Vitamin-A Partnership for Africa: A Food Based Approach to Combat Vitamin A Deficiency in Sub-Saharan Africa through Increased Utilization of Orange-fleshed Sweetpotato

Regina Kapinga, Pamela Anderson, Charles Crissman, Dapeng Zhang, Berga Lemaga and Fina Opio

The Vitamin A for Africa (VITAA) partnership is promoting the increased production and use of orange-fleshed sweetpotato (OFSP) to combat vitamin A deficiency in sub-Saharan Africa. This deficiency is one of the leading causes of early childhood death, and a major risk factor for pregnant women in Africa. Vitamin A is essential for a child's normal mental and physical development and for keeping everyone healthy and strong - especially pregnant and lactating mothers. The lack of it can be a death sentence, in some cases directly but more often via a weakened immune system, which exposes victims to diseases such as measles, pneumonia and malaria. Vitamin A deficiency also reduces the ability to see clearly in poor light and can lead to night blindness. The VITAA partnership therefore targets young children and their mothers, who are the most vulnerable to vitamin A deficiency. In sub-Saharan Africa, more than 3 million children under the age of five suffer from vitamin A-related blindness. OFSPs are rich in beta-carotenes that the body converts easily into vitamin A, they are easy to grow and the average consumer can afford them. Efficacy studies have proved that the daily addition of 100 g of the sweetpotato to the diet can prevent vitamin A deficiency in children and dramatically reduce maternal mortality. An ex-ante impact assessment (pilot study) has indicated that introducing the new high beta-carotene cultivars will benefit 50 million African children under the age of six. Pioneered and led by the International Potato Center (CIP), the VITAA partnership includes more than 50 organizations from the health, nutrition and agriculture, non-government organizations, community-based organizations, root crops sub-regional research networks, and private business sectors, working together to extend the impact of OFSP in more than ten partner countries in the region. About 15 new starchy OFSP cultivars with moderate resistance to viruses and weevils have been accepted by the farmers and consumers in Tanzania, Uganda, Kenya, Mozambique and South Africa. OFSP cultivars currently occupy 1-2% of the planted area in the lake zone of Tanzania, 5-10% in Central Uganda and 10-15% in Western Kenya. Adoption is higher if there is a ready market for the cultivars, both as fresh roots and vines and as processed foods. Farmers in western Kenya, eastern and central Uganda are increasing their incomes by selling planting material. In Uganda, a single farmer can earn up to US$ 400 per month. OFSPs are contributing to the welfare of households disrupted by HIV/AIDS, as well as other crises. In northern Uganda, where persistent violence has forced many farmers to live in protected camps and in Mozambique during the 2000-2001 drought and floods, OFSPs contributed to food security, income generation and improved nutrition for the displaced people. To encourage adoption, VITAA has developed a social marketing strategy and action plan. Awareness campaigns and nutrition education are creating a demand for more planting materials and information. Mothers and school-age children are targeted with messages that create demand for the new varieties and associated food products. The work is also encouraging governments, non-government organizations, and community-based organizations to take responsibility for the distribution of the high beta-carotene materials. The initial VITAA activities were supported by contributions from the Canadian International Development Association (CIDA), CIP and its donors that contribute with unrestricted contributions, United Kingdom Department for International Development (DFID), the OPEC Fund for International Development, the Senior Family Fund, The Micronutrient Initiative, United States Agency for International Development (USAID)-Africa Bureau, the Regional Network for Improvement of Potatoes and Sweetpotato in East and Central Africa (PRAPACE) and the Southern Africa Root Crops Research Network (SARRNET). Future plans include expanding the VITAA partnership to more countries and sectors, with large-scale dissemination of the varieties to all major sweetpotato producing and consuming countries in Africa. These efforts will be combined with institutional and capacity building and

Orange-fleshed sweetpotato.

studies of traditional processing to improve beta-carotene retention. Work will continue on developing nutritional and agricultural training programmes for household decision-makers, community leaders, local educators and children.

BACKGROUND

VITAA is promoting a simple change - consumption of orange-fleshed sweetpotato instead of traditional African white ones - to make a difference in the lives of millions of children and mothers, the people most at risk from vitamin A deficiency. The VITAA partnership, a CGIAR 2003 award-winning project, offers prospective donors an opportunity to support a novel initiative that has achieved major impact in sub-Saharan Africa. On 9 May 2001, an international group of 70 agriculturists, health experts and nutritionists launched what is believed to be the first crop-based initiative to attack the tragic consequences of vitamin A deficiency in sub-Saharan Africa. Working under the VITAA umbrella, more than 50 partner agencies from the health, nutrition and agricultural sectors have agreed to work together to extend the impact of orange-fleshed sweetpotato in more than ten partner countries in sub-Saharan Africa. Original VITAA countries include: Ethiopia, Kenya, South Africa, Tanzania, Uganda, Mozambique and Ghana. CIP and partnership scientists are working in this region, and for the larger global community, to address this nutritional deficiency, which is one of the leading causes of early childhood death, and a major risk factor for pregnant women in Africa. The CIP-led and pioneered VITAA project recognizes that this devastating condition is completely preventable, and supports research that seeks a breakthrough food-based solution - the substitution of vitamin rich orange-fleshed sweetpotatoes for the white-fleshed sweetpotatoes that comprise an important part of the sub-Saharan African diet. VITAA funding agencies include: CIP, DFID, Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ), the OPEC Fund for International Development, the Senior Family Fund, The Micronutrient Initiative, the USAID-Africa Bureau, PRAPACE, and SARRNET.

THE PROMISE OF ORANGE-FLESHED SWEETPOTATO IN COMBATING VITAMIN A DEFICIENCY

A recent ex-ante impact case study conducted by economists from CIP and Michigan State University strongly suggests that 50 million African children under the age of six could benefit from the new orange-fleshed varieties. Complementary field studies conducted by CIP in collaboration with several VITAA partner agencies, have shown that orange-fleshed sweetpotato and sweetpotato-based food products are not only acceptable to both producers and consumers in terms of appearance, taste, and texture, but also have contributed to the alleviation of vitamin A deficiency. The new sweetpotato cultivars also performed well with respect to yields, and pest resistance and also had high beta-carotene content. One of the principal findings from the studies is that African mothers would readily accept the new cultivars, dispelling the myth that African taste preferences precluded the use of orange-fleshed sweetpotatoes. The bio-efficacy study recently completed in South Africa has demonstrated that the daily addition of as little as 100 g of OFSP to the diet could prevent vitamin A deficiency in children. A micro-enterprise component using OFSP also has the potential to increase rural incomes for the people who need it most in rural communities. Now the partnership is capitalizing on the opportunity revealed by these findings. Adaptive research activities are being advanced in Kenya, Mozambique, Ghana, Tanzania, South Africa, Ethiopia, Madagascar, DR. Congo, Rwanda, Zambia, Malawi, Burundi and Uganda, where the National Agricultural Research Institutions scientists are working with CIP's regional staff to screen several orange-fleshed cultivars in order to access their suitability to different environments.

VITAA Goal

Healthy, rural populations through food-based approaches to nutrition, focused on vitamin A.

VITAA Purpose

Children and adults consume orange-fleshed sweetpotato (OFSP) in levels that lead to reduced vitamin A deficiency.

VITAA Agenda

The agenda consists of a coordinated set of activities in the major sweetpotato-producing countries of Eastern and Southern Africa. Its principal objective is to promote wide-scale production and use of orange-fleshed sweetpotato. The partnership program focuses on Uganda, Kenya, Ghana, Tanzania, South Africa, Mozambique and Ethiopia. Close linkages are also maintained with partner institutions in other countries through two regional root and tuber crops research networks: PRAPACE and SARRNET. Project activities include: impact assessment before the interventions (ex-ante), participatory testing of varieties for adaptation and acceptability, community-based multiplication of planting materials, nutrition education, post-harvest processing for market and for home consumption, promotion through social marketing, monitoring of impact on nutrition and health, and capacity building. Principal beneficiaries are young children and their mothers, the two groups most at risk for vitamin A deficiency. Implementation strategies concentrate on women because of their central role in the production and marketing of sweetpotato and other food crops used in the family diet.

Mrs. Joweria Sekiyanja harvests by piecemeal orange-fleshed sweetpotato roots for her family's meal.

PRINCIPLES OF THE VITAA WORK PLAN

As a result of these highly promising results, VITAA engagement is mainly community-based and focused on women decision makers. It also emphasizes nutrition education and micro-enterprise development. The partnership operates according to the following principles:

- That orange-fleshed sweetpotato is now acceptable by African consumers and ready for full-scale development, and will also prove effective as an entry point for other food-based strategies aimed at reducing vitamin A deficiency in sub-Saharan Africa.
- That VITAA cultivars can empower local communities to help mothers and young children prevent vitamin A deficiency through their own labour and industry but also increase their incomes through value addition.
- That VITAA provides a highly effective tool to address vitamin A deficiency among rural poor communities, more especially: children, pregnant women and lactating mothers.
- That evidence exists that the VITAA cultivars may also help reducing the impact of anemia, measles, and malaria.

VITAA PROGRESS AND MAJOR ACHIEVEMENTS TO DATE

Impact Assessments, Monitoring and Evaluation

An ex-ante impact assessment study done jointly by the International Food Policy Research Institute (IFPRI) and CIP, which was completed in 2001, revealed that in many parts of SSA, there is sufficient per capita production of sweetpotato to warrant optimism about positive nutritional consequences for vitamin A deficient populations with the introduction and diffusion of OFSP cultivars. The study estimates that up to 50 million children in the region could benefit significantly from the new OFSP cultivars.

Planning and Constituency Building

Working from the results of the ex-ante assessment, project leaders have embarked on a program of constituency building. The objective is to garner support for the use of high vitamin A sweetpotatoes among national policy makers, as well as NGOs and development agencies working in agriculture, human health, and nutrition.

Adaptive Research

New technologies exist on: the utilization of new noble varieties in the family diets, processing techniques of nutri-products including the enrichment of local weaning foods. To date ten to twenty OFSP cultivars with high dry matter have been accepted by consumers in the region.

Training

To the greatest extent possible, training programs have been and continue to be conducted in all major project areas, including impact assessment, seed multiplication, post harvest processing and marketing, micro-enterprise and micro-credit. Priority has always been given to the concept of training of trainers. The training of experts who can move skills and expertise to rural areas and help to empower local people including extension workers, NGOs and community leaders, has been given increasingly higher priority.

Mrs. Joweria Sekiyanja preparing to serve her family with cooked orange-fleshed sweetpotato.

Social Marketing

To encourage adoption of new technologies, VITAA has also developed a social marketing strategy and action plan. Targeting has focused on mothers and school-age children with messages that create demand for the new varieties and associated food products. The social marketing component has also encouraged the country governments, non-government organizations, and community-based organizations to take responsibility for the distribution of the high beta-carotene materials and for micro-enterprise development.

A child in rural Rwanda eating and enjoying cooked orange-fleshed sweetpotato root.

About the Author

Regina Kapinga

Pamela Anderson

Charles Crissman

Dapeng Zhang

Berga Lemaga

Fina Opio

Dr. Regina Kapinga, International Potato Center (CIP), Box 22274, Kampala, Uganda, is the VITAA Coordinator and Sweetpotato Breeder - SSA, email: r.kapinga@cgiar.org, VITAA website: www.cipotato.org/vitaa

Dr. Pamela Anderson, International Potato Center (CIP), Apartado 1558, Lima 12, Peru, is the Director General of CIP, email: cip-dg@cgiar.org, website: www.cipotato.org

Charles Crissman, International Potato Center (CIP), Apartado 1558, Lima 12, Peru, is the Deputy Director General Research of CIP, email: cip-ddg-research@cgiar.org, website: www.cipotato.org

Dr. Dapeng Zhang, USDA, ARS-BA-PSI, 10300, Baltimore Avenue, BARC-West, Beltsville, MD, 20705, USA, is the breeder-geneticist, Alternate Crops and Systems Laboratory, USDA, email: zhangd@BA.ARS.USDA.GOV

Dr. Berga Lemaga, Regional Network for Improvement of Potatoes and Sweetpotatoes in Eastern and Central Africa (PRAPACE), Box 22274, Kampala, Uganda, is the coordinator of PRAPACE, email: b.lemaga@cgiar.org, website: www.asareca.org/prapace

Dr. Fina Opio, Namulonge Agricultural and Animal Production Research Institute (NAARI), Box 7084, Kampala, Uganda, is Chairperson of the VITAA Steering Committee for 2003-2005, National VITAA Coordinator, and Director of NAARI, email: fopio@naro-ug.org