

# Scaling-Up Sweetpotato through Agriculture and Nutrition (SUSTAIN) in Rwanda

At the time of the project phase out of field activities in June 2017, we had reached 103,529 direct household beneficiaries. At the same time our collaborating partners reached 20,236 indirect household (HHs) beneficiaries. During the three-year project, we set up 39 Decentralized Vine Multipliers (DVMs) (46% male, 54% female) who sold vines worth US\$ 361,801. Average yields have increased from 3-5 t/ha to 1215 t/ha. Farmers made roots sales worth US\$ 154,040; two processing cooperatives made sales worth US\$ 6,898.

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## What is the problem?

Agriculture contributes to 33% of Rwanda GDP and is still the backbone of Rwanda's economy, employing about 70% of the population. The government of Rwanda recognizes the value of agriculture and there is committed to investing in priority crops. In Rwanda, sweetpotato remains the number one food crop in terms of production per year, accounting for 16.6% of all crop production on only 7.3% of area cultivated (Table 1). With 12.2 million people in Rwanda, per capita sweetpotato production is 88 kg. It's production has kept pace with population growth, unlike the case for banana. With so much being produced, the major complaint of farmers is lack of market.

**Table 1.** Product of key roots, tubers and bananas in Rwanda in 2017 for Seasons A, B, and C.

Crop	Total metric tons	% of all crop production	% of all cultivated area	% change since 2014 in production
Sweetpotato	1,082,364	16.6	7.3	15.0
Cassava	1,041,843	15.9	15.5	15.7
Irish Potato	847,302	13.1	3.7	17.8
Cooking Banana	731,349	11.2	7.7	-15.5
Banana for Beer	783,314	12.0	8.3	-8.4

Source: National Institute of Statistics of Rwanda: Seasonal Agriculture survey 2017.

In addition, the level of stunting remains high (38% in 2014-15 DHS). Combatting malnutrition is a high government priority. Biofortified orange-fleshed sweetpotato (OFSP) can provide a year-round source of vitamin A in the diet while continuing to be central to ensuring food security of rural Rwandese households.



**Fig. 1** Caregivers feeding a balance diet to children during Kigali Nutrition week (Credit V. Uwase)

## What do we wanted to achieve?

Biofortified, pro-vitamin A rich OFSP varieties are a proven tool for reducing vitamin A deficiency (VAD) among children under five years of age, the group most at risk of VAD. Under the SASHA project (2010-2014), we demonstrated that through an effective public-private partnership with Urwibutso (SINA) Enterprises, it is possible to build a sweetpotato value chain that is pro-poor and pro-women. The SUSTAIN project built on this experience, with a goal of strengthening the nutrition component.

To build the evidence base on how to scale integrated agriculture-nutrition interventions, Rwanda was selected among the four SUSTAIN countries for a full-scale impact assessment using a robust randomized control trial (RCT) design, led by Michigan State University.

## Where were we working?

SUSTAIN worked in 8 districts (Gicumbi, Ruhango, Kayanza, Rwamagana, Gakenke, Rulindo, Kamonyi, and Muhanga). The project was part of a wider CIP Rwanda sweetpotato program that covered 18 districts out of 27 rural districts in Rwanda.



SUSTAIN is a 5-year partnership (2013-2018), coordinated by CIP and financed by the UK Department for International Development, to scale up the nutrition benefits of biofortified orange-fleshed sweetpotato (OFSP). The overall goal is to reach 1.2 million households with under 5 years of age in Kenya, Malawi, Mozambique, Rwanda, Tanzania, Bangladesh. SUSTAIN supports integrated interventions in agriculture, nutrition, utilization, and marketing to strengthen production and consumption of OFSP. SUSTAIN emphasizes rigorous measurement and evaluation in order to assess the scalability of these interventions and contribute to global evidence on achieving large scale nutrition outcomes through biofortified crops.



**Fig. 2** Smiling farmer receives vines from a DVM (Credit H. Rutherford)



**Fig. 3** Pregnant women and mothers of children less than 2 years of age learn about feeding balanced diets (Credit H. Rutherford)

## What did we achieve?

**Beneficiaries reached.** At the time of the project phase out of field activities, we had reached 103,529 direct household beneficiaries. At the same time our collaborating partners reached 20,236 indirect household beneficiaries.

**Seed system establishment.** The project empowered 39 new Decentralized Vine Multipliers (DVMs) --46% male and 54% female (Fig. 2). We made a deliberate effort to ensure the inclusion of women into the seed production business. The project also linked DVMs with buyers and through these linkages using a sweetpotato seed tracker, DVMs sold vines worth US\$ 361,801 during the three-year project period.

**Productivity gains.** The average sweetpotato yield increased from 3-5 t/ha to 12-15 t/ha. Compared to the local white-fleshed check variety (10.1 t/ha), the average yield of all of OFSP varieties disseminated have been superior: Gihingamukungu (14.8 t/ha), Vita (14.1 t/ha), Kabode (13.9 t/ha), and Terimbera (13.1 t/ha).

**Roots sales.** Farmers who received OFSP vines were encouraged to sell their surplus. Monitoring data of some farmer cooperatives show their root sales are valued at US \$154,040.

**Processing.** The project continued working with the private sector to introduce OFSP into their products. Urwibutso Enterprise continued to sell OFSP donuts and biscuits, making sales worth US \$1,080,093 during the project period. Two farmers cooperatives with support from SUSTAIN processed OFSP products and made sales worth US \$6,898.

**Close government collaboration.** We collaborated with the Government of Rwanda, through MINAGRI/Rwanda Agriculture Board, Ministry of Local Governments, and Ministry of Defense to disseminate OFSP planting materials. In the special program called Rwanda Army week, OFSP cuttings were given to the farmers in selected locations, increasing the area under OFSP by 2,561 hectares.

**Social Behavior Change Communication (SBCC) for improved health outcomes.** We distributed over 300 nutrition counseling cards to project partners, government staff and other NGOs who employed community health workers (CHWs) and agriculture promoters in the field. These staff member used these materials in step-down trainings. Between July 2016 to June 2017, 101 community-

level infant and young child feeding (IYCF) events, 125 agricultural events and 107 cooking and processing events were undertaken (Fig. 3). To date, 103,000 brochures, 103,000 OFSP variety labels, and 103,000 cooking flyers have been distributed to farmers. We also helped 14 DVMs set up signage on roadsides to help them link up with farmers looking for quality planting material. To reach both rural and urban consumers, 20 TV and 26 radio programs have been aired; 2,800 flyers distributed to donors and policy makers; and 22 stories have appeared in print media and 30 on-line.

A focused study found that exposure to nutrition SBCC was significantly and positively associated with improved diet diversity and vitamin A intakes among women and young children. Compared to no exposure, exposure to nutrition SBCC was positively and significantly associated with greater maternal dietary diversity. After controlling for caregiver age, educational status and employment status, caregivers who were exposed to nutrition SBCC were three times more likely to meet the recommended dietary vitamin A intake of at least 6 days per week compared to those who were not exposed to nutrition SBCC. Similarly, their children were also twice more likely to meet the recommended dietary vitamin A intake of at least 6 days within a week.

With this data, it is evident that project model of linking agriculture, and nutrition through SBCC with a value chain approach achieved the intended effects of increasing the dietary diversity and the likelihood on increasing the intake of vitamin A rich foods among women and young children.

## Way forward

Data for the impact assessment were collected in early 2018 and are still being processed. The project will continue backstopping DVMs and marketing activities, including demand creation campaigns in support of processors, while the final project report is prepared.

### Our Partners

Rwanda Agriculture Board (RAB)  
Young Women Christian Association (YWCA)  
IMBARAGA Farmers Syndicate  
United Nations Children's Fund (UNICEF)  
World Vision  
One Acre Fund  
Gardens for Health  
Caritas  
Catholic Relief Services (CRS)  
Local Governments  
Rwanda Cooperative Agency

### Processors

Urwibutso Enterprises (SINA Gerard)  
Millennium bakery  
DUHANGE KUBYIWACU  
Farmer cooperatives  
CARL group