

# Fact Sheet • TOWARDS SUSTAINABLE NUTRITION IMPROVEMENT IN MOZAMBIQUE

► ACTION RESEARCH PROJECT ◄

between

► MICRONUTRIENT INITIATIVE, ROCKEFELLER FOUNDATION, U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT,  
AND MICHIGAN STATE UNIVERSITY ◄

► TIME PERIOD: OCTOBER 2002 - FEBRUARY 2005

## 1. Cooperating Institutions

Department of Agricultural Economics, Michigan State University (MSU)  
Nutrition Division, Ministry of Health, Mozambique (Nutrition/MISAU)  
World Vision, Mozambique (WV)  
National Institute for Agronomic Research, Mozambique (INIA)  
Southern African Root Crops Research Network, Mozambique (SARRNET)  
Provincial Directorate of Agriculture of Zambézia, Mozambique (DPA)  
Helen Keller International, Mozambique (HKI)

## 2. Researchers Involved

**Ministry of Health:** Armanda Gani, Eugenia Raposo, Antonia Malgalhães

**World Vision, Mozambique (WV):** Felipe Zano, Brian Hilton, Timbrine

**National Institute for Agronomic Research, Mozambique (INIA):** Calisto Bias,  
Anabela Zacarias

**Southern African Root Crops Research Network, Mozambique (SARRNET):**  
Maria Andrade, José Ricardo

**Provincial Directorate of Agriculture of Zambézia, Mozambique (DPA):** Jesus

**Helen Keller International, Mozambique (HKI):** Stephan Meershoek

**MSU In-Country Researchers:** Jan Low (Co-Principal Investigator and project leader)

**MSU Campus Backstop:** David L. Tschirley (Co-Principal Investigator)

## 3. Project Objective

To determine whether a food-based intervention strategy can lead to sustainable, year-round intake of vitamin-A rich foods, reduced fluctuations in seasonal household calorie supply, and an overall improvement of diet diversity, nutritional status and diet quality in a cost-effective manner, particularly among children under five years of age.

## 4. Project Approach and Partner Roles

TSNI is an action research project based in Mopeia and Namacurra districts in Zambézia Province, Mozambique. The project integrates nutritional, agronomic, and socio-economic components to achieve the project objective. Project extension personnel will work with farmer groups and groups of women using a consultative approach to successfully introduce beta-carotene rich sweet potatoes and other sources of vitamin A into the young child and family diet. Diversified use of new foods will be promoted as will the development of markets for those products. MSU leads the socio-economic research activities, while INIA and SARRNET contribute to the agronomic research component and develop training materials related to the introduction of new varieties and improved agronomic practices. World Vision is the lead partner in the agriculture and nutrition extension activities, in collaboration with the MSU project coordinator and the DPA. HKI is developing the social marketing

strategy, with WV and MSU assisting in implementation. The DPA will participate most closely in the collection of monthly prices on sources of vitamin A rich foods and in market and commercialization studies, in collaboration with MSU and WV. Data entry and analysis will be done in-country, emphasizing the training of two nutritionists in data analysis and report preparation.

## **5. Output**

Output at the household level will be measured principally through comparing an end of project impact survey with the results obtained during the baseline survey, which is due to be completed in July 2003. Throughout the project, on-going consultative research on feeding and other caregiving practices with young child caregivers will be carefully documented and used to adjust extension methodologies. Market research will inform strategies for commercializing sweetpotatoes as well as social marketing techniques.

### **5.1 Overview**

At the end of the project period, it is expected that the vast majority of 500 intervention households will have successfully adopted the beta-carotene rich sweetpotato varieties and integrated sweetpotatoes and other vitamin A rich foods into the young child diet, as demonstrated by the consumption research and biological outcome indicators (serum retinol status and anthropometry).

In addition, widespread dissemination of planting material of beta-carotene rich sweetpotatoes through informal (farmer-to-farmer sharing) and formal mechanisms (World Vision and SARNET/INIA distribution efforts), beyond the research households will have occurred and limited marketing campaigns will have been tested.

### **5.2 Nutrition Research**

The nutrition research undertaken in this study focuses on understanding behaviors which determine whether an introduced food is actually taken up by households, and incorporated into young child diets. It compares two extension techniques: 1) reaching caregivers through group meetings and social marketing campaigns, and 2) in addition to the above, visiting caregivers in their homes to negotiate changing behaviors at the individual level. Each farmer's group participating in the project will be assigned to an intervention group after matching the overall characteristics of the young children and their caregivers as closely as possible based on baseline survey information.

This study is not an efficacy trial, but seeks to understand if behaviors can be modified in a cost-effective manner. Once the baseline survey is completed, all children will receive a vitamin A capsule and the project will measure, using the serum retinol indicator, whether the food-based intervention succeeds in maintaining adequate serum retinol status. Serum retinol status of intervention children will be measured every 6 months, with those failing to maintain status receiving an additional vitamin A capsule. Since serum retinol status is influenced by the health status of the children, in addition to collecting recall information on morbidity, blood samples will also be analyzed for C-Reactive Protein, an indicator of the presence of infection.

Research will also be conducted to develop materials for creating awareness of the importance of Vitamin A in the diet, and the potential uses of beta-carotene rich sweetpotatoes within the household.

### **5.3 Socio-Economic Research**

It is essential to comprehend the socio-economic context in which the families operate to explain why adoption of new cultivars and new behaviors occurs or not. The socio-economic research also seeks to examine the hypothesis that adoption of new varieties is more likely to be sustained when those

varieties can be commercialized, either in fresh or processed form. Marketing research will focus on understanding existing chains for sweetpotato commercialization, identifying preferences of both urban and rural sweetpotato consumers, and monitoring the relative prices of vitamin A rich foods on a monthly basis.

#### **5.4 Adaptive Research and Varietal Identification**

The nine beta-carotene rich sweetpotato varieties being promoted by the project have been officially released by INIA. These varieties have medium to low dry matter content particularly preferred by young children. The project is participating as part of nation-wide trials being conducted by INIA/SARRNET testing over 20 varieties of beta-carotene rich sweetpotatoes with higher dry matter content often preferred by adult consumers. It is expected that by the middle of the project period, the best performing varieties for the project area conditions will have been identified and, once approved, will be distributed towards the end of the project period.

In addition, in collaboration with the World Vision adaptive testing program, high beta-carotene tomato varieties developed by AVRDC (the International Vegetable Research Center in the Phillipines) are in preliminary trials.

#### **5.5 Capacity Building and Training**

Capacity building and training is an integral part of the project, as few project staff or government collaborators in Zambézia have had much experience in action/research projects. Training has focused on sweetpotato production and agronomic constraints, extension techniques, basic concepts in nutrition, and nutrition extension techniques, survey design and implementation, data entry skills, and data entry programming. Training in higher level analysis will focus on the project nutritionist and agronomist and the government nutritionists and socio-economists involved in the project. The project nutritionist will use data from the project to pursue her Ph.D. at the London School of Tropical Medicine and Hygiene. Once completed, she will be the first Ph.D. level nutritionist in Mozambique.

#### **5.6 Publications**

To date, two technical progress reports have been written. Results from the baseline survey will be available in September 2003.

#### **5.7 Presentations**

Presentations to date have focused on introducing the project at the national, provincial, district, and village level. The following meetings have been held:

- On October 22<sup>nd</sup> 2002, the project held a seminar at the Provincial Directorate of Agriculture for Zambézia to introduce the project. Twelve persons attended, representing provincial level government personnel, World Vision staff, the representative for SARRNET in Zambézia, and the chair of the provincial level SETSAN (Food Security and Nutrition Committee) group.
- On November 4<sup>th</sup>, the project held the first meeting of the Technical Advisory Group in Maputo. The Advisory Group consists of senior level professionals in the area of health, nutrition, agriculture, and agricultural economics who have been asked to review research protocols and project documents twice a year. Advisory Group members come from both institutions directly involved in the study and those not directly involved but interested in the subject area. At this meeting, the project was introduced, background information was presented to justify the need for such a project, the research protocol was discussed, and a draft of the baseline questionnaire was reviewed.

- On October 31<sup>st</sup>, Jan Low, Nadia Osman, and Armanda Gani were invited to attend the session of the Comissão Nacional de Bioética para a Saúde (National Bioethics Commission for Health) to clarify questions related to methodology being used to assess nutritional status. After evaluating the protocol, the commission approved the study.
- Throughout the months of November and December 2002, meetings were held first with community leaders at the district and locality level in all selected sites to inform them about the project and ask for their participation in setting up community level meetings at the village level. In general, village level meetings were well attended, with emphasis given to explain why participating in the farmers groups and study would require having blood samples (finger pricks) taken four time as this subject is often sensitive in rural Mozambique. All families subsequently participating in the project signed declaration of consent forms
- On June 4<sup>th</sup>, Jan Low presented the objectives and methodology to the project at the workshop of Biofortification Challenge Program held in Cali, Colombia. This program is a new endeavor involving over 10 international agricultural centers focused on breeding improved micronutrient density into staple food crops. The on-going extension and research work in Sub-Saharan Africa concerning beta-carotene rich sweetpotato was of particular interest to participants as this is the first crop for which dissemination activities already exist at the community level.

## **6. The Future**

The current action/research project is focused on 3 districts in Zambézia province, Mozambique. Zambézia contains 20% of Mozambique's total population and has the highest levels of under five malnutrition and maternal mortality within the country, in part due to poor infrastructure and distribution of health services. It is also one of the largest producers of sweetpotatoes in the country.

World Vision, one of the collaborators in this project, works in an additional 7 districts throughout Zambézia. Materials developed through this project will be provided to program leaders and extensionists in all other districts, as well as to government extension services. Given that World Vision has financing through mid-2007, the approaches developed during this action/research project will be scaled-up to a much larger population.