Integrating Orange Combating Vitamin A Deficiency in maize-based food systems in Zambia

In year 1, three pro-vitamin A rich orange-fleshed sweetpotatoes (OFSP) bred by the national program have been selected based on-farm trials for further testing, multiplication and demonstration. Farmers are being identified and trained as quality vine multipliers and hosts of demonstration plots for the next season.

What is the problem?
Southern Africa, except for South Africa, is renowned for low diet diversity and high levels of stunting. Forty-eight percent of boys and 42% of girls under five years of age in Zambia are stunted (2007 figures). Moreover, micronutrient malnutrition is also high. For example, the prevalence rate of vitamin A deficiency (VAD) among children under five years of age in Zambia is very high at 54%. This is in spite of Zambia having a vitamin A capsule supplementation program—currently reaching 63% of children 6 to 9 months of age—and fortified sugar. Food-based approaches highlighting vitamin A foods are complementary to these efforts and particularly suited to rural areas, where fortified foods are often beyond the purchasing power of many households.

Orange-fleshed sweetpotato can contribute to solving the problem. Just one small root (125 gms) can meet the daily vitamin A needs of a young child. However, most varieties grown in Zambia are white or yellow-fleshed, with little or no pro-vitamin A. Moreover, sweetpotato is already a critical food security crop in the Eastern Province of Zambia. It supplements maize and cassava and serves as a stand-by when other staples fail due to drought or disease. But many households failed to grow sufficient quantities of sweetpotato due to lack of timely access to quality planting material.

The government of Zambia has recognized the need to diversify away from its heavy dependency on maize. In the 1990s, drought mitigation programs promoted cassava and sweetpotato distribution programs. This led to widespread adoption of a yellow-fleshed, 3-month maturing sweetpotato variety Chingova, which unfortunately contains no beta-carotene. However, until 2007, investment in agriculture in Zambia and particularly in agricultural research was in decline. There is a particular dearth in researchers and development agents knowledgeable in vegetatively propagated crops, which urgently needs to be addressed.

What do we want to achieve?
Integrating Orange began in September 2011 as part of the Feed the Future Initiative (FTF) by USAID to support research for development in Zambia, with a focus on Eastern Province. In collaboration with the Zambia Agriculture Research Institute (ZARI), we seek to identify the best performing and tasting orange-fleshed sweetpotato varieties for Eastern and Central Province and to ensure that by 2015, quality planting material of these varieties will be delivered to 15,000 households, prioritizing women with children under five years of age. Concurrently, we seek to strengthen research capacity in sweetpotato
crop management and establish two profitable sweetpotato value chains.

How are we making it happen?
First, on-farm trials to evaluate best-bet OFSP varieties bred by ZARI researchers against the popular Chingova variety will be conducted with farmer participation, to ensure that farmer preferences regarding performance and taste are captured. Second, in collaboration with public sector extension, we will establish a cadre of trained decentralized vine multipliers (DVMs) located near the communities they will serve. Zambian masters students, supervised by CIP and ZARI scientists, will conduct research on improved management techniques, including a method to re-sprout vines from roots stored during the dry season. In collaboration with other CGIAR research centers, intercropping trials with other crops will be conducted.
Commercially-oriented farmers will be linked to traders marketing sweetpotato and traders will be trained about the health benefits of OFSP. Radio and other promotion events will be held to build demand and other partners will be engaged to promote improved dietary practices using OFSP and its diversified use in promising processed products.

Where are we working?
The project is working in the Chipata, Katete, Lundazi, and Petauke districts of Eastern Province, Zambia. Kapiri-Mposhi in Central Province is the fifth district included in the project. The vine conservation trials will be implemented at the Msukera Agricultural Research Station and at two farms within the four Eastern Province districts.

What have we achieved so far?
- Two of the five OFSP varieties have cleared to the final stages of virus elimination in vitro. These virus-free tissue culture plantlets will be used to initiate foundation and primary multiplication sites.
- A glass house and two screen houses at ZARI’s Msukera research station have been rehabilitated and will receive the disease-free planting material.
- On-farm vine, establishment, disease assessments, and leaf taste surveys have been completed for all 5 varieties along with the local standard at all 36 trial sites. Three OFSP varieties will be used in 2012/2013 demonstration plots.

- Two primary multiplication plots established: one at Msukera research station; the second at Mt. Makulu research station.
- 20 DVMs have been established in the four districts of Eastern Province with DVM training expanded to an additional two districts.
- Two Masters students have initiated their field research.

What is next?
A baseline assessment of households with young children who grow sweetpotato and those who do not grow sweetpotato will be conducted in September 2012. For the 2012/2013 season, at least 25 DVMs will be ready to serve their communities with quality vines and demonstration plots, backed up by training, communication materials and activities. We are expecting to reach 3,000 households using the DVM approach and 2,000 households through mass multiplication from September through November 2012, with the remaining 10,000 households obtaining vines in 2014 and 2015.

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