



## Sweetpotato Action for Security and Health in Africa (SASHA) Phase 2: Continuing to make a difference in sub-Saharan Africa!

In 2009, the Sweetpotato Action for Security and Health in Africa (SASHA) project set out to improve the food security and health of poor families in sub-Saharan Africa (SSA) by exploiting the untapped potential of sweetpotato. The project seeks to tackle the bottlenecks along the sweetpotato value chain that prevent the full exploitation of crop's potential. The \$22.5 million, five year Phase 1 effort (2009-2014) was led by the International Potato Center and implemented with over 30 partners, thanks to the support of the Bill & Melinda Gates Foundation. Many advances in essential capacities, products, and methods were made during the Phase 1, including:

1. Major improvements in efficiency in conventional breeding through the development of an accelerated breeding scheme, proof of exploitable heterosis (hybrid vigor), and common protocols and tools for designing multi-locational trials and recording and analyzing data;
2. Significant investments in strengthening population development for key traits and the community-of-practice of sweetpotato breeders in 12 SSA countries, with 46 varieties released, of which 37 are vitamin A rich, orange-fleshed varieties (OFSP);
3. Improved germplasm management and infra-structure at support platform research stations;
4. New techniques for maintaining quality foundation planting material at lower cost (net tunnels); and a method appropriate for producing planting material in drought-prone areas ("Triple-S" method) and advances in diagnostic tools for virus detection;
5. Better understanding of how to design, implement, and monitor more sustainable "seed" systems and how to engage with multiple partners to deliver planting material and other interventions;
6. Major investment in training young biotechnologists focused on developing a weevil-resistant sweetpotato using modern molecular techniques;
7. Solid evidence on the benefits to young child and maternal nutrition of linking orange-fleshed sweetpotato to health services for pregnant women and the costs of such a delivery system;



■ The whole family benefits from healthy orange-fleshed sweetpotato (credit R. Odengo)

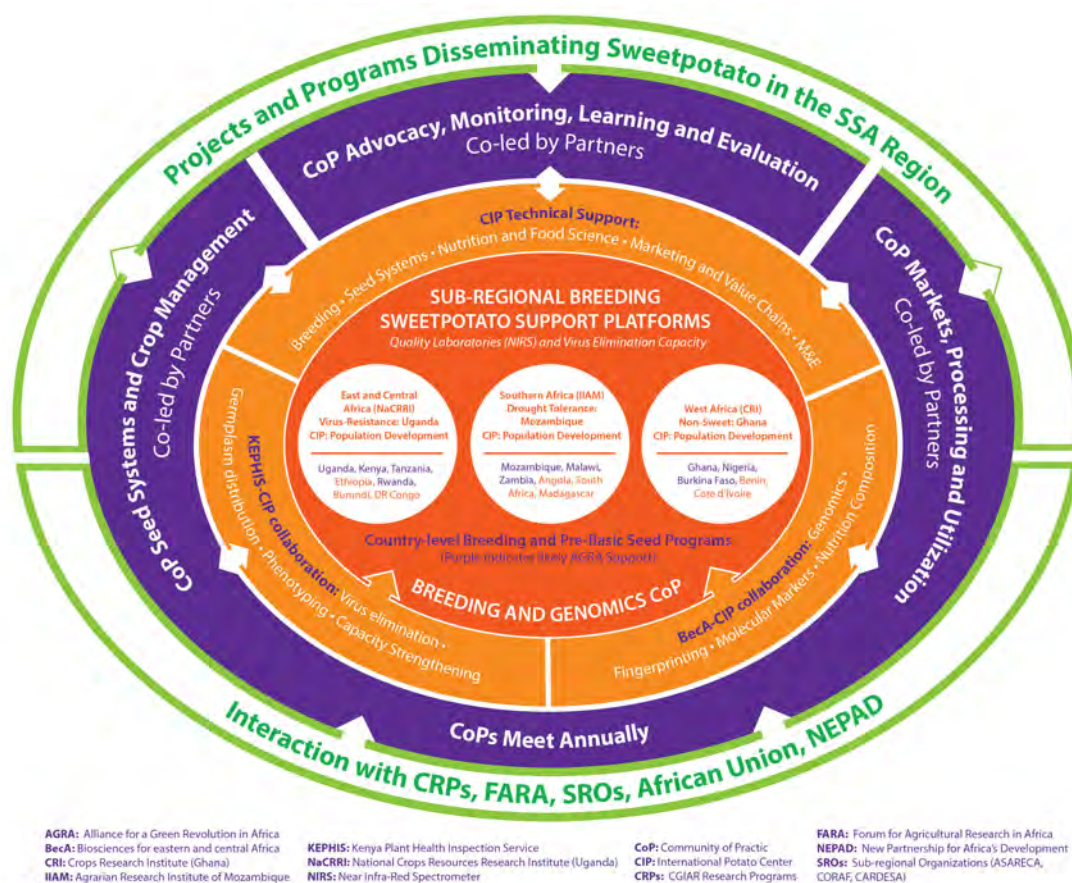
8. A commercially viable orange-fleshed sweetpotato product, *Golden Power Biscuit*, developed by a public-private sector partnership;
9. Improved techniques for making sweetpotato silage for use as a dairy and pig feed and identification of varieties appropriate for dual purpose (food-feed) use;
10. An increasingly vibrant community-of-practice, sharing knowledge through regular Support Platform meetings and the Sweetpotato Knowledge Portal ([www.sweetpotatoknowledge.org](http://www.sweetpotatoknowledge.org)).

### SASHA Phase 2 (2014-2019) Overview

The five year \$22.0 million SASHA Phase 2 project will build on the successes realized during SASHA Phase 1, with a strategic focus on adaptive research to break the remaining bottlenecks to unleashing the potential of sweetpotato for reducing undernutrition and food insecurity. The overall objective continues to be **to develop the essential capacities, products, and methods to reposition sweetpotato in food economies to alleviate poverty and undernutrition in Africa**. CIP will lead a diverse set of partner organizations in research for development activities in Uganda, Kenya, Ethiopia, Tanzania, Mozambique and Ghana. SASHA Phase 2 continues to receive the support of the Bill & Melinda Gates Foundation (90% of the resources) and new support from and increased interaction with the CGIAR Research Program on Roots, Tubers and Bananas (10% of the resources).

In Phase 2, SASHA is addressing remaining challenges in breeding, seed systems, post-harvest and nutritional quality, as well as continuing its commitment to building a strong sweetpotato community of practice (CoP). In addition, since 2009, the CGIAR Research Programs on Roots, Tubers and Bananas (RTB) and Agriculture, Nutrition, and Health (A4NH) have been launched. SASHA Phase 2 is well aligned with these programs.

A core function of SASHA Phase 1's activities has been providing sweetpotato parental material with key traits to national programs and working to strengthen the growing sweetpotato breeding CoP. Without adapted sets of varieties that meet consumer preferences, other areas of investments will not be cost-effective. Hence, in SASHA Phase 2, breeding remains the major component (56% of resources), noting that many of the new breeding approaches (accelerated breeding, heterosis) will be validated and more fully exploited. SASHA's close collaboration with the Alliance for a Green Revolution in Africa (AGRA) will continue and be expanded.



AGRA supports the breeding work of national partners, and doctoral level training of sweetpotato breeders. In addition, during the first year of Phase 2, we will conclude our investigation started in Phase 1 on achieving weevil resistance by using a transgenic approach.

While striving to ensure the sustained availability of quality, disease-free planting materials in required quantities and in a timely fashion, we will add activities to work with policy makers to ensure that appropriate regulatory guidelines are established in key countries. We will continue to work on improved germplasm management, affordable virus diagnostic tools, and ensure that our major national research program partners access and implement at least one improved method for multiplying foundation (basic seed) material. For sweetpotato agro-processing to truly take off on a commercial scale, and to enhance household level food security, we will develop and refine tools to significantly reduce seasonality in supply. This will be achieved by investing in cost-effective gender-sensitive storage techniques for fresh roots and processed puree and postharvest management practices for different end users of sweetpotato, assuring adequate safety and quality standards by establishing a reference nutrition laboratory in collaboration with Biosciences for eastern and central Africa (BecA) in Nairobi.

Finally, we will build on SASHA Phase 1 investments in the sub-regional Sweetpotato Support Platforms (SSPs) for breeding in Uganda, Mozambique, and Ghana (SSP), and associated tools, including the Sweetpotato Knowledge Portal, the Clone Selector program for breeders and a germplasm access database. Through these tools, SASHA phase 2 will strengthen a gender-equitable, sustainable CoP, with a focus on engaging younger scientists and practitioners, through information exchange at platform meetings and to capacitate and back-stop country level breeding, germplasm and overall crop management, nutritional quality assessments, post-harvest management, marketing approaches, advocacy, and monitoring and evaluation efforts. The Regional Technical Support Platform (see figure) envisions four technical CoP working groups meeting annually and communicating virtually throughout the year: 1) Breeding and Genomics, 2) Seed Systems & Crop Management, 3) Markets, Processing & Utilization, and 4) Advocacy, Monitoring, Learning and Evaluation.

For CIP and the team involved in its strategic objective to reduce malnutrition, it will be essential to monitor, evaluate, learn, and advocate from the research for development program experiences throughout the region, making significant gains in managing partnerships and exchanging information between diverse sweetpotato projects and programs. The experience of Sweetpotato for Profit and Health Initiative (SPHI) as a partnership platform will be model for other crops and other regions. The SPHI CoP will progress in changing the image of sweetpotato from being a poor person's crop to being a healthy food for all.



■ The SASHA Senior Management Team and key partners attended a convening at the Bill & Melinda Gates Foundation in March 2013 to review Phase 1 progress and present Phase 2 ideas. (credit unknown).

#### Partners

National sweetpotato research programs in Kenya, Tanzania, Uganda, Rwanda, Burundi, DRC Congo, Ethiopia, Zambia, Malawi, Mozambique, Madagascar, South Africa, Ghana, Nigeria, Burkina Faso

Natural Resources Institute (NRI)

ETH Zurich

Kenya Plant Health Inspectorate Service (KEPHIS)

Food and Environment Research Agency (FERA)

Innovative Ingredient Solutions

Ghent University

Donald Danforth Plant Science Center

University of Development Studies (Ghana)

Biosciences for east and central Africa (BecA)



■ Marketing, Processing, and Utilization CoP held first meeting in Kigali



■ Breeders (shown here at annual meeting in 2014) will continue to produce better varieties in Phase 2

### Expect outputs by 2020

By the end of SASHA Phase 2, we will have verified and expanded the use of more efficient breeding strategies. In addition we expect to have:

1. A vibrant breeding CoP in SSA that will produce at least 30 new varieties with improved traits;
2. Promising OFSP clones with significantly higher levels of iron and zinc than current varieties and knowledge about how bioavailable the iron is in those clones;
3. Recommendations whether further investment in transgenic approaches for tackling the serious sweetpotato weevil pest problem is warranted;
4. Evidence whether Quality Declared Planting Material (QDPM) protocols applied to farmer multipliers, combined with new virus diagnostic methods and improved germplasm management techniques, can provide a cost-effective system to ensure farmer access to quality planting material;
5. Improved, gender-sensitive fresh root and processed puree storage and vine conservation techniques at the household and commercial level, enhancing year-round food security and the reliability of supply chains for emerging sweetpotato agro-processors;
6. Strengthened capacity in SSA to develop economically viable OFSP processed products with adequate nutritional quality that meet international food safety standards;
7. A strengthened and diversified sweetpotato CoP that attracts more youth and private sector participation;
8. Improved methods for monitoring the growth in the CoP and its impact on target beneficiaries and the greater integration of sweetpotato into food security, nutrition, and poverty reduction policies.
9. Solid evidence that the image of sweetpotato has been changed from being a food for the poor to a healthy food for all classes.

Research undertaken by SASHA will be aligned with other projects and programs under the umbrella Sweetpotato for Profit and Health Initiative, which will ensure engagement of users in technology development and accelerate dissemination and adoption of new products and methods.

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