD (including high dietary diversity index scores), plus vitamin A capsules for under 5 year olds      |         |
| Availability of OFSP varieties                    | No OFSP varieties available   |         |
|   | <3 OFSP varieties available   |         |
|   | ≥3 OFSP varieties available   | X       |
| Technical capacity to implement an OFSP programme | 0 field staff familiar with key OFSP topics   |         |
|   | <50 field staff familiar with key OFSP topics; programme leaders not familiar with multi-sectoral approach  | X       |
|   | > 50 extensionists or NGO field staff highly familiar with OFSP and vitamin A, clean planting material production, processing, farmer training, and multi-sectoral approaches |         |
| Sources of clean OFSP seed/ planting materials    | No disease-free or “clean” OFSP planting materials available  |         |
|   | Trained vine multipliers who understand how to produce healthy looking planting materials   | X       |
|   | Tissue cultured plantlets of ≥2 OFSP varieties & protected basic planting material in screen houses   |         |
| Multiplication of OFSP planting materials         | No trained OFSP vine multipliers  |         |
|   | 1-200 trained decentralised vine multipliers  | X       |
|   | >200 trained decentralised vine multipliers   |         |



# Overview of an OFSP value chain investment program at scale



- Designed to **directly reach 10,500 households** with practical training on sweetpotato crop production and utilisation and OFSP planting materials, and **indirectly reaching a further 33,000 households** within a 3 year timeframe
- Building the capacity of those along the value chain
- Sustainably improving food and nutrition security, seed systems, extension capacity, markets, incomes and agro-processing



CNG members **directly** reached during the 3 years  
 = **10,560 households**

HHs **indirectly** reached during the 3 years  
 = **33,000 households**



# 1. Understanding the role of sweetpotato in the food system

- To plan strategic investments it is necessary to understand the current role of sweetpotato in the focal food system, a situation analysis can be used to learn about:
  - Sweetpotato consumption and marketing
  - Trends affecting sweetpotato (*over the last 20 years, and what has driven them*)
  - Sweetpotato activity calendar
  - Main constraints to production, consumption and marketing of sweetpotato
  - Roles and responsibilities within the sweetpotato value chain (*who does, who decides*)
  - Nutritional behaviour and awareness (*by age, sex; who decides what to buy, eat, grow*)
  - Other relevant initiatives (*e.g. nutritional programmes, VAD levels, school feeding etc.*)



## RESOURCE REQUIREMENTS

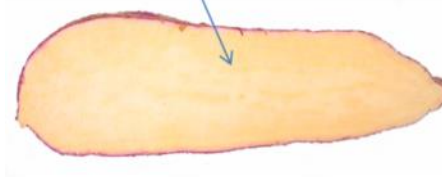
| Activity   | Year 1 | Year 2 | Year 3 | Total (USD\$) |
|--|--------|--------|--------|---------------|
| Sweetpotato in the food system - 2 week situation analysis | 15,000 | 0      | 0      | 15,000        |

## 2. Availability of OFSP varieties

- Sweetpotato is thought to have originated in Central America, but movement of planting materials between farmers means thousands of different varieties now exist across the world
- These sweetpotato varieties differ by leaf shape, colour, vine structure, root shape, root skin colour, flesh colour, dry matter content, resistance to pests and diseases, and yield.
- The wide range of different colours of the sweetpotato flesh colour are natural and not the result of genetic modifications.
- The deeper the orange colour of the flesh, the higher the beta-carotene content



Beta-carotene: 1,650ug/100g FW  
Vitamin A: 137.5 ug RE/100g FW



Beta-carotene: 14,370ug/100g FW  
Vitamin A: 1,197.5 ug RE/100g FW



## 2. Availability of OFSP varieties *continued*

- Breeding a new sweetpotato variety is complex and expensive, shortcuts exist by importing clean planting materials from neighbouring countries
- It is important to ensure planting materials are disease free as viruses and other diseases can dramatically reduce the yields



- Some of the OFSP varieties now available in SSA countries

| Country      | Released OFSP varieties   |
|--------------|---|
| Mozambique   | Tio Joe, Namanga, Bela, Lourdes, Ininda, Irene, Cecilia, Erica, Delvia, Melinda, Amelia, Sumaia, Esther, Jane, Gloria |
| Tanzania     | Mataya, Kiegea, Ejumula   |
| Nigeria      | King J (Umuspo/1) and Mother's Delight (Umuspo/3)   |
| Ghana        | Bokye, CRI-Apomuden   |
| Burkina Faso | Tiebele, Bagre, Jewel, BF138, BF139 ( <i>registered in 2014</i> )   |
| Malawi       | Zondeni, Ana Akwanire, Kadyaubwerere, Mathuthu, Kaphulira, Chipika  |
| Uganda       | SPK004 (Kakamega), Ejumula, NASPOT 8, Vita (NASPOT 9 O), Kabode (NASPOT 10 O), NASPOT 12 O, NASPOT 13 O               |
| Kenya        | KENSPOT-3, KENSPOT-4, KENSPOT-5, SPK004 (Kakamega), Kabode (NASPOT 10 O), Vita (NASPOT 10 O)                          |
| Rwanda       | 97-062 (Gihingamukungu), SPK004 (Kakamega), Caceapedo, RW11-2560, RW11-4923 and RW11-2910 (Ndamirabana)               |



## 2. Availability of OFSP varieties *continued*

- Farmers and consumers need to be involved in trials to select OFSP varieties with characteristics they value.
- Sometimes farmers are involved very early in the breeding process, and in other situations they are involved in evaluating promising materials in on-farm trials
- On-farm participatory sweetpotato varietal selection helps in:
  - Testing the performance and acceptability of the varieties under farmer-growing conditions
  - Building farmers' capacity in comparing varieties or treatments
  - Disseminating new varieties



### RESOURCE REQUIREMENTS

| Activity  | Year 1        | Year 2        | Year 3        | Total (USD\$)  |
|---|---------------|---------------|---------------|----------------|
| Importation of OFSP varieties*                  | 2,650         | 0             | 0             | 2,650          |
| Tissue culture plantlets and support            | 8,040         | 27,608        | 0             | 35,648         |
| Demonstration trials                            | 19,150        | 14,975        | 15,600        | 49,725         |
| OFSP variety promotion field days and hand-outs | 5,900         | 11,265        | 20,680        | 37,845         |
| <b>TOTAL</b>                                    | <b>35,740</b> | <b>53,848</b> | <b>36,280</b> | <b>125,868</b> |



### 3. Strengthening the capacity of OFSP agents of change

- In 2012, the Reaching Agents of Change (RAC) project supported the development of a 10 day hands-on learning course and manual to build the capacity of extension and NGO personnel in *'Everything you ever wanted to know about sweetpotato'*
- To date 224 OFSP 'change agents' have been trained through this ToT course at centres in Nigeria, Mozambique and Tanzania, and they have trained 4,000 others
- OFSP investors should select two enthusiastic staff to participate in the ToT, these trainers can then train the field offers on all aspects of OFSP enterprise



#### RESOURCE REQUIREMENTS

| Activity   | Year 1        | Year 2       | Year 3       | Total (USD\$) |
|--|---------------|--------------|--------------|---------------|
| Sponsor 2 staff to attend <i>'Everything you ever wanted to know about sweetpotato'</i> ToT course | 8,000         | 0            | 0            | <b>8,000</b>  |
| 12 <i>'Everything you ever wanted to know about SP'</i> manuals                                    | 840           | 0            | 0            | <b>840</b>    |
| Preparation and production of counselling cards and job cards                                      | 43,800        | 0            | 0            | <b>43,800</b> |
| Training of 12 field officers, plus refresher training   | 13,000        | 4,017        | 4,139        | <b>21,156</b> |
| Community leader sensitisations & trainings in 11 communities                                      | 2,750         | 0            | 0            | <b>2,750</b>  |
| <b>TOTAL</b>   | <b>68,390</b> | <b>4,017</b> | <b>4,139</b> | <b>76,456</b> |

# 3. Strengthening the capacity of OFSP agents of change



## Overview of topics in the 'Everything you ever wanted to know about sweetpotato' ToT

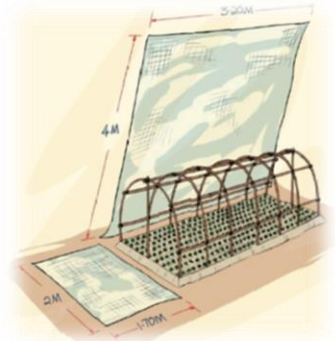
| Day | Topics  | <i>Examples of Intended Learning Outcomes: Participants will:</i>  |
|-----|---|--|
| 1   | <b>Expectations, Uses of sweetpotato; Gender and diversity and sweetpotato</b>            | <ul style="list-style-type: none"> <li>- Understand the course programme</li> <li>- Know about trends and challenges in sweetpotato production and use</li> <li>- Understand how gender issues are relevant through the value chain</li> <li>- Be able to prepare two sweetpotato dishes</li> </ul>  |
| 2   | <b>Different varieties of sweetpotato and their characteristics</b>                       | <ul style="list-style-type: none"> <li>- Know key characteristics of ≥3 sweetpotato vars. suitable for their area</li> <li>- Be able to help farmers identify the key OFSP characteristics they want</li> <li>- Know how to conduct a variety ranking test and a taste test</li> </ul>   |
| 3   | <b>Nutrition and OFSP</b>   | <ul style="list-style-type: none"> <li>- Understand what a balanced diet is and why it is important</li> <li>- Be able to use local ingredients to make child-friendly, nutritious meals</li> </ul>  |
| 4   | <b>Selecting, preserving and multiplying SP planting materials</b>                        | <ul style="list-style-type: none"> <li>- Be able to identify, select and conserve clean SP planting materials</li> <li>- Understand how to calculate vine multiplication rates</li> </ul>  |
| 5   | <b>Sweetpotato pests and diseases and their management</b>                                | <ul style="list-style-type: none"> <li>- Be able to find field examples of the key pests and diseases of sweetpotato and explain and show the damage each can cause</li> <li>- Know a range of practical techniques for managing key pests and diseases</li> </ul>   |
| 6   | <b>Sweetpotato production and crop management</b>   | <ul style="list-style-type: none"> <li>- Be able to help farmers set up a field experiment to compare different varieties or management practices</li> <li>- Understand the different stages of the sweetpotato crop cycle and the management implications of each stage</li> </ul>  |
| 7   | <b>Planning a planting material dissemination program</b>                                 | <ul style="list-style-type: none"> <li>- Understand all of the key steps, and bottlenecks that may emerge in planning a mass multiplication or DVM approach dissemination exercise</li> <li>- Practice designing a dissemination program to reach 5,000 households</li> <li>- Practice monitoring the dissemination of planting materials</li> </ul> |
| 8   | <b>Harvesting, post-harvest management, and processing</b>                                | <ul style="list-style-type: none"> <li>- Know about the main aspects of sweetpotato harvesting, post-harvest management and processing</li> <li>- Understand how OFSP processing &amp; storage affects beta-carotene content</li> </ul>  |
| 9   | <b>Marketing and entrepreneurship</b>   | <ul style="list-style-type: none"> <li>- Be familiar with the concepts of marketing and market orientation</li> <li>- Understand the opportunities and challenges in sweetpotato marketing</li> <li>- Explore gender issues along the value chain</li> <li>- Be aware of how to select an appropriate processed product</li> </ul>                   |
| 10  | <b>Planning to train others on 'Everything you ever wanted to know about sweetpotato'</b> | <ul style="list-style-type: none"> <li>- Understand and have developed the draft learning outcomes and approaches, training materials and draft logistics plans of the sweetpotato training courses they will be delivering</li> <li>- Be able to deliver a training course on 'Everything you ever wanted to know about sweetpotato'</li> </ul>     |



# 4. OFSP vine conservation, multiplication & dissemination

## • Selecting healthy planting materials

- Viruses severely reduce yields
- Rogue out any plants showing virus symptoms
- Only use vines from plants less than 4 months old
- Only use the tips of the vine of healthy plants
- Tissue culture can be used by specialists for large-scale multiplication of clean planting materials
- Net tunnels can help keep planting materials clean and insect free



## • Conserving planting materials through the dry season

- Dry season conservation of vines – near moisture or shade
- Triple S root preservation – Storage, Sand, Sprouting
- Dry season irrigation of vines



## • Rapid multiplication of planting materials

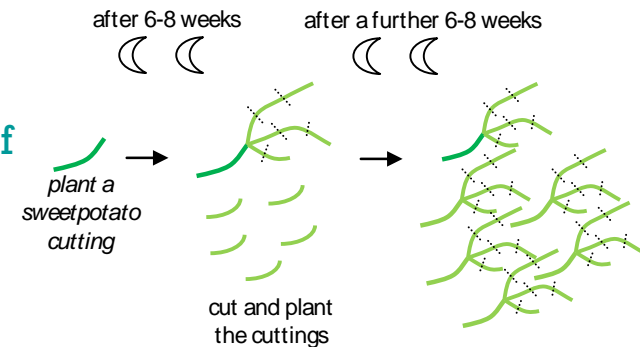


# 4. OFSP vine conservation, multiplication & dissemination

- Centralised or decentralised vine multiplication (DVMs)
  - DVMs are able to continue to produce clean planting materials after the project
- Large-scale planting material dissemination approaches (single shot vs on-going access)



- Advanced planning for timely production of planting materials
  - To build up sufficient quantities of planting materials of new varieties at least 7 months is required





# 4. OFSP vine conservation, multiplication & dissemination

The OFSP planting material multiplication plan can be used for reaching 10,500 households in 3 years

|        |  |   | Year 1            |              |                          |                    |                        |                |                        |            |
|--------|--|---|-------------------|--------------|--------------------------|--------------------|------------------------|----------------|------------------------|------------|
| DEMAND | Direct beneficiary households(HHs)   |   | 1,320 HHs         |              |                          |                    |                        |                |                        |            |
|        | Total no. of cuttingsrequired @300 cuttingsof each variety/ HH:  |   | 792,000 cuttings  |              |                          |                    |                        |                |                        |            |
|        | No. of cuttings per variety per HH   |   | 300               |              |                          |                    |                        |                |                        |            |
|        | of OFSP Variety A  |   | 396,000           |              |                          |                    |                        |                |                        |            |
|        | of OFSP Variety B  |   | 396,000           |              |                          |                    |                        |                |                        |            |
|        |  |   | Cuttings per unit | No. of units | Multiplication rate (MR) | No. of multipliers | No. cuttings harvested | Wastage factor | No. cuttings available | Time taken |
| SUPPLY | Multiplier   | Method  |                   |              |                          |                    |                        |                |                        |            |
|        |  |   |                   |              |                          |                    |                        |                |                        |            |
|        | Research station (primary multiplier): will need to produce sufficient disease-free pathogen tested planting materials to supply the DVMs with clean cuttings for their net tunnels.             | 1,400 tissue cultured plantlets hardened off, and used to produce clean pre-basic seed cuttings in the screen house. These cuttings are used to supply the DVMs net tunnels       |                   |              |                          |                    |                        |                | 7,920                  | 3.5 months |
|        | DVM enterprise (secondary multipliers): Each DVM enterprise will have 2 net tunnels AND will also do open field RMT. Each extensionist supports 1 DVM enterprise, and there are 11 extensionists | 2 net tunnels/ enterprise - 2 ratoons (each net tunnel is 1 unit).  | 360               | 2            | 8                        | 11                 | 63,360                 | 0.0125         | 62,568                 | 2.5 months |
|        |  | RMT in open field using an initial area of 0.02ha and the cuttings produced in net tunnel, after first vine harvest they will plant them out and harvest them all 6-8 weeks later | 5,688             | 1            | 15                       | 11                 | 938,520                | 0.0125         | 926,789                | 4 months   |
|        | Community nutrition group promoters (tertiary multipliers and demonstration site): Using conventional multiplication in open field   | Conventional multiplication in open field using an area of 0.05ha/ CNG promoter at a plant density of 33,300 per ha   | -                 | -            | -                        | -                  | -                      | -              | -                      | -          |
|        | No. of cuttings produced for CNG members in time for that year's planting  |   | 926,789           |              |                          |                    |                        |                |                        |            |

NB. An interactive excel version of this OFSP planting material multiplication plan exists at: <http://sweetpotatoknowledge.org/projects-initiatives/reaching-agents-of-change-rac/ofsp-investment-guides>



## 4. OFSP vine conservation, multiplication & dissemination

### RESOURCE REQUIREMENTS

*The following costs are based on directly reaching 10,500 households with 300 cuttings of two OFSP varieties, and indirectly reaching a further 33,000 households using DVMs within 3 years*

| Activity  | Year 1        | Year 2         | Year 3         | Total (USD\$)  |
|---|---------------|----------------|----------------|----------------|
| <i>If required, partner identification for dissemination (travel costs)</i>                                       | 3,000         | 0              | 0              | <b>3,000</b>   |
| Identification of, contracting of and training of DVMs  | 2,000         | 9,000          | 6,600          | <b>17,600</b>  |
| Provide & install irrigation equipment for DVMs (50% cost share)  | 1,000         | 4,500          | 0              | <b>5,500</b>   |
| Procure & establish 4 net tunnels, signs, labels & string per DVM   | 4,800         | 3,800          | 2,250          | <b>10,850</b>  |
| Train 4 QDPM inspection agents, & 2 inspection visits/yr/ DVM   | 3,440         | 3,520          | 3,520          | <b>10,480</b>  |
| Transport of vines from 1 <sup>st</sup> site to DVM & 6 monitoring visits   | 680           | 3,540          | 2,640          | <b>6,860</b>   |
| Community Group Promoters (CGP) identify & group formation  | 11,220        | 33,660         | 44,880         | <b>89,760</b>  |
| Establish demonstration sites at CGP farms  | 8,800         | 26,400         | 35,200         | <b>70,400</b>  |
| Dissemination day to Community Nutrition Group Members  | 5,940         | 18,216         | 24,816         | <b>48,972</b>  |
| Dissemination day to Marketing Group Members and data entry   | 780           | 3,350          | 300            | <b>4,430</b>   |
| 1 training visit to CNG and MG on Quality Planting Material, Virus detection, Weevil management and Planting      | 1,840         | 5,720          | 7,480          | <b>15,040</b>  |
| 2 training visits to CNG on Vine conservation, Triple S(ind. 2 basins/gp & brochure for those in semi-arid areas) | 4,178         | 12,664         | 16,885         | <b>33,727</b>  |
| Vine sharing & promotion day to wider community   | 11,000        | 33,000         | 44,000         | <b>88,000</b>  |
| Certificates for CNG and MG completing sweetpotato training   | 1,320         | 3,960          | 5,280          | <b>10,560</b>  |
| <b>TOTAL</b>  | <b>59,998</b> | <b>161,330</b> | <b>193,851</b> | <b>415,179</b> |

# 5. Improving sweetpotato production and postharvest management



As trained field agents you will train farmers at relevant times throughout the year on:

Conserving and multiplying healthy vines

Land preparation

Planting

Intercropping

Weeding and hilling up

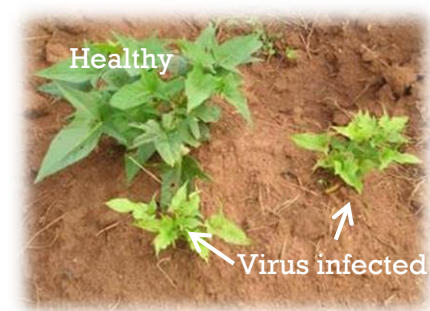
Virus management

Weevil management

Harvesting

Storage of fresh sweetpotato

Storage of dried sweetpotato



## RESOURCE REQUIREMENTS

| Activity  | Year 1 | Year 2 | Year 3 | Total (USD\$) |
|---|--------|--------|--------|---------------|
| 2 training visits to CNG demonstrating in-ground skin toughening, careful harvesting & fresh root storage, plus poster<br>(NB other crop management training is included in earlier budget) | 3,586  | 10,758 | 14,344 | 28,688        |

## 6. Promoting OFSP to improve health and wealth

### Why

- Consuming OFSP can reduce vitamin A deficiency (43 million under 5's in SSA are VAD)
- Nutritional awareness is a public good

### How

- Use existing nutritional knowledge,
- Create awareness about importance of vitamin A,
- Develop behavioural change strategies for different groups



### RESOURCE REQUIREMENTS

| Activity   | Year 1        | Year 2        | Year 3       | Total (USD\$) |
|--|---------------|---------------|--------------|---------------|
| Radio/ TV programs, theatre or song: design & translation for advertising dissemination days | 1,200         | 3,300         | 3,300        | 7,800         |
| Design & production of banners and extensionists t-shirt                                     | 1,298         | 1,000         | 770          | 3,068         |
| Painting & decorating vehicles and motorcycles   | 5,900         | 0             | 0            | 5,900         |
| Painting and decorating market stalls  | 0             | 8,800         | 0            | 8,800         |
| Attending 2 agricultural fairs or other promotion events/yr                                  | 1,000         | 1,000         | 1,000        | 3,000         |
| Producing promotional cloth ( <i>kitenge</i> , <i>capulanas</i> ) to sell at cost            | 35,000        | 0             | 0            | 35,000        |
| <b>TOTAL</b>   | <b>44,398</b> | <b>14,100</b> | <b>5,070</b> | <b>63,568</b> |

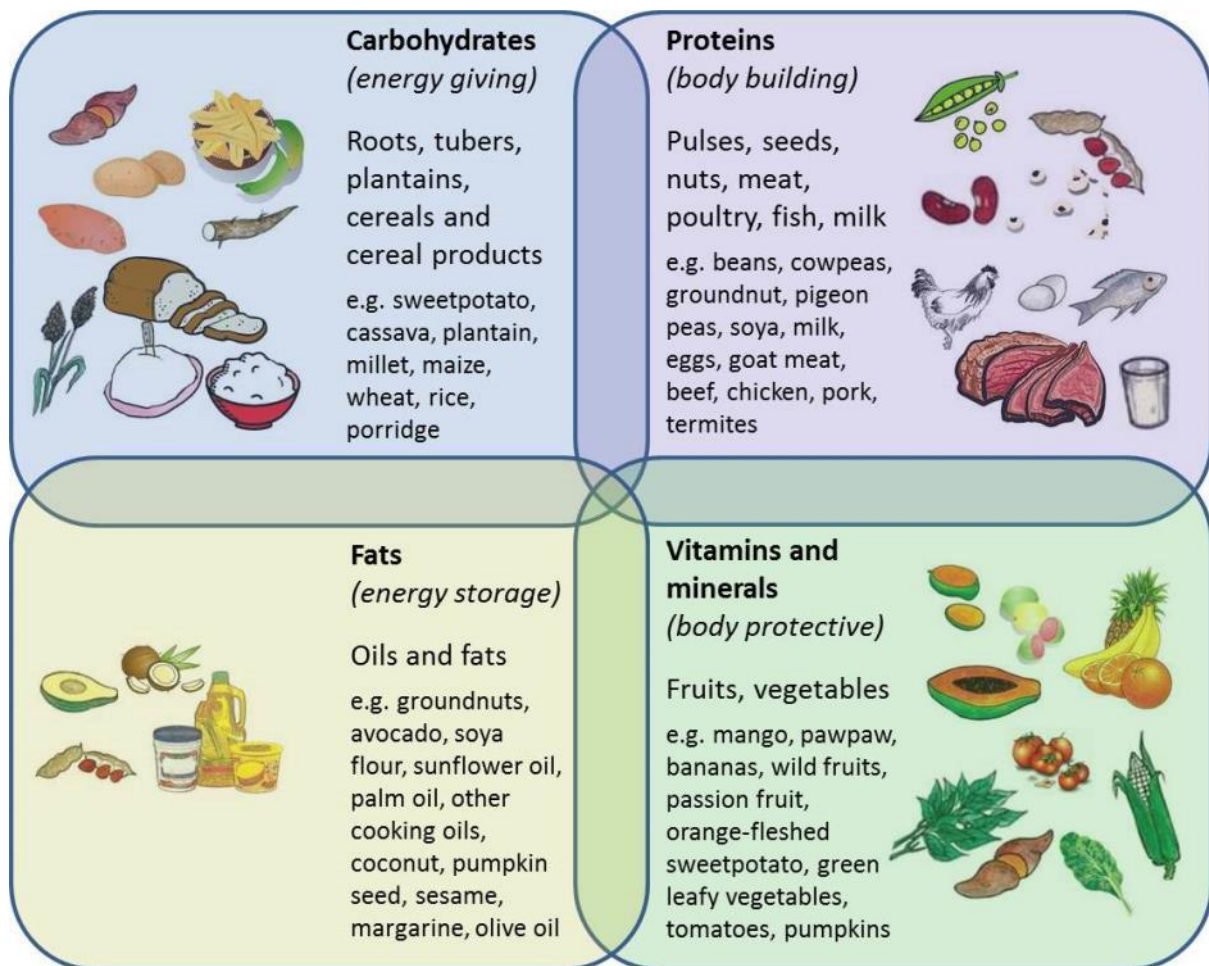


# 7. Nutrition education for behavioural change



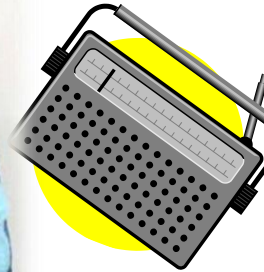
- Economic growth and human development require well-nourished populations
- 35% of African children under 5 yrs. old are chronically malnourished & stunted
- There is a need to create awareness about:

- the importance of a **diverse and balanced diet** and the different food groups
- the **importance of vitamin A**
- the **high vitamin A content in orange-fleshed sweetpotato, pawpaw, mango, carrots, spinach, liver, egg yolks, milk**



# 7. Nutrition education for behavioural change

- 35% of African children under 5 yrs. old are chronically malnourished & stunted
- There is a need to enable nutritional behavioural change:
  - improving **young child feeding practices**
  - **diversifying the overall diet** at the household level
  - improving **marketing chains** for OFSP roots, leaves and products



## RESOURCE REQUIREMENTS

| Activity  | Year 1        | Year 2        | Year 3        | Total (USD\$) |
|---|---------------|---------------|---------------|---------------|
| Local nurses working on mother & child nutrition– 1 day w/ shop                                     | 4,500         | 4,500         | 0             | 9,000         |
| Community nutrition group training on vitamin A rich foods – ½d                                     | 1,760         | 5,280         | 7,040         | 14,080        |
| CNG training on balanced diets and diet diversification – ½day                                      | 1,760         | 5,280         | 7,040         | 14,080        |
| CNG training on nutrition during pregnancy, breastfeeding and young child feeding principles – ½day | 1,760         | 5,280         | 7,040         | 14,080        |
| CNG training on young child feeding including cooking demo–½d                                       | 2,640         | 7,920         | 10,560        | 21,120        |
| <b>TOTAL</b>  | <b>12,420</b> | <b>28,260</b> | <b>31,680</b> | <b>72,360</b> |

## 8. Strengthening OFSP marketing

### Fresh sweetpotato root marketing

- Fresh roots are traded in urban markets throughout the year, due to traders sequentially purchasing from different geographical areas
- Supply chains are short due to the bulkiness of the fresh root, their short shelf-life and relatively low value/ profitability
- The roots are typically bulked by the roadside by brokers, they may be washed before being packed tightly into huge sacks, which are then loaded into empty trucks for transport to urban markets
- Retailers (mainly women) buy a sack of roots from the trader, and then arrange the roots in piles. The retailers change the volumes of the piles during the course of the day and during the year to help them sell more, and retain their profits
- Farmers are rarely able to negotiate the sales price, and its usually too far for them to transport and sell their own roots
- Consumers select their roots based on the colour, freshness, size and price



Analysis of the sweetpotato value chain will identify the weak links and opportunities for strengthening them.



## 8. Strengthening OFSP marketing *continued*



### Marketing OFSP processed products

- Many of the fresh root marketing constraints are also relevant to processed OFSP products
- Additionally to market OFSP products, one also needs to
  - identify the target groups of customers,
  - find out about current and potential OFSP product opportunities for those target groups,
  - develop and test OFSP products – is it cost-effective to substitute some wheat flour with sweetpotato flour or puree? do consumers like the appearance and taste?
  - develop relationships along the value chain,
  - determine the price, promotion, and distribution methods for their OFSP product/s, and
  - then monitor the market to retain their customers and to develop new products in response to customer's feedback and the competitive environment





## 8. Strengthening OFSP marketing *continued*

- Marketing activities could include:
  - market assessment;
  - root price monitoring;
  - trader identification and OFSP training;
  - formation of OFSP farmer marketing groups and training on business skills and negotiations, OFSP crop management, OFSP postharvest handling;
  - OFSP promotional events.



### RESOURCE REQUIREMENTS

| Activity   | Year 1        | Year 2        | Year 3       | Total (USD\$) |
|--|---------------|---------------|--------------|---------------|
| Rapid market assessment – value chain functioning/ entry points  | 5,000         | 0             | 0            | 5,000         |
| Price monitoring (weekly)  | 220           | 220           | 220          | 660           |
| Training of extension staff on market assessment findings  | 9,000         | 0             | 0            | 12,000        |
| Identification of traders (wholesale & retail) & 2 days training   | 720           | 6,480         | 0            | 7,200         |
| Market group (MG) formation – 3 visits   | 240           | 1,080         | 0            | 1,320         |
| MG training on: 1) sweetpotato marketing as a business; ii) enhancing yields to generate surplus; iii) group dynamics, negotiation, record keeping; iv) harvesting, grading & storage; v) designing promotion strategy | 640           | 2,880         | 0            | 3,520         |
| 2 joint MG negotiations with traders (pre and post training)   | 2,000         | 9,900         | 0            | 11,900        |
| MG promotion materials & events, including radio adverts   | 400           | 6,200         | 4,400        | 11,000        |
| Supervisory visits   | 240           | 1,080         | 1,320        | 2,640         |
| <b>TOTAL</b>   | <b>18,460</b> | <b>27,840</b> | <b>5,940</b> | <b>52,240</b> |

# 9. Processing OFSP

## How to process OFSP



Boiling



Steaming



Roasting



Drying

- The leaves can also be used as a nutritious relish, and in many countries sweetpotato is also widely used as an animal feed

## Retaining the beta-carotene during processing

- The processes that cause the least to the greatest beta-carotene losses in OFSP roots are: **roasting** > **boiling** > **frying** > **steaming** > **sun-drying**
- It helps to:
  - Process quickly
  - Process with the skin on
  - Do not store the processed product for more than 1 months



## 9. Processing OFSP *continued*



There are multiple novel ways to prepare OFSP which increase its value:



**OFSP Golden Power Biscuits**

– USD\$342,000

of sales from one factory in 2 years





## 9. Processing OFSP *continued*



### Sweetpotato as animal feed

- Sweetpotato can be widely used as animal feed
- The wilted vines can be chopped up and fed to goats, pigs, cows, chickens, rabbits, fish. They can also be dried and made into hay or made into silage for feed stocks to be used later in the year
- The roots are more usually fed to pigs and broilers once they have been dried or boiled

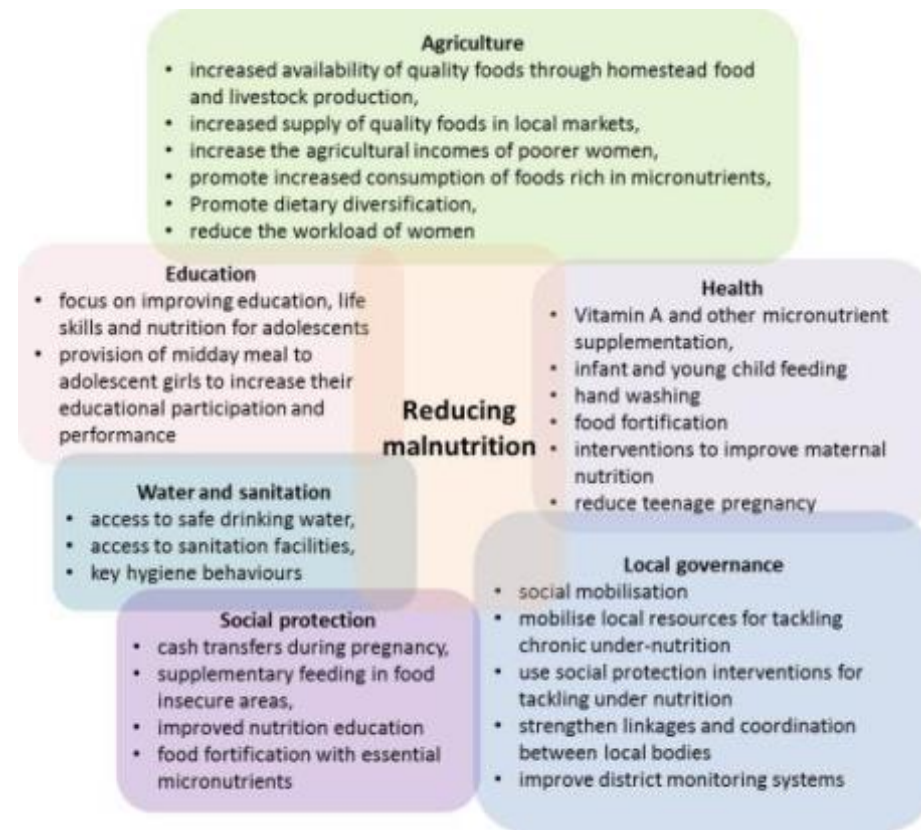


### RESOURCE REQUIREMENTS

| Activity  | Year 1       | Year 2        | Year 3       | Total (USD\$) |
|---|--------------|---------------|--------------|---------------|
| Identify 3-5 local mandazi/ snack makers, 1 day training on substituting wheat flour with OFSP, promotional signs & aprons          | 1,080        | 4,380         | 0            | 5,460         |
| Identify 1 medium-size bakery interested in using OFSP, TA on products refinement & packaging, subsidise puree processing equipment | 0            | 12,300        | 0            | 12,300        |
| Consumer study to assess product acceptability  | 0            | 2,000         | 0            | 2,000         |
| Nutritional analysis of products  | 0            | 800           | 0            | 800           |
| Promotional materials and events  | 0            | 1,000         | 1,000        | 2,000         |
| <b>TOTAL</b>  | <b>1,080</b> | <b>20,480</b> | <b>1,000</b> | <b>22,560</b> |

# 10. Enhancing multi-sectoral collaboration

- Malnutrition is a complex and multifaceted problem, suggesting that a single organisation cannot solve it
- Political commitment increases the success of multi-sectoral actions
- Such collaboration cannot happen after a one-off workshop,
  - shared understanding, vision, strategy, personal relationships and trust take time to build
- Multi-sector plans can often be very broad and propose too many measures and actions in each sector
  - leading to problems with downstream implementation
- Strategic entry points should be identified and prioritised in each sector



## RESOURCE REQUIREMENTS

| Activity   | Year 1       | Year 2     | Year 3       | Total (USD\$) |
|--|--------------|------------|--------------|---------------|
| Planning/ sharing meeting (12 pers. x 3 days)          | 1,800        | 0          | 0            | 1,800         |
| Implementation activities and visits                   | 600          | 600        | 600          | 1,800         |
| Lesson learning/ refining workshop (12 pers. x 2 days) | 0            | 0          | 1,200        | 1,200         |
| <b>TOTAL</b>   | <b>2,400</b> | <b>600</b> | <b>1,800</b> | <b>4,800</b>  |



# 11. Monitoring, measuring and sharing the impact of your investment



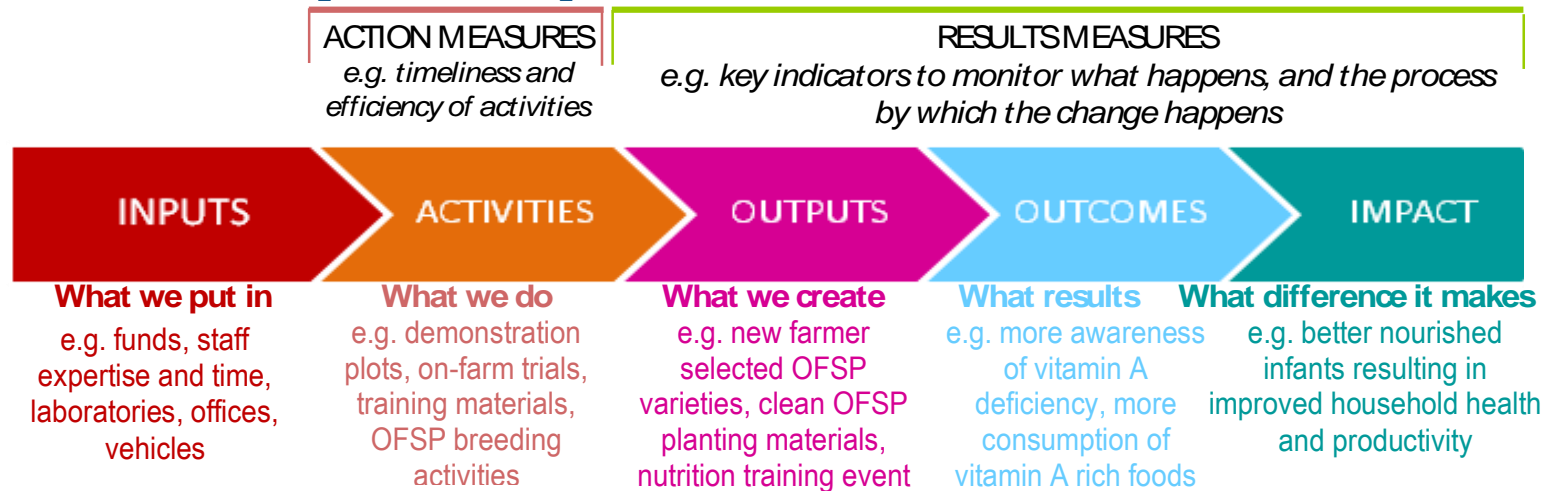
*Monitor to find out where the planting materials were planted, how they are performing and in what ways they are being used by different members of the household*



# 11. Monitoring, measuring and sharing the impact of your investment *continued*



- As you design your OFSP plan, identify the logical linkages between your inputs, activities, outcomes, outputs and impacts



- Identify what information you will need to collect in order to prove whether your investments have led to the anticipated impacts. *How will you obtain that information, who will collect, enter and analyse it. Do you have enough resources?*
- What indicators can you identify, e.g. *the number of households growing OFSP; OFSP planting material sales; frequency of consumption of OFSP and other vitamin A rich foods by young children; vitamin A deficiency levels*
- There are a wide range of M&E approaches, techniques and tools, e.g. sample surveys, multi-stakeholder workshops, review of official statistics, focus groups
- It is useful to collect information before and after the investment to assess what change has occurred

# 11. Monitoring, measuring and sharing the impact of your investment *continued*



- Many monitoring forms and tools already exist, see Section 12.5 of the ToT manual, for examples for monitoring:
  - Dissemination of sweetpotato planting materials, from a mass multiplication or voucher system – who received them, have they been planted, have they spread to further households
  - Performance and use of disseminated planting materials
  - Who has received sweetpotato training and what they have done as a result of it

## RESOURCE REQUIREMENTS

| Activity  | Year 1         | Year 2        | Year 3         | Total (USD\$)  |
|---|----------------|---------------|----------------|----------------|
| Technical assistance and workshop to develop impact pathway and design M&E system with team | 13,600         | 0             | 0              | 13,600         |
| Training of partners in M&E systems   | 3,500          | 0             | 0              | 3,500          |
| Fuel and per diem costs for manager and monitoring officer                                  | 20,640         | 20,640        | 20,640         | 61,920         |
| Baseline study  | 30,000         | 0             | 0              | 30,000         |
| Monthly staff review meetings & refresh training (2d/m 15 pers.)                            | 32,400         | 32,400        | 32,400         | 97,200         |
| Mid-term gender review & stakeholder meetings at district level                             | 0              | 8,000         | 0              | 8,000          |
| End line study  | 0              | 0             | 35,000         | 35,000         |
| Technical support in M&E study analysis and write-up  | 9,000          | 0             | 9,375          | 18,375         |
| Stakeholder dissemination meetings (at national & district level)                           | 0              | 0             | 10,000         | 10,000         |
| Best practice briefs  | 0              | 1,000         | 2,000          | 3,000          |
| <b>TOTAL</b>  | <b>109,140</b> | <b>62,040</b> | <b>109,415</b> | <b>280,595</b> |

# OFSP value chain investment program overview

Summary of the resources required for a 3 year OFSP investment programme reaching 43,500 households

| OFSP INVESTMENT PROGRAM BUDGET SUMMARY                                  | Year 1         | Year 2         | Year 3         | TOTAL BUDGET (USD\$) |
|---|----------------|----------------|----------------|----------------------|
| SALARIES - across activities  | 108,840        | 114,786        | 120,525        | 344,151              |
| COMMON EXPENSES - across activities                                     | 31,650         | 26,710         | 27,286         | 85,645               |
| EQUIPMENT - across activities   | 189,900        | -              | -              | 189,900              |
| ACTIVITY COSTS (total for all activities)                               | 370,612        | 383,273        | 403,519        | 1,157,404            |
| Act 1. Understanding the role of sweetpotato in the food system         | 15,000         | -              | -              | 15,000               |
| Act 2. Availability and acceptability of OFSP varieties                 | 35,740         | 53,848         | 36,280         | 125,868              |
| Act 3. Strengthening the capacity of OFSP service providers             | 68,390         | 4,017          | 4,139          | 76,546               |
| Act 4. OFSP vine conservation, multiplication and dissemination         | 59,998         | 161,330        | 193,851        | 415,179              |
| Act 5. Improving sweetpotato production and postharvest management      | 3,586          | 10,758         | 14,344         | 28,688               |
| Act 6. Promoting OFSP to improve health and wealth                      | 44,398         | 14,100         | 5,070          | 63,568               |
| Act 7. Nutrition education for behavioural change at community level    | 12,420         | 28,260         | 31,680         | 72,360               |
| Act 8. Strengthening OFSP marketing                                     | 18,460         | 27,840         | 5,940          | 52,240               |
| Act 9. Processing OFSP  | 1,080          | 20,480         | 1,000          | 22,560               |
| Act 10. Enhancing multi-sectoral collaboration                          | 2,400          | 600            | 1,800          | 4,800                |
| Act 11. Monitoring, measuring and sharing the impact of your investment | 109,140        | 62,040         | 109,415        | 280,595              |
| <b>Sub-total</b>  | <b>701,002</b> | <b>524,769</b> | <b>551,330</b> | <b>1,777,100</b>     |
| OVERHEADS   | 70,100         | 52,477         | 55,133         | 177,710              |
| <b>GRAND TOTAL BUDGET</b>   | <b>771,102</b> | <b>577,245</b> | <b>606,463</b> | <b>1,954,810</b>     |

An investment of:

USD\$45 per beneficiary household (direct and indirect), or

USD\$185 per direct beneficiary household.



# OFSP Investment Products

- **OFSP Investment Guide**
  - targeted at national level technical experts in public, private & development institutions.
  - it unpacks the investment opportunities along the OFSP value chain, offering a decision-tool for identifying where the key opportunities are, activities for achieving these opportunities including details of what resources (human, financial, physical) are required to transform OFSP value chains.
- **OFSP Investment Implementation Guide**
  - targeted at those involved in the implementation of OFSP investment programs, such as local government or NGO field staff.
  - it provides a brief overview of the reasons for investing in pro-poor nutrition-sensitive agricultural growth and vitamin A reduction programmes, such as the promotion of OFSP. It then presents a decision-tool for identifying where the key opportunities along the OFSP value chain are, and then unpacks each of the investment areas in more detail.
- **OFSP Investment Summary**
  - has been developed to help inform policy makers and high level management.

They are available at:

<http://sweetpotatoknowledge.org/projects-initiatives/reaching-agents-of-change-rac/ofsp-investment-guides/>

# INVEST IN OFSP

