

Orange-fleshed Sweetpotato



YOUR PASSPORT

TO GOOD HEALTH



OFSP is a Vitamin A Powerhouse

Vitamin A is one of the essential micronutrients for a strong immune system and good eyesight.

Children lacking in sufficient amounts of vitamin A are more likely to fall ill and even die than those with adequate levels of vitamin A in their bodies.

Orange-fleshed sweetpotatoes (OFSP) are one of nature's richest sources of beta-carotene. The human body converts beta-carotene into Vitamin A (retinol). Studies have shown that 13 units of beta-carotene convert into one unit of retinol (vitamin A). There are many different varieties of OFSP. The deeper the shade of orange, the more beta-carotene in the root. Roots of OFSP varieties in sub-Saharan Africa (SSA) range from 3,500 to 16,000 units of beta-carotene (BC) per 100 grams when raw. On average 20% of the beta-carotene is lost when boiled.

Adding just a teaspoon of to an OFSP-based porridge increases the vitamin A absorption by 50%.



Kakamega: 3,760 $\mu\text{g}/100$ gms of BC raw; 230 μg RAE/100 gms of vitamin A when cooked.



Sumaia: 7,700 $\mu\text{g}/100$ gms of BC raw; 475 μg RAE/100 gms of vitamin A when cooked.



Tio Joe: 10,030 $\mu\text{g}/100$ gms of BC raw; 620 μg RAE/100 gms of vitamin A when cooked.

“Just one small root of OFSP meets the daily vitamin A needs of a young child.”



A child 1-3 years old needs 300 µg Retinol Activity Equivalents (RAE) of Vitamin A daily.
A child 4-8 years old needs 400 µg RAE of vitamin A daily.



OFSP has lots of other vitamins and minerals. It's a Superfood!

Sweetpotatoes are an important food security crop in SSA. Sweetpotato is known as the crop that is there when the maize fails. It is a staple food providing needed calories to the diet. When a staple has a large amount of a key micronutrient like Vitamin A, we call it biofortified. OFSPs are bred conventionally.

In addition, any type of sweetpotato is also a good source of vitamins C and E, several B vitamins, and the minerals magnesium

and potassium. Hence, OFSP is a Superfood. Superfoods are nutrient-rich foods considered to be especially beneficial for health and well-being.

The International Potato Center (CIP) is currently drawing on the natural diversity of traits found in sweetpotato to increase the iron (Fe) and zinc (Zn) content of OFSP varieties. Fe and Zn are two other major micronutrients essential for good health.



CIP technician Daniel Mbogo preparing samples for beta-carotene analysis using the HPLC (credit S. Quinn)

Percent Nutrition Contribution of Boiled DFSP Root to Daily Needs of a Young Child

| Nutrients | Unit | DFSP Root Boiled without skin Value per 100 g | % of Dietary Reference Intakes for Child 1-3 years of age* |
|------------------|------|---|--|
| Minerals | | | |
| Magnesium, Mg | mg | 18 | 22.5 |
| Iron, Fe | mg | 0.72 | 10.3 |
| Potassium, K | mg | 230 | 7.7 |
| Phosphorus, P | mg | 32 | 7.0 |
| Zinc, Zn | mg | 0.20 | 6.7 |
| Vitamins | | | |
| Vitamin A, RAE | µg | 787 | 262.3 |
| Vitamin C | mg | 12.8 | 85.3 |
| Vitamin B-6 | mg | 0.165 | 33.0 |
| Vitamin E | mg | 0.940 | 15.7 |
| Thiamin (B-1) | mg | 0.056 | 11.2 |
| Riboflavin (B-2) | mg | 0.047 | 9.4 |
| Niacin (B-3) | mg | 0.538 | 9.0 |

Source: DFSP values: Release 28 of the USDA National Nutrient Database for Standard Reference
Reference intakes: Institute of Medicine, Washington DC 2011.

* Bioavailability not included in these figures



Every part of the sweetpotato plant can be utilized

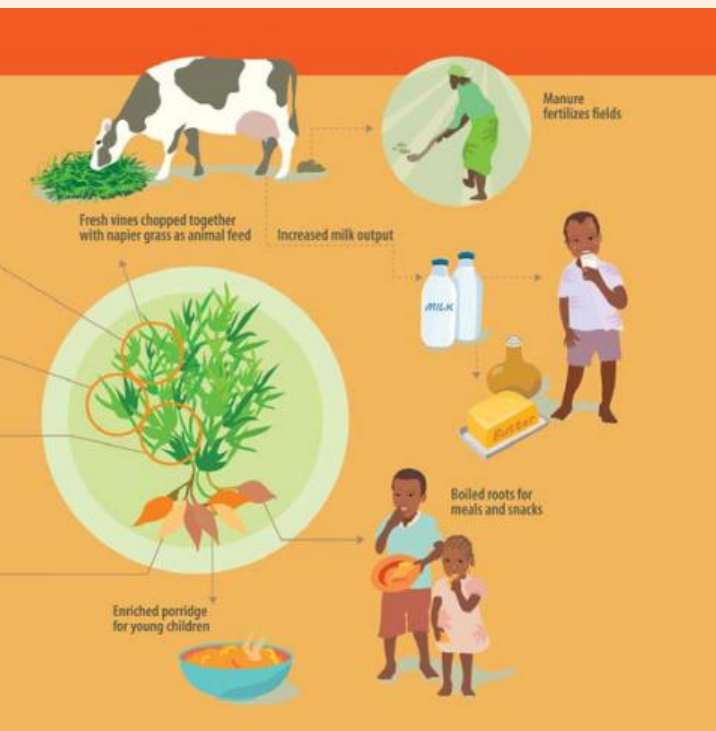
Sweetpotato (*Ipomea batatas*) belongs to the morning glory family. Underground, it produces storage roots, not tubers like potato. Most roots in SSA are consumed boiled, steamed or fried. But they can be processed into many different products, including bread, biscuits, and juices.

Above ground, the vines of sweetpotato consist of leaves and stems. Younger leaves of sweetpotato can be eaten as a leafy vegetable. Long vines are cut into 20-30 cm "cuttings", which are planted to generate the next crop of sweetpotato.

Sweetpotato vines are also an excellent complementary feed for dairy animals and pigs. Dairy cows produce milk, which can be converted into butter, another rich Vitamin A source.

Chopped sweetpotato vines and roots can be combined with molasses or other crop residues and fermented to make silage. Silage can be stored for months, providing feed for livestock during the dry season. A brochure on making silage is available at www.sweetpotatoknowledge.org.







Sweetpotato leaves are wonderful sources of lutein

Leaves are an outstanding source of lutein, a micronutrient which helps prevent eye degeneration as we age. The amounts of lutein far exceed other common greens (see table).

Leaves are a good source of other healthy nutrients, including vitamins, minerals, and host of polyphenolics (including anthocyanins, flavonoids and caffeic acid derivatives), omega-3 fatty acids and dietary fiber. Anthocyanins and polyphenolics are anti-oxidants and can help fight inflammation and cancers.

In SSA, people in Angola, Sierra Leone, Tanzania and Zambia like to consume sweetpotato leaves. In other countries like Kenya and Uganda, sweetpotato vines are considered as animal feed. Given that vine protein content is much higher than fresh Napier grass, fresh sweetpotato vines are mixed 50:50 and chopped up with Napier grass to increase milk production by dairy cows.

Two excellent ways to prepare sweetpotato leaves include:

1) With a peanut sauce and OFSP roots



2) Stir fried with tomato, onion, and small fish



Nutrient composition per 100 grams¹ of cooked leaves

| Nutrient | Cowpea Leaves | Cabbage | DFSP Leaves |
|--------------------------------|---------------|------------|--------------|
| Energy (kcal) | 22 | 22 | 34 |
| Protein (gms) | 4.7 | 1.0 | 2.3 |
| Fiber (gms) | N.A. | 1.9 | 1.9 |
| Beta-carotene (µg) | 348 | 74 | 550 |
| Vitamin A (µg RAE) | 29 | 7 | 46 |
| Vitamin C (mg) | 18 | 20 | 1.5 |
| Vitamin B1: Thiamine (mg) | 0.26 | 0.06 | 0.11 |
| Vitamin B2: Riboflavin (mg) | 0.14 | 0.06 | 0.27 |
| Vitamin B3: Niacin (mg) | 1.01 | 0.28 | 1.00 |
| Vitamin B6 (mg) | 0.14 | 0.11 | 0.16 |
| Iron (mg) | 1.1 | 0.17 | 0.6 |
| Calcium (mg) | 69 | 31 | 24 |
| Phosphorus (mg) | 42 | 15 | 60 |
| Lutein + zeaxanthin (g) | N.A. | 253 | 2,633 |

¹ Sources: U.S. Department of Agriculture (USDA) National Nutrient Database for Standard Reference, Release 28.



How the food is prepared makes a difference in nutrient content

How we prepare foods affects the amounts of nutrients available for our bodies to absorb. Releasing nutrients from the food matrix during digestion makes them bioaccessible. Then our own health status and presence of substances like fat influence the amounts our intestines absorb, reflecting their bioavailability.

When a raw sweetpotato is cooked, around 20% of the beta-carotene is lost. To maximize keeping the nutrients in, it is best not to remove the skin of the sweetpotato before cooking and if boiling, keep the lid on the pot. Beta-carotene is a carotenoid, and carotenoids are best absorbed when there is co-consumption of fat, at least a teaspoon, in the meal. Sources of fat include avocado, groundnut, coconut, and vegetable oils.

In-vitro bioaccessibility has been studied with OFSP varieties from Uganda¹. Interestingly, although heat exposure reduces beta-carotene retention, this is compensated for by the heat increasing the bioaccessibility of

the beta-carotene because it breaks up the protein complexes in which the beta-carotene is embedded. Ranking the bioaccessibility of sweetpotato from least to most, it was found that:

raw < baking < steaming/boiling < deep frying

The amounts of bioaccessible Vitamin A (in retinol activity equivalent (RAE) units per 100 grams) for the popular OFSP variety Kabode were found to be:

| raw | < baking | < steaming | < boiling | < deep frying |
|-----|----------|------------|-----------|---------------|
| 194 | 224 | 302 | 330 | 472 |

Many urban consumers are concerned about the risk of diabetes and seek to control their intake of sugars. The Glycemic Index (GI) ranks foods according to their immediate effect on blood sugar, with 100 being the maximum representing pure glucose. GIs for steamed and baked sweetpotato are in the 63-66 range².

¹ Tumuhimbe, G. A., Namutebi, A.S., Muyonga, J. H. 2009. Microstructure and In Vitro Beta Carotene Bioaccessibility of Heat Processed Orange Fleshed Sweet Potato. *Plant Foods Hum Nutr* 64, 312–318.

² Allen, J.C., Corbitt, A.D, Maloney, K.P., Butt, M.S., Truong, V-D. 2012. Glycemic Index of Sweet Potato as Affected by Cooking Methods, *The Open Nutrition Journal*, 6, 1-114.

indicative of a moderate GI food. Raw OFSP flesh and baked or steamed skins have values in the low GI category (30-34). Consumers should be encouraged to also eat the skin of boiled, steamed or roasted sweetpotatoes.

Of course, OFSP fries are full of calories, like any deep-fat fried food. Feel a little better that all that fat has made the vitamin A more bioaccessible. Alternatively, the fries can be baked in an oven, with a touch of oil added.





Adaptable, climate-smart sweetpotato can grow from sea-level to 2,400 m in SSA

The natural diversity found in sweetpotato is mind boggling. CIP's genebank has over 3,000 different types. Flesh colors include white, cream, yellow, orange and purple. Skin colors are equally diverse. The plant can grow erect, or spread out. The latter provide good ground cover once established. A myriad of leaf shapes exists.

Sweetpotato loves warm but not too hot climates. It is happiest at 25-29°C with 750-1000 mm of rainfall annually on good soils with a pH of 5.6-6.6.

But varieties can be found that produce at low altitudes with 400 mm rainfall annually on sandy soils. Others are adapted to be more cold tolerant, but maturity periods lengthen in cooler climates and frost can kill the plant. Many sweetpotato varieties are drought tolerant once they are established. In East and

Southern Africa, it is known as the crop that is there when the maize fails.

Early maturing varieties (3-4 months) are in high demand by farmers needing to maximize the use of their land. Sweetpotato has much higher energy output per unit time per hectare than grain crops. Current yields under rainfed conditions range from 5-30 tons/ha. Poor farmers appreciate the fact that they can often get reasonable yields of sweetpotato without having to use inorganic fertilizer.

However, commercial farmers in South Africa using quality seed of improved varieties, irrigation and fertilizer, combined with good agronomic management, achieve 50-70 tons/ha.

Clearly, the potential for the crop in SSA is still underexploited.



Sweetpotato growing in favorable climate (credit F. Asfaw)



DFSP growing in drought-prone area (credit V. Atakos)



Breeding in Africa for Africa has been key for getting OFSP varieties accepted in SSA

Many people think sweetpotato is indigenous to Africa, but it originated in Central or South America. Portuguese traders brought sweetpotato to Africa in the 16th century. For whatever reason, the dominant varieties in SSA are white-fleshed, having no beta-carotene, or yellow-fleshed, with limited amounts of beta-carotene or none at all.

Adult consumers in East Africa like varieties that have a very mealy texture, with a dry matter content above 30%. Those in Southern Africa prefer varieties with 27-30% dry matter. In contrast, in the USA, orange-fleshed sweetpotatoes dominate. The US types are easy to mash, with dry matter contents of 18-22%. When these types of OFSP varieties were tested in SSA, the young children loved them because they were sugary and easy to swallow, but adults found them to be watery. In addition, introduced varieties often succumbed after a couple of seasons to the different disease and pest pressures in SSA.

When we say breeding, that means a crossing block has been established and different varieties are selected to be the male parents and the female parents. When the female parent flowers, a technician can bring in the male's pollen and make a "controlled cross". The alternative is to let bees do the pollinating— a polycross. These crosses generate true seeds. Each seed that germinates has the potential to be a new sweetpotato variety.

It's an incredible numbers game. A typical crossing-block will generate at least 20,000 seeds a year. The breeder, in collaboration with farmers, evaluates these varieties for many desirable characteristics and yield performance over time. At the end, just a few varieties out of those 20,000 will be candidates for release. One stands in awe of the patience found in committed breeders.



Making a controlled cross in Uganda, introducing pollen from the known male parent to the female parent. If successful, seed will be generated. Each seed is a potential new variety.



Speedbreeders from 13 African countries have released 40 adapted OFSP varieties since 2009

With critical donor support, the number of national programs breeding high yielding, adapted sweetpotato varieties (both orange-fleshed and non-orange fleshed) has grown from 2 in 2005 to 13 in 2017, a dramatic increase. CIP as established three population development programs in SSA to select for the difficult traits of virus resistance (Uganda), drought tolerance (Mozambique) and low-sweetness (Ghana). Each of these sub-regional Sweetpotato Support Platforms (SSPs) has a quality laboratory for nutrient analysis that national programs can access.

The sweetpotato breeders have adapted the accelerated breeding approach developed

by CIP that has reduced the time from crossing parents to releasing varieties from 8 to 4-5 years. This new conventional method and the use of standardized tools for collection and analysis of trial data led the scientists (photo below) to adopt the moniker of Speedbreeders.

It is highly recommended to consult the breeder in the country of interest because having the right variety for the right environment and the desired use (i.e. home consumption versus processing for a particular product) is the foundation for having successful harvests.



| Country | Name of breeder | Email contact |
|-----------------------|-----------------------------|----------------------------|
| Burkina Faso | Koussao Some | koussao@hotmail.com |
| Burundi | Gaspard Nihorimbere | nihorimbereg@yahoo.fr |
| Ethiopia | Fekadu Gurmu Balcha | fekadugurmu@yahoo.com |
| Ghana | Kwadwo Adofo | kinfodda@yahoo.com |
| Kenya | Benjamin Kivuva | benmusem@yahoo.com |
| Madagascar | Michelin Bruno Rasoloniaina | micheline_bruno1@yahoo.fr |
| Malawi | Obed John Mwenye | omwenye@yahoo.co.uk |
| Mozambique | Jose Ricardo | j.ricardo1999@yahoo.com.br |
| Nigeria | Solomon Olufemi Afuape | solomonafuape@yahoo.com |
| Rwanda | Jean Ndirigue | ndrick3@gmail.com |
| South Africa | Sunette Laurie | slaurie@arc.agric.za |
| Tanzania | Everina Lukonge | elukonge@yahoo.com |
| Uganda | Benard Yada | yadabenard21@gmail.com |
| Zambia | Martin Chiona | martinchiona@yahoo.com |
| East & Central Africa | Robert Mwanga (CIP) | r.mwanga@cgiar.org |
| Southern Africa | Maria Andrade (CIP) | m.andrade@cgiar.org |
| West Africa | Ted Carey (CIP) | e.carey@cgiar.org |



Another key to success is using quality seed

Most SSA sweetpotato farmers save their vines to use as “seed” for the following season. Or they get cuttings from their neighbors. However, over time, yield reducing viruses can build up in recycled planting material.

Different varieties have varying levels of resistance to virus diseases. Several SSA laboratories in national programs have the capacity to “clean” (i.e. eliminate viruses in) infected varieties.

Truly sustainable seed systems need to provide adequate amounts of quality planting material or “seed” at the time when farmers are ready to plant. Many demonstrations are underway so farmers can see the yield advantage of using “clean” seed. In several countries, farmers are now willing-to-pay for quality starter seed.

During the past decade, the net tunnel technology has been developed to assist trained basic seed multipliers to maintain their own stocks of disease-free planting material.

National program breeders can link you to producers of quality planting material of the varieties they recommend. In addition the Sweetpotato Knowledge Portal (www.sweetpotatoknowledge.org) has lists of trained, decentralized multipliers in selected countries.

In areas with dry seasons lasting more than 4 months, the use of the Triple S method, that is root Storage in Sand, then Sprouting, is recommended for assuring sufficient quantities of adequate quality seed at the beginning of the rains. Detailed tools for using this approach are available on the Sweetpotato Knowledge Portal.



Producing high quality tissue culture plantlets in Rwanda is the starting point (credit J. Low)



Net tunnels in Ethiopia prevent virus-carrying insects from infecting basic cuttings coming from protected screenhouses at research stations (credit R. Brouwer)



Improved handling during harvest and transport can significantly increase shelf-life

One of the greatest challenges faced along the sweetpotato value chain is the shelf-life of sweetpotato once it is harvested. Rough use of hoes or other equipment during harvest that cut the root introduce entry points for rot-causing organisms.

Smallholders often harvest just a small quantity of roots for one or two meals and store the rest in the ground until they are needed. This is known as piecemeal harvesting. If larger quantities are harvested, unless they are cured, shelf-life is limited, typically several days to up to two weeks. Curing is a process of exposing the harvest roots to high humidity (90-95%) at 25-30°C for 3-5 days. This toughens the skin of the roots, which helps protect the root from damage and heal any existing

wounds, reducing the risk of post-harvest disease infection. A different approach, called pre-harvest in-ground curing, entails removing the foliage 2-4 days before harvesting to reduce post-harvest loss.

To minimize damage, it is best to harvest sweetpotato with a pointed stick or equipment that minimizes root damage. Then, the unwashed roots are packed in medium-size (approximately 60 kgs of roots) bags or crates if those are affordable. Avoid using extended bags that require several people to load and unload the bag. Large bags tend to be dropped when unloaded, damaging the roots.

Many farmers and traders unknowingly abuse their sweetpotato roots. This leads to levels of post-harvest loss that are higher than need be.



Tight packing of roots in difficult to handle extended bags results in considerable damage to the roots and reduced shelf-life (credit T. Stathers)



Harvesting with care that avoids cutting the root is critical for prolonging shelf-life (credit T. Stathers).



Off-season availability can be extended through piecemeal harvesting and storage

Farmers can spread out the planting of their sweetpotato cuttings over several weeks to extend the period of root availability (i.e. staggered planting). The challenge occurs when the dry season starts and cracks appear in the soil, allowing the sweetpotato weevils to access and damage the roots. Hilling-up dirt around the base of the plant helps prevent weevil attack as does irrigation which keeps the soil moist. The key is to prevent cracks in the soil or exposed roots as weevils cannot dig!

After harvesting, the use of a sandbox (Double S method) or a stepped pit store can also ex-

tend availability of roots for home consumption for up to four months. Basically, weevil-free, uncut roots are layered with cool sand, assuring that the roots do not touch each other.

Large-scale commercial operations store sweetpotato roots for many months. After curing, the roots are kept in crates at 13-15°C. The cool temperatures suppress weevils and sprouting. However, these systems typically are run using electricity. The cost of such systems is often prohibitive in SSA, and the use of solar-powered cold storage is being investigated.



Weevils lay their eggs in roots and stems, causing permanent damage (holes) when they emerge (credit M. Ghislain)



When storing for home consumption, alternating layers weevil-free roots and sand are made, assuring touch each other roots do not touch (credit E. Abidin)



OFSP use in sub-Saharan Africa is expanding through incorporation into traditional dishes and modern cuisine

Over 90% of sweetpotato in SSA is consumed steamed or boiled, limiting its use. Scientists have worked with local women in Uganda, Ethiopia, Mozambique, Malawi, and Ghana to see how OFSP could be added to local dishes to improve their nutritional content and flavor. Recipe books for each country are available at www.sweetpotatoknowledge.org/sections/recipes.

In Kenya, CIP worked with Chef Arnold Mawala to develop recipes that included OFSP in dishes appealing to urban consumers such as OFSP wrap, OFSP-avocado salad, and OFSP-tomato-apple soup. Check out the recipes on <https://www.flickr.com/photos/106872707@N03/albums/72157682938229512>.

For young children, we encourage the use of enhanced OFSP porridge, for example mashed sweetpotato mixed with a source of protein (like groundnuts or fish), a little fat (like vegetable oil) and dark green leaves. Such porridges are also used in school feeding programs.



OFSP leaf stew with egusi seed in West Africa



OFSP wrap in Kenya's capital, Nairobi



Traditional flat bread made with OFSP purée in Tigray, Ethiopia



Children eating OFSP porridge in Osun State School Feeding Program (credit O. Phorbee)



DFSP purée is an excellent way to increase vitamin A content in baked products

When you steam DFSP with its skin on and then mash it, you create DFSP purée. DFSP can replace 20-60% of wheat flour in commonly baked products, giving them a golden color. This can be done at home, but for a business, usually a grating/pureeing machine is used to assure a purée without lumps. If the skin is left on, you have a high fiber purée.

DFSP purée is much cheaper to make than DFSP flour and unlike DFSP flour, is usually cheaper than wheat flour. To make DFSP purée as convenient to use as flour, CIP developed a vacuum-packed DFSP purée that uses affordable, locally available preservatives to enable storage at or below 25° C for 3 months. This will help bakers have a year-round supply of DFSP.

Euro-Ingredients food technologist Antonio Magnaghi has worked closely with CIP to adapt existing recipes for bread, biscuits, chapattis (flat bread), and muffins to develop quality, competitive DFSP purée based bakery products.



Making DFSP purée from steamed, peeled roots



DFSP high fiber purée, peel not removed, vacuum-packed

For assistance on DFSP purée use contact: Tawanda Muzinghi (t.muzinghi@cgiar.org) or Antonio Magnaghi (antonio@euroingredients.net)





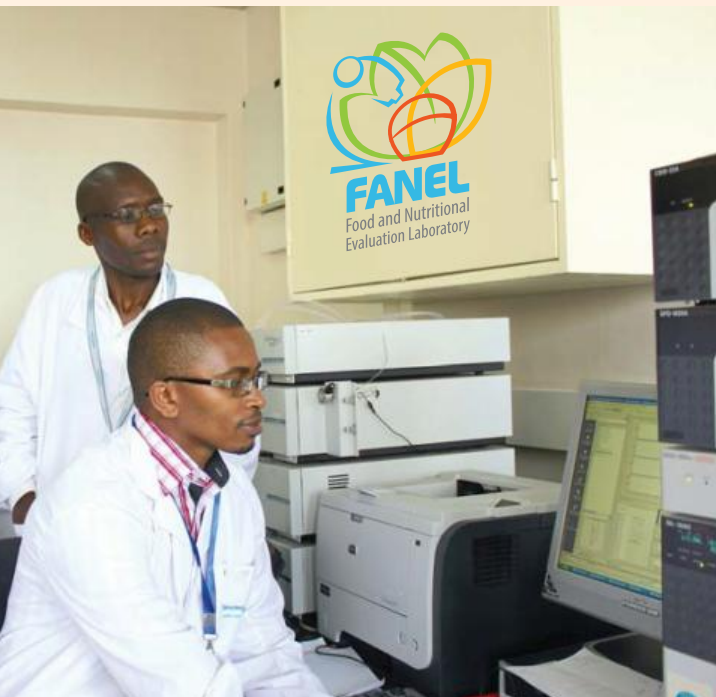
The Food Analysis and Nutrition Evaluation Laboratory (FANEL) can assess the beta-carotene content of any product

In developing any new OFSP based processed product, it is critical that it meets food safety standards and that the amount of beta-carotene in the product is known so that accurate labeling can be done.

FANEL is jointly staffed by CIP and the International Livestock Research Institute at the Biosciences for East and Central Africa (BecA) laboratories in Nairobi, Kenya. It can provide services to public and private sector clients in beta-carotene and vitamin C analysis, proximate analysis, and microbial analysis. FANEL gladly hosts graduate food science students.

We consider an OFSP product to be an excellent source of vitamin A if a standard serving meets 20% of daily requirements of the target group and a good source if it meets 10%.





Direct any requests for FANEL services to Dr. Tawanda Muzhingi (t.muzhingi@cgiar.org)



Women are benefitting by OFSP income-generating opportunities and improved diets at home

In many countries in SSA, sweetpotato is traditionally grown, sold and processed in small quantities by women. Introducing high yielding OFSP varieties to women farmers for production in field or homestead plots and providing extension advice on improved production practices, and improving access to inputs, offers the opportunity to increase women's productivity. This increase is likely to result in reduced vitamin A deficiency and improved food security since women are more likely than men to use OFSP for child feeding and household consumption.

While the higher productivity of many OFSP varieties enables women to sell surplus roots and processed products, there is a need to design gender equitable commercialized interventions that ensure women are not relegated to lower levels of OFSP marketing and processing value chains, but have opportunities also at higher levels. To ensure that women have equal opportunities all along the value chain

for OFSP products, entrepreneurial training, financial services and other resources must be "women-friendly".

In Rwanda, women constitute 75% of the farmers linked to Urwibutso Enterprises, which produces the OFSP based Golden Power Biscuits. Women farmers with fewer resources were organized into groups to ensure a consistent root supply for the agro-processor and provided with additional training to increase the output of quality OFSP roots. On their small pieces of land, women were generating \$277 per year per household from sales of sweetpotato roots in 2014. The introduction of quality planting material of high yielding varieties was key for generating surplus for sale.

In addition, many women produce OFSP processed products to sell in local markets and women dominate retail sweetpotato fresh root sales.





Learn Everything you ever wanted to know about sweetpotato in 5 languages

To make a difference to health and wealth, qualified change agents are needed in every country to work with farmers, traders, processors and influence consumers. To get the latest research knowledge out, a ten day Everything You Ever Wanted to Know About Sweetpotato Trainers of Trainers (ToT) course was developed and one local institution was identified in Tanzania, Mozambique, Nigeria, Burkina Faso, and Ethiopia to become the official course trainers. Course dates are announced on the Sweetpotato Knowledge Portal. The manuals cover 13 topics and provide suggestions for practical exercises. Digital sets are available in English, French, Portuguese and Kiswahili at www.sweetpotato-knowledge.org.

In addition, we have developed an Investment Guide to provide detailed information on what it will cost to develop an integrated agriculture-nutrition OFSP-focused intervention.

This is complemented by a Implementation Guide for making the proposed intervention a reality.

There is also a five-volume learning kit entitled Engendered Orange-fleshed Sweetpotato Project Planning, Implementation, Monitoring and Evaluation, that covers all aspects of proposal development and project implementation. A manual with nine key monitoring tools specific for sweetpotato dissemination projects is also available.

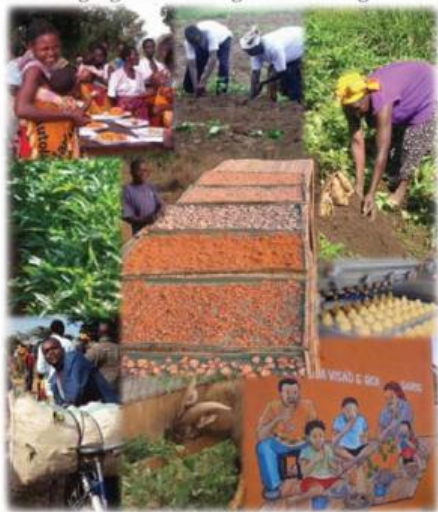
Learning is a continuous process and we encourage organizations to sponsor their technical staff to join relevant Community of Practice technical working groups. Each of them meets once a year. The CoP groups are:

- 1) Breeding and Genomics
- 2) Seed Systems and Crop Management
- 3) Marketing, Processing & Utilization
- 4) Monitoring, Learning and Evaluation

Contact: Jan Low (j.low@cgiar.org) for details

Everything You Ever Wanted to Know about Sweetpotato

Reaching Agents of Change ToT training manual



JUNE 2013





The SPHI seeks to improve the lives of 10 million households in 17 SSA countries by 2020

In October 2009, the International Potato (CIP) and 26 partner organizations launched the Sweetpotato for Profit and Health Initiative or SPHI. Its goal is to improve the lives of 10 million African households by 2020 through access to improved varieties of sweetpotato and their diversified use. This is a multi-partner, multi-donor effort.

The SPHI seeks to untap the potential of sweetpotato to address malnutrition and poverty in SSA. Since 2014, the SPHI has been co-led by CIP and the Forum for African Research in Africa (FARA). Five donors are contributing to the effort, supporting research to address bottlenecks for the full exploitation of the crop and/or supporting going to scale efforts to get improved sweetpotato varieties to farmers and consumers so that their diets and incomes are improved. These are: the Bill & Melinda Gates Foundation, UKAid, the United States Agency for International Development, Irish Aid, and the Alliance for a Green Revolution in Africa. Their support is truly appreciated and we encourage others to join so that the goal is met.

For the latest update on the numbers of households reached, consult the home page of the Sweetpotato Knowledge Portal.

BILL & MELINDA
GATES foundation



USAID
FROM THE AMERICAN PEOPLE



Contact: Jan Low (j.low@cgiar.org) for details





Eleven organizations belong to the SPHI Steering Committee and are committed to reaching the 2020 goal

The SPHI Community of Practice meets annually to share progress and new findings that strengthens our collective ability to improve lives.

Please learn how these different organizations are working with sweetpotato by visiting their websites or contacting the SPHI Steering Committee member by e-mail. All these organizations are committed to making a difference by integrating OFSP into their programs.



Jan Low, SPHI Co-Leader

j.low@cgiar.org ■ www.cipotato.org



Yemi Akinbamijo, SPHI Co-Leader

yakinbamijo@faraafrica.org ■ www.faraafrica.org



RESEARCH
PROGRAM ON
Roots, Tubers
and Bananas

Graham Thiele

g.thiele@cgiar.org ■ www.rtb.cgiar.org/



Valerie Rhoe Davis

valerie.rhoe@crs.org ■ www.crs.org

....Join us in reaching this ambitious goal



Michelle Wilson

mwilson@farmfrica.org ■ www.farmfrica.org



Helen Keller
INTERNATIONAL

Mette Kjaer Kinoti

m.kinoti@hki.org ■ www.hki.org



Antony Masinde

antony.masinde@farmconcern.org ■
www.farmconcern.org



Andrew Westby

a.westby@gre.ac.uk ■ www.nri.org

NC STATE
UNIVERSITY

Craig Yencho

yencho@ncsu.edu ■ www.potatoes.ncsu.edu



Anna-Marie Ball

a.ball@cgiar.org ■ www.harvestplus.org



Rikka Trangsrud

rtrangsrud@path.org ■ www.path.org



We are honored that the strong evidence base that biofortification can make a difference was recognized by the World Food Prize Foundation in 2016. DFSP is the lead biofortified crop in SSA.



From left to right: Former President of Malawi, Joyce Banda, Co-laureate Jan Low (CIP), Co-laureate Robert Mwanga (CIP),

“This is the power of agriculture
working for nutrition”



President of Mauritius, Ameenah Gurib, Co-laureate Maria Andrade (CIP), Co-laureate Howarth Bouis (HarvestPlus)



2nd Edition: October 2017

Written by Jan W. Low

Graphic design by CIP-CPAD

Printed with support from the SASHA project

www.sweetpotatoknowledge.org

www.cipotato.org