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Partnership: An approach to promote orange-fleshed sweetpotato, experiences from Uganda

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Abstract. Micronutrient malnutrition, is widespread in Uganda. In late 2000 a partnership using a multisectoral approach was initiated to address vitamin A deficiency (VAD) using orange-fleshed sweetpotato (OFSP) in a community in five zones of Luwero district in Central Uganda. The partners from different organizations and sectors field-tested OFSP in the district, created awareness of the potential value of OFSP in combating VAD, improving food security and household income. The initial partners were the National Agricultural Research Organization (NARO), the International Potato Centre (CIP), Child Healthy and Development Centre of Makerere University Medical School, Luwero District Agricultural Extension (LDAE), and the non-government Organization, Volunteer Efforts for Development Concerns (VEDCO). To accelerate promotion and dissemination of OFSP the partnership at different times included different players from the different sectors. To date more than 30 districts in the country have received planting material to initiate multiplication and dissemination of OFSP. Promotion of OFSP is increasingly attracting the private sector leading to new sweetpotato products, increased sale of OFSP vines and storage roots by farmers. The multisectoral approach involving different partners has had a positive impact as reflected in the increased demand for OFSP planting material from research institutes and agricultural development research centers, individual farmers and farmer groups.

Introduction

Micronutrient malnutrition, primarily due to diets poor in bioavailable vitamins and minerals is widespread in Uganda, and in developing countries. Iron, vitamin A and zinc deficiencies are the most widespread nutrition deficiencies in the world today, affecting over 3.5 billion people globally (Ruel, 2001). The root cause of micronutrient malnutrition is poor quality diets, characterized by high intake of food staples, but low consumption of animal and fish products, fruits, lentils, and vegetables, which are rich sources of bioavailable minerals and vitamins. Consequently, most of the malnourished are those who cannot afford to buy high-quality, micronutrient-rich foods or who cannot produce and consume these foods.

More than 90 countries are categorized by the World Healthy Organization (WHO) as having a public health problem as a result of clinical (very severe) and/or sub-clinical (severe) vitamin A deficiency (WHO, 1995). Uganda is included in the clinical vitamin A deficiency category (WHO, 1995) due to approximately one third (28%) of Ugandan children, and 60% of women being vitamin A

deficient (UDH, 2001). Globally, an estimated 3-million preschool-age children have visible eye damage due to vitamin A deficiency (VAD). Annually, an estimated 250,000 to 500,000 preschool children go blind from this deficiency, and about two-thirds of these children die within a few months after going blind. VAD increases children's risk of common illnesses such as respiratory and diaorrheal diseases, measles, and malaria, impairs growth, development, vision, and immune systems, and in severe cases results in blindness and death (Ruel, 2001). In women Vitamin A deficiency increases the risk of dying during pregnancy, as well as giving birth to low weight children and may increase the spread of HIV infection leading to AIDS. There are several approaches that are effective in combating vitamin A deficiency. These include, capsule supplementation, food fortification, diet diversification and public health measures. The rural and urban poor cannot afford expensive vitamin A-rich foods, such as fish oils, liver, milk, eggs and butter, which contain vitamin A in its true form (retinol), which can be used directly by the body. Plant foods and vegetables contain precursors, or pro-vitamin A (beta-carotene) and other carotenoids that the human body can convert to vitamin A.

Food-based strategies to combat vitamin A deficiency may involve modifying people's diets, by providing plants with large amounts of b-carotene or by breeding new varieties of plants with larger amounts and more bioavailabe b-carotene. As a long term goal to combat VAD, consumption of a variety of local foods rich in vitamin A will provide adequate vitamin A. Consumption of these foods requires purchasing them or producing and consuming them on small holder farms of low income families. OFSP have potential to provide adequate vitamin A intake to the resource-poor, especially children. Prior studies have shown that OFSP are among the most promising plant sources of β-carotene (Low *et al*., 1979; 2001; Hagenimana *et al*., 1999; Mukherjee and Ilangantileke, 2002). This paper highlights the important role partners have played in dissemination of OFSP in Uganda.

Early Attempts to introduce OFSP in the farming systems of Uganda. There were attempts to introduce OFSP in the farming systems of Uganda in the early 1980s but failed. Farmers and consumers rejected OFSP clones introduced from Taiwan, Mainland China, and the International Institute of Agriculture (IITA) because of low dry matter content (<30%) and squash-like flavor of clones (Mwanga *et al*., 1991). In 1999 the National Agricultural Research Organization (NARO) officially released the "NASPOT 5", the first OFSP cultivar to be released by the national sweetpotato program (Mwanga *et al*., 2003. However, dissemination of "NASPOT 5" was very slow. In an independent project, attempts by Child Healthy and Development Centre (CHDC) of Makerere University to improve child growth through improved quality of diet by promotion of rabbit rearing in Luwero District in mid 1990s failed. These plus perhaps other examples of previous undocumented interventions of supplementation, agricultural interventions, and education to improve dietary quality were all necessary but insufficient approaches. Coordination between sectors was missing. Multidisciplinary teams had to work together as partners to design and implement strategies to tackle the problem in a sustainable way.

Food-based approaches focus on increasing the amount of micronutrients consumed in the diet and on making a larger share of these nutrients bioavalable (readily absorbed by the human body). Food-based approaches are complex and require collaboration or partnership between a variety of sectors such as agriculture, nutrition, education, and economics. The realization of the need for a partnership and sector approach led to initiation of the Luwero Child Nutrition Project and eventually to the promotion of beta carotene-rich OFSP.

Background to the Luwero Child Nutrition Project. In 1997 The Child Health and

Development Centre (CHDC) of Makerere University (MU) together with Volunteer Efforts for Development Concerns (VEDCO), implemented a child nutrition project in 5 zones in Luwero District. The major objective of the project was to promote child growth through improved quality of diet. The activities included promotion of rabbit rearing for household diet, especially for children, monthly weighing of children, nutrition education, individual counseling and referral of mothers with malnourished and sick children, periodic distribution of vitamin A capsules and deworming medication. Rabbits had already been introduced to Luwero by VEDCO as an economic initiative. CHDC therefore came in to add value to the rabbits by promoting them for household consumption, for the benefit of children and to address micronutrient malnutrition. VEDCO and Luwero District Agricultural Extension (LDAE) provided extension services in rabbit management and rearing, and other agricultural related services. The Thrasher Foundation, a US based research initiative, funded the project during 1998 to 2000.

The Orange Fleshed Sweetpotato Project in Luwero District. In late 2000, the International Potato Centre (CIP) approached Micronutrient Operational Strategies and Technology (MOST) through the CHDC, to identify a community where the 'orange-fleshed sweetpotato project' could field-test OFSP to address vitamin A deficiency. The opportunity was seized by CHDC to continue providing services for nutrition improvement services already implemented in Luwero District. The National Agricultural Research Organization (NARO) through Namulonge Agricultural and Animal Production Research Institute (NAARI) and Kawanda Agricultural Research Institute (KARI) were included to plan for field-testing of sweetpotato in the existing project areas. Sweetpotato was considered a viable product for the project since 80% of Luwero households depend on sweetpotato as a staple food.

Implemented Project Activities

The partners (shown in parentheses below) implemented different components of the project in five zones of Luwero District.

Growth promotion (CHDC/MU, Healthy Department Luwero District, VEDCO). The partners executed monthly weighing of children, nutrition education and counseling, periodic deworming, and vitamin A capsule supplementation.

Crop and Field Management (NARO/NAARI, CHDC, CIP, VEDCO). The partners conducted demonstrations on garden-preparation, planting technology and crop management, and on-farm field-testing of OFSP clones. Rapid multiplication of planting materials was carried out to ensure availability of vines to farmers in each zone.

Post-harvest Technology (NARO/KARI, NAARI, CIP, CHDC, VEDCO, Luwero District Agricultural Extension (LDAE). The partners: (1) carried out demonstrations on processing of sweetpotato into various products suitable for young children's meals. (2) Provided hands-on experience in preparation of children's meals. (3) Demonstrated technology for preservation and storage of sweetpotato for long time use. (4) Conducted palatability tests to measure acceptability of sweetpotato varieties and products.

Monitoring and evaluation (NAARI, CIP, CHDC, VEDCO, LDAE, farmers). NARO together with farmers specifically monitored crop management and emerging field problems. NARO also compiled data to assess yield performance, disease, pest resistance, and palatability of the different sweetpotato varieties. Other aspects of the project such as responses of the communities to project benefits were jointly monitored by all the partners.

Project Achievements

The following were the major achievements of the Luwero OFSP project accomplished through a strong partnership of various collaborators, including the community.

- Demand for nutrition and agricultural services were enhanced greatly.
- The project strengthened leadership of existing community groups to address not only economic empowerment, but also health and nutritional status of vulnerable groups like children
- Nutrition improvement for children was put on the communities' priority agenda. Communities demonstrated this through the implementation of community-initiated children's days to promote what they had benefited from the project.
- The OFSP project was appreciated as a means of improving household food security because the OFSP was high yielding and grew faster. It was nutritious and was liked by children. It is also a viable income-generating product of the project.

The Luwero Community. The community was led and organized by five leaders from each project zone. The leaders were responsible for mobilization, and training of community members. They were also responsible for monitoring progress of implemented activities.

Volunteer Efforts for Development Concerns (VEDCO). VEDCO is a community-based organization whose mission is to ensure sustainable economic empowerment of smallholder farmers and micro-entrepreneurs, organized in self-help groups. The organization acted as an entry point to the target communities, for implementation of nutrition-related activities.

Child Health and Development Centre (CHDC), Makerere University: provided the technical input on nutrition and health for growth promotion.

National Agricultural Research Organization, (NARO). Two research institutions, NAARI, and KARI together with CIP, conducted extensive collaborative research on the OFSP, internationally and in Uganda. NARO was responsible for introducing, breeding and field-testing of the sweetpotato cultivars. KARI coordinated post-harvest technology.

MOST, a USAID Micronutrient Program was responsible for co-ordinating and providing logistical support to the project through the CHDC, Makerere. The MOST strategy aims at reducing micronutrient deficiencies related to Vitamin A, anaemia and iodine deficiency through an appropriate mix of interventions constituting a complex, yet affordable program.

Emerging Challenges

The following were the major challenges that emerged during the project:

- To create awareness and continue to emphasize to parents that children are special and require special care to keep them healthy and well
- Have the OFSP widely available on the open markets and in all households
- Need to encourage more caregivers to attend monthly growth promotion sessions for nutrition
- Conduct research on the OFSP retention of vitamin A through the different processing methods
- Inadequate supply of OFSP planting materials
- Expansion of project to cover the whole of Uganda

Expansion of Partnership. Funding of the OFSP by USAID in Luwero District was short, 2001 to 2002 due to the AlKeida bombing of the twin tower in New York on September 11, 2001 that led to sudden budget cuts which affected numerous US funded projects. Although USAID funding of the OFSP project stopped in 2002, partnership activities

continued with partners funding different components from different funding sources. The following activities or events led to expansion of the activities to other districts and increased the number of partners. The expansion of the partnership and activities led to rapid dissemination of planting material of OFSP in Uganda.

The orange-fleshed sweetpotato promotion initiative. Promoting the OFSP is one of the ways of focusing on available Ugandan foods with added value. The OFSP promotion effort was started in the pilot District in Luwero in 1999 as a joint multi-sectoral effort involving NARO, CIP, VEDCO, Makerere University Medical School, Ministry of Healthy, Local Government and farmer groups, to introduce OFSP in the farming and food systems of Uganda.

To date the promotional effort has widened and includes many partners whose roles vary. The key ones are:

1) the National Agricultural Research Organization (NARO)
2) the International Potato Centre (CIP)
3) the Potato and Sweetpotato Network (PRAPACE)
4) Child Healthy and Development Centre (CHDC), Makerere University
5) Non-Government Organizations VEDCO (Volunteer Efforts for Development Concerns), BUCADEF (Buganda Cultural Development Fund) JAF (James Arwata Foundation), SOCADIDO (Soroti CatholicDiocese Devevelopment Organisation), AFRI-CARE and World Vision
6) Senior Family Charity Foundation in the USA
7) Farmer groups,
8) CBOs (Community based organizations)
9) REFSO (Rural Energy Food security organisation

Most of the sweetpotato breeding work to produce new OFSP cultivars and a large proportion of on-farm testing and technology transfer is supported by the McKnight Foundation.

Role of local government and political leaders. The role of local government and political leaders has had a significant effect in mobilizing and sensitizing communities to the problems of vitamin A deficiency and the great need to plant and consume OFSP to combat the deficiency. Below are examples where political leaders have been actively involved in sensitizing communities and/or dissemination of OFSP.

The Minister for Agriculture officiated opening of vitamin A for Africa (VITAA)-Uganda Workshop at NAARI (4-6 February 2002). The inauguration was televised and covered in local newspapers and radio. He urged all concerned to encourage every homestead to grow OFSP to combat Vitamin A deficienccy. The Honorable Minister For Agriculture does not only promote use of OFSP to combat Vitamin A deficiency but he also grows it on his firm at Kikonde, Bamunanika in Luwero. He is practical. Representatives from the districts of Gulu, Lira, Kabale, Kisoro, Masindi, Kamuli, Soroti, Kumi, Busia and Pallisa who attended the workshop followed the example of the minister; they took OFSP vine cuttings to their districts to start sensitizing the local communities.

Queen of Buganda Launch of OFSP. Her Royal Highness, the Queen of Buganda, known locally as the *Nabagereka* launched a campaign at Nyimbwa Sub-county Headquarters near Bombo in Luwero District on May 15, 2002 to promote OFSP in the nine districts of Buganda in Central Uganda to combat vitamin A deficiency. The launch built upon two years of research by child health experts at Makerere University, NARO, and CIP. The Queen appealed to all Ugandans to grow and feed OFSP to fight malnutrition and poverty. Local officials named one of the new varieties *Nabagereka* to motivate Ugandan mothers to grow orange-fleshed plant types.

The *Nabagereka*, the official wife of the Kabaka or King of Buganda, is held in high esteem by her subjects and plays a pivotal role in mobilizing development efforts in the Buganda Kingdom which covers 10 districts in Central Uganda: Kiboga, Masaka, Wakiso, Mpigi, Mukono, Mubende, Kayunga, Luwero, Rakai, and Kalangala. During the launch, there were exhibits by farmers, research institutes and NGOs. Different cultivars of OFSP (Ejumula, SPK004, NASPOT 5, Sowola-6, Sudan, and Kala) and sweetpotato products such as chapatti, doughnuts, cakes, crackers, pancakes, porridge and bread were sold. The Luwero farmers sold OFSP vine cuttings at 10,000/= Uganda shillings (USD 5.00) a bundle of 600 vine cuttings of 30 cm length each. They also displayed and sold vines and products of the OFSP. The event was widely publicized on radio, television and newspapers. The Queen's launch of OFSP subsequently led to increased acceptance and high demand for OFSP.

The Uganda Parliamentarians' Forum on Food Security, Population and Development (UPFFPD). Involvement of the UPFFD started during a meeting when all the Future Harvest centers based in Uganda were invited by the UPFFPD to address matters related to food security and income generation in Uganda. The parliamentarians had special sessions (4/3/2003, 4/4/2003, May 2003) with NARO, CIP and NARO staff. The forum is an interest group of 60 members of parliament formed to advocate for and where possible implement and promote programs to improve food security and general livelihoods in the country.

CIP and PRAPACE used this opportunity to brief the forum on its research and development activities on potato and sweetpotato in Uganda and in other countries. It is this briefing that generated interest among the executive committee of the forum and requested for a follow up discussion on possible collaborative plans. Thereafter, NARO, CIP-VITAA and PRAPACE agreed to initiate follow up activities ranging from dissemination of planting materials of improved varieties of OFSP in pilot constituents to big proposal development to cover more than 20 districts in Uganda. It was at this point that CIP-VITAA together with PRAPACE provided support to the forum by providing starter-planting material of the popular varieties for a few pilot constituencies as indicated in the Table 1. It is also important to note that some parliamentarians ordered and got more planting material for their areas.

Five pilot constituencies were targeted by the forum to benefit from the planting material. These included mainly the cattle corridor in Katakwi and Kotido, which experience severe

Table 1: Distribution of OFSP planting material in pilot constituencies of Uganda through the Parliamentarians Forum on Food Security and Population Development, May, 2003.

Constituency	Number of bundles distributed*	Estimated number of cuttings	Estimated area harvested (ha)	Estimated of Households benefited**
Kotido	200	600000	20	6000
Katakwi	246	590400	19.7	5904
Jinja	110	264	8.8	2640
Rakai	80	168	5.6	1680
Kalangala	80	168	5.6	1680
Totals	636	1.430.400	59.7	17904

* A bundle has 800 vines each capable of giving 3 vine cuttings.

** Major assumption: Each targeted household receives at least 100 vine cuttings.

famine after prolonged drought and were largely supplied with orange-fleshed varieties SPK 004 (Kakamega) and Ejumula. Jinja district in the East was also targeted and received orange varieties. Rakai and Kalangala districts in the Central which experience frequent food insecurity yet grow and consume a lot of sweetpotato, were given the high yielding but yellow varieties, Tanzania and Naspot 1.

Source of OFSP and varieties supplied. All the vines were obtained from progressive farmers from Luwero and Mpigi districts who have concentrated in the multiplication of clean healthy planting materials of popular varieties as an income generating activity. The consignment supplied consisted of OFSP (81%) and others (19%). A bag consisting of 2400 vine cuttings is sold at Ugshs. 6000 = US $ 3. These farmers originally participated in the first pilot NARO/ CHDC/ VITAA – USAID MOST project on the promotion of OFSP for the increased intake of Vitamin A in resource poor households of Luwero district. Although the project was concluded in May 2002, farmers have continued with the scaling-up of activities mainly multiplication and dissemination of clean healthy planting materials, development of OFSP based processed products, and storage root production targeting the markets. Interview reports, their experiences, farmers' experiences, and OFFSP success stories, and lessons learnt frequently appear on the VITAA web site.

Handing over ceremony

An official hand over ceremony was held on 15th May, 2003 at the premises of Uganda Parliamentary Chambers during which Dr. Fina Opio, the VITAA co-ordinator and Director of Namulonge Agricultural and Animal research Institute of NARO handed over two lorries full of sweetpotato vines to the Hon. Grace Akello the Chairperson of the Forum executive committee and by then was one of the state Minister for Ministry of Gender, Labour and Social Development. About thirty parliamentarians from the forum witnessed this event. Also in attendance were partners from BUCADEF, CIP- Nairobi, PRAPACE, NARO and individual farmers from Central Uganda. The journalists from both the print and electronic media covered the function. It formed an item on the evening news broadcasted by the Uganda Television covering the all country and the Central Broadcasting Station (CBS), a private local radio station covering almost eighteen districts of Central Uganda.

The forum members exhibited a lot of enthusiasm and are still keen to promote the activities food security in their constituencies. Sweetpotato provides a great potential for the purpose due to its wide adaptability and acceptability to all Ugandan communities. However the forum is constrained by limited financial resources that are much needed to undertake the activities. CIP-VITAA, PRAPACE, and NARO remain committed to work with the forum to mobilize resources to cover larger areas in Uganda, particularly with orange-fleshed types. Technology transfer through this channel could have much impact at household level since they reach the grassroots. They can also link up quickly with the active community based set ups and the local governments in their constituencies to reach more people. High interest by the MPs has demonstrated the importance attached to food security crops such as sweetpotato to address food shortages in their areas.

Dissemination and commercialization of orange-fleshed sweetpotato through Farmer Field Schools and VITAA partnerships in Eastern Uganda. Farmer field schools (FFS) integrated crop management of sweetpotato started in August 2001 and the orange-fleshed varieties were introduced during launching of OFSP to combat VAD on September 27, 2002 in Gweri sub-county, Soroti district. All the vines were sourced from Luwero district, Nyimbwa sub-county. Since the launching 872 bundles of 600 vines each worth Ug.Sh. 5,232,000 have been bought from original

farmers where CHDC worked in partnership with CIP, NARO, VEDCO, and PRAPACE. Farmers from Luwero went to Soroti and trained their fellow farmers in agronomic practices, product development, and rural income generation through the sale of OFSP (Table 2). In 2002 two FFS (Apa Amora and Okunguro) in Kyere, Soroti District sold about 700 kg of dry chips to Maganjo factory in Kampala for further processing into nutri-porridge flour.

Projections. Slicing and immediate sale of dry chips of OFSP stimulated interest by individuals and other groups in Soroti District for further production of orange-fleshed varieties, and by 2003, nine farmer field groups, 20 SOCADIDO community-based groups in Kumi and Soroti districts, several individual spill over within and beyond the project areas such as Bugondo had grown the orange fleshed varieties namely Ejumula and Kakamega (SPK004). A conservative figure of above 70 acres was grown in the second season of 2003 alone and was estimated to produce not less than 700 tons of fresh roots.

Sustainability. Soroti local government and National Agricultural Advisory Services (NAADS) program have internalized the orange-fleshed varieties as a commercial crop in selected sub-counties. The district leadership and CIP is spearheading the search for and linkage to alternative markets such as encouraging consumption of orange-fleshed in boarding schools and other factories including those processing animal feeds. Key district leaders urged their people to grow more orange-fleshed varieties for domestic and outside district market, and encouraged the producers to include OFSP on their daily menu to alleviate the nutritional deficiency of Vitamin A.

Lessons learnt from the fields. Commercialization through processing seemed not profitable meanwhile the use of feeding to boarding schools was more promising. Awareness of the crop about its nutritional and marketability benefits promotes popularity. Through FFS an inferior crop can be easily be popularized. Farmers can accept to pay for the cost of inputs where they expect tangible returns. Farmers have a potential to supply quality-planting material after internalizing the concepts and practices learnt through self-learning approach. Farmers' collective participation is a tool of capital mobilization and a driving ingredient for self- accountability as skillful performance and financial improvement by the group member(s) portrays community excellence. Farmers are thirsty for a positive change in production and income. Evidence of economic success through changed technological approaches to production by farmer field graduates is not only exemplary but also creates anxiety of others to explore similar

Table 2: Distribution of orange-fleshed sweetpotato planting material in Soroti District, Uganda.

Season	Beneficiary	Source	Bags	Cost/bag	Total cost Ug. Shillings	Paid by
2002	SOCADIDO	JAF	256	6000	1,536,000	SOCADIDO
	NAADS	JAF	600	5,000	3,000,000	NAADS
	Launching	CIP	27	8,000	216,000	CIP
	FFS groups	CIP	20	6,000	120,000	CIP
	FFS groups	Gweri	16	5,000	80,000	FFS
2003	FFS groups	CIP	196	5,000	980,000	CIP
	FFS groups	Gweri	45	5,000	225,000	FFS
Total			1160		6,157,000	

avenues to improve farming techniques and enhance adoption as an avenue of improving on food security and household incomes. Researchers, NGOs, policy makers and farmers must collaborate in developing, designing and implementing strategies for transforming agricultural production and augmenting successful attainment. Experience sharing and availing opportunity to FFS member(s) to become technical instructor(s) (facilitators) of otherS promotes ambition, encourages active participation, enhance self-confidence and leadership building. Farmers are willing to drop a crop variety for a more promising one. Integrated crop management approach through experience sharing, self-teaching and a hands-on technique is a tangible technology uptake pathway for recommended practices.

OFSP in Disaster Mitigation. James Arwata Foundation (JAF) with support from NARO, CIP, Senior Family Charity Foundation in the USA and PRAPACE has distributed OFSP planting material in the war ravaged districts and donated OFSP roots to resettlements camps in Northern Uganda where Joseph Kony operates.

The private sector engagement in OFSP. This has gaining momentum as highlighted below:

1) The number of farmers selling OFSP vines, roots, and processed products is increasing
2) Maganjo Grain millers markets a composite flour that has OFSP flour as an ingredient.
3) Ugachick conducted trials to use OFSP flour in their chicken feed.
4) Training of CBOs and farmer groups in production of sweetpotato products such as bread, doughnuts, chapatti has stimulated growth of small-scale enterprises in villages in peri-urban centers.
5) HORTEXA (Association of Horticultural Exporters) exports sweetpotatoes, including OFSP to Europe.

Conclusion

There has been rapid dissemination of OFSP in Uganda. The initial pilot OFSP project covered five zones in Luwero District in Central Uganda in late 2000. The participating farmers had no OFSP planting material to start with. A multi-sectoral approach involving partners from different organizations, NGOs, the private sector (such as processors), community based organizations, individual farmers and farmer groups worked together. The partners provided OFSP cultivars to conduct participatory evaluation of OFSP, sensitization of the communities regarding the widespread vitamin A deficiency in the country and need to grow, consume and commercialize OFSP to alleviate the deficiency and poverty. The number of partners increased and dissemination of OPSP from the single limited localized research pilot area of Luwero District in central Uganda accelerated, reaching at least 30 districts by 2003. Some of them districts were already selling OFSP vines, roots and processed products by the end of 2003. The different partners attribute this success of rapid dissemination of OFSP to active sustained involvement by the partners.

References

Hagenimana, V., M.A.Oyunga, J. Low, S.M. Njoroge, S.T. Gichuki, and K. Kabira. 1999. The effects of women farmers' adoption of orange-fleshed sweetpotatoes: raising vitamin A intake in Kenya. Research Report No. 3. International Center for Research on Women (ICRW)/ Opportunities for Micronutrients Interventions (OMNI). Washington, D.C.:ICRW.

Low, J., P. Kinyae, S. Gichuki, M.A. Oyunga, V. Hagenimana, and J. Kabira. 1997. Combating vitamin A deficiency through the use of sweetpotato. International Potato Center (CIP)/Kenya Agricultural Research Institute (KARI).

Low, J., T. Walker, and R. Hijmans. 2001. The potential impact of orange-fleshed

sweetpotato on vitamin A intake in Sub-Saharan Africa: A paper presented at a regional workshop on food-based approaches to human nutritional deficiencies, May 9-11, 2001. Nairobi, Kenya. The VITAA Project, vitamin A and orange-fleshed sweetpotato in Sub-Saharan Africa.

Mwanga, R.O.M., B. Odongo, G. Turyamureeba, A. Alajo, G.C. Yencho, R.W. Gibson, N.E.J.M. Smit and E.E. Carey 2003. Release of six sweetpotato cultivars ('NASPOT 1' to 'NASPOT 6') in Uganda. HortScience 38(3): 475-476.

Mwanga, R.O.M., C. N. O. p'Obwoya, G.W. Otim-Nape and B. Odongo. 1991. Sweetpotato improvement in Uganda. In: Alvarez M. N and R. Asiedu (eds.). The role of root crops in regional food security and sustainable agriculture. Proceedings of the 4th Eastern and Southern African Regional Root Crops Workshop, Mansa, Zambia, 29 October - 2 November 1990. Pp 59-67. International Institute of Tropical Agriculture, Ibadan, Nigeria.

Mukherjee, P.K. and S. Ilangantileke. 2002. Dietary interventions with orange fleshed sweetpotato (Ipomoea batatas (L.) Lam.) to alleviate vitamin A deficiency in South and West Asia. Acta Horticulturae 583: 206-210.

Ruel M.T., 2001. Can food-based strategies help reduce vitamin A and iron deficiencies, a review of recent evidence. International Food Policy Research Institute Washington, D.C.

UDHS, 2001. Uganda Demographic and Health Survey, Uganda Bureau of Statistics, Entebbe, Uganda.

WHO (World Health Organization). 1995. Global prevalence of vitamin A deficiency. Micronutrient Deficiency Information System, Working Paper No.2 (Catalog No. WHO/NUT/95.3). WHO, Geneva, Switzerland.