

How Agriculture Can Contribute to Nutrition and Health Outcomes: Experience to date from the Rooting out Hunger in Malawi with Nutritious Orange-Fleshed Sweetpotato Project

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Background

Malawi is challenged by being landlocked and densely populated. Based on the census of 2008, the population is 13.1 million, i.e. 110 inhabitants per km² (1) compared to the average inhabitants in Sub-Saharan Africa, 34 per km². The government is committed to poverty reduction and the percentage of persons falling below the poverty line has declined from 50% in 2005 to 39% in 2009 (2). However, the level of malnutrition remains high, with 47% of under-five children stunted, 59% at risk of vitamin A deficiency (VAD), and 13% underweight. VAD can limit growth, weaken immunity and eyesight and lead to increased mortality. Furthermore, there is still a significant prevalence of HIV and AIDS, currently estimated at 12% (3).

Maize is the most important food crop, followed by cassava, sweetpotato, Irish potato, and sorghum. However, sweetpotato is currently one of the most widely grown crops. It is becoming a major food source and increasingly contributing to the food basket in Malawi. This crop is also a source of cash and employment to many farmers.

The development, promotion, and dissemination of pro-vitamin A rich orange-fleshed sweetpotato (OFSP) varieties align perfectly with the food security and nutrition objectives of the country because of five key strengths:

1. Just 100 g (1/2 cup) supplies the daily vitamin A needs of young children, the group most at risk of VAD. 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 (4) has demonstrated the efficacy of OFSP as a bioavailable source of vitamin A, and community-level research in Mozambique (5) has shown that an integrated approach using OFSP can reduce VAD within a resource-poor population.
2. Compared to many other crops, sweetpotato requires few inputs and relatively less labor,¹ making it particularly suitable for households threatened by migration, civil disorder, or diseases such as HIV and AIDS (6).
3. Its ability to produce relatively good yields under marginal conditions, its flexible planting and harvesting times that provide roots *and* leaves during hunger season, and its good yield response to better management are factors driving its expansion in Sub-Saharan Africa (SSA) (7).
4. Like the majority of SSA, it's a woman's crop in Malawi. Since women are responsible for the preparing food for themselves and their families, and are the dominant caregivers for young children, the likelihood of OFSP having the desired uptake by the two groups most susceptible to vitamin A deficiency, young children and women of reproductive age, is vastly enhanced.

Rooting Out Hunger in Malawi with OFSP

The objectives of the Rooting out Hunger in Malawi with Nutritious Orange-fleshed Sweetpotato project align well with the ASWAp of the Government of Malawi (8) and priority areas for action announced by the Ireland's Hunger Task force in 2008. The International Potato Center (CIP) co-leads the project with the national sweetpotato program, with public sector extension personnel and three non-governmental organizations (Concern, Millennium Village Project, and CADECOM) participating in dissemination and training efforts.

In the first year, the project had to start by building up the supply of the Zondeni, a high dry matter OFSP. It developed a 1 ("primary"), 2 ("secondary"), 3 ("tertiary") seed multiplication system. The primary multiplication site provides disease-free ("clean") planting material and is managed by researchers at the Bvumbwe research station. Department of Agricultural Research Services in Bvumbwe would release 7 sweetpotato varieties after being accepted by the Committee Release Varieties, recently. Five out of seven are OFSP. By having more OFSP varieties, it will be having great opportunities to up-scaling planting material to all over Malawi based on its performance at each agro-ecological zone. To be able to best serve farmers, the secondary and tertiary multiplication sites are decentralized to farms located near the beneficiary populations. This makes sense because sweetpotato vines are perishable. Secondary sites are larger than tertiary sites, but both are managed by trained farmer multipliers. To date, 133 decentralized vine multiplication (DVM) sites have been established. Through March 2011, in the second year of the project, the dissemination of OFSP with subsidized vouchers, has reached 10,869 farming households, i.e. 5,496 women and 5,373 men. They have already grown the OFSP in the 2010/2011 rainy season in Malawi. This success was using an implementation strategy that includes six integrated components: (1) strengthening the partnership with the relevant government, NGOs and private sectors, (2) seed systems, (3) training, visits and field days, (4) demand creation campaign through behavior change communication (theatre, dance, poetry, songs and banners) (5) voucher systems, and (6) post-harvest and marketing on a small-scale.

Training activities were in each district using a "Training of Trainers" approach. In this approach, each person trained is expected to subsequently train others. For example, in Chikhwawa, Phalombe, and Dedza, one trained secondary multiplier should train five tertiary multipliers. In Zomba, one woman/household trained in utilization of storage roots is expected to subsequently train 10 additional women. We use vouchers to reduce the risk to DVMS by guaranteeing that they will be reimbursed for a certain number of vines distributed using vouchers. This method also provides an excellent tracking system to capture the names and locations of the vine recipients who redeem their vouchers. Through March 2011, US \$11,231.30 (MK 1,685,695) has been spent on covering voucher redemption. DVMs generated additional income from selling OFSP vine cuttings on the free market. A total of \$1,732 (MK 259,800) was received from these additional sales. A number of success stories have been recorded from DVM and beneficiaries in Dedza, Zomba, Phalombe and Chikhwawa Districts. Mr. Chimpikizo, a multiplier in Dedza, received US \$407 (Mk 61,000) from this sale. With the earned money, he plans to construct a new diffused light store for Irish potato seeds. Mr. Chimpikizo is also an Irish potato seed producer and participates in the CIP program of Irish potato seed production. He also practices crop diversification. Upile Farmer Club, one of the clubs under MVP in Zomba, received 797 vouchers and earned \$823 (Mk 123,535). Additionally, the club also sold 189 bags of 50-kg volume at Mk 250/bag.

From this sale, they earned as much as \$315 (Mk 47,250). These bags were sold to the Ministry of Agriculture and Food Security Machinga Agriculture Development Division. The club has extended the multiplication of sweetpotato vines to 0.1 ha in this 2010/2011 season using existing irrigation equipment. Mr. Oxford Dimo, a tertiary multiplier in Chikhwawa, obtained the vine cuttings from Mr. Oris Tembo, the secondary multiplier and from the Madalitso Club. He expanded the area of planting OFSP to 0.7 ha. He uses a motorized pump to irrigate the vines. He has sold the vine cuttings thrice. The first lot of 700 bundles of 5 kg each was sold to the Evangelical Lutheran Development Services and earned him \$700 (Mk 105,000). From the second lot of 250 bundles of 5 kg each he earned \$250 (Mk 37,500). The third lot of 60 bundles of 5 kg each he sold for \$60 (Mk 9,000). With these earnings, he could buy two additional diesel pumps for irrigation. He is also implementing crop diversification in his garden. He plans to extend the area for OSFP vine multiplication and production in the future. Mr. and Mrs. Tambala from Phalombe District said that OFSP Zondeni sweetpotato leaves made a very good relish and it was not like the ordinary sweetpotato vines that we normally grew, Zondeni leaves were very delicious. Her three-year-old boy child liked it quite a lot. He asked for Zondeni cooked leaves at least thrice a week. If she did not prepare it for him then she would be in hot soup. Mrs. Tambala reported that she did not want to lose the variety. The last but not the least, we heard the story from one of beneficiaries from Chikhwawa District, Mr. Adikleki Biliati. He planted 0.2 ha of sorghum but the crop failed due to drought. At the same time, he received 4 kg of OFSP Zondeni planting material from CADECOM. He planted the crop using the information written on the vouchers issued by CIP: 18 ridges of each 5 m long. He watered his garden with the water from a borehole. He used a drum to carry the water on a bicycle. Now, the sweetpotato field is doing better as compared to sorghum. In this village, farmers have agreed to do a pass-on-program—that is, by passing on 4 kg of OFSP planting material to other beneficiaries in order to sustain and accelerate the distribution of vines for food security.

In year 3, we expect to reach at least 24,000 households. In this year 3, we will start up-scaling our strategic implementation. After 4.5 year program, we have planned to reach 115,000 households who will be growing the OFSP in their gardens and more Malawian will be consuming the OFSP products.

With the building up of surplus root production by year 2 (November 2011), the right time to invest more in nutrition education at the community level and product and market development. Major efforts on nutrition awareness, for instance, through a radio program, and market development for both fresh and processed OFSP products will be complemented by private sector and community-based capacity development with the aim at improving production and postharvest practices and ensure adequate monitoring and evaluation of the program. Recently, Irish Aid in cooperation with CIP and implementing partners have compiled 9 series radio programmes in Chichewa on highlighting the benefits of nutritious orange-fleshed sweetpotato recipes that are broadcasted each Wednesday for 9 weeks on Malawi Broadcasting Radio One, starting on September 14th through to the 9th of November at the 16:15-16:30 slot. MBC One was chosen as it has been recommended to reach the most rural women – it was also recommended to get a late afternoon slot when women would be in from the field. These programmes have been edited and produced by Irish Aid partners NASFAM. A monitoring exercise will be done in a few months. We like to see what the impressions/learning/viewership of the radio programme were.

We will be focused on improving fresh root markets and informal chip processing. We are also collaborating with a private sector partner, Universal Industries, to develop a commercial value chain. Universal Industries has been developing biscuits from the OFSP flour and fried crisps from fresh OFSP. For crisps, they have purchased new equipment to enable them to make high quality sweetpotato, cassava and banana crisps which will come on-line in 2012. In collaboration with Bvumbwe, 3 orange-fleshed varieties (Zondeni, LU06/2525, BV07/026) have been found to be suitable for crisps. For making biscuits, a number of trials have been conducted. They are now considering launching one inexpensive “budget cream biscuit” and a new nutritional biscuit during the coming year.

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