

## CASE STUDY ABSTRACTS – SESSION 6

### **Scaling Up Orange-fleshed Sweetpotato for Nutrition and Incomes**

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***Howarth Bouis, Interim Chief Executive Officer, HarvestPlus***

CIP and partners have been using an integrated agriculture-nutrition-marketing approach to develop and promote diversified utilization of biofortified orange-fleshed sweetpotato (OFSP) to address vitamin A deficiency in young children and women of reproductive age. This initiative has been coordinated through multi-institutional technical support platforms in Uganda (for East and Central Africa), Mozambique (for Southern Africa), and Ghana (for West Africa). As a result, over the past 10 years, more than 4.5 million farming households with children under 5 years of age in at least 15 African countries have started to grow OFSP for family nutrition and increasingly also for sale. At the start of the strategy has been a key technology innovation – biofortified sweetpotato – with a strong evidence base proving its efficacy for reducing vitamin A deficiency. The strategy has been driven by country-level and international commitments to making nutritious foods available for all, and has been organized around five elements: (1) a recognizable product to be promoted – locally adapted OFSP varieties, (2) supply chains of sufficient quantities of clean planting material, (3) pluralistic partnerships aligned to provide technical and financial support, (4) a technically sound approach to creating demand and achieving coverage in a timely manner; and (5) a monitoring, evaluation and learning system to assess scalability and enable adaptive management. This strategy has generated efficient delivery approaches addressing key technical and institutional constraints. Persistent challenges include strengthening commercial incentives for investment, though this is improving with commercial processing of OFSP, and creating feedback loops from expanding utilization into continued technology investments such as breeding new OFSP varieties.

### **Commercializing Strigaway Maize to address Witchweed (Striga) in East Africa**

***Bob Rabatsky, Director, Feed the Future Partnering for Innovation, Fintrac***  
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For millions in East Africa, maize is a staple food and primary crop grown by smallholder farmers. The parasitic weed striga infests 1.4 million hectares of land around Lake Victoria, reducing maize production by 30 to 100 percent. Striga is saprophytic to maize, produces prolifically, and is difficult to kill using traditional herbicides since seed remain viable in the soil for up to 20 years. A recent collaboration between CIMMYT, BASF, the Weizmann Institute of Science, and NARS resulted in a maize variety with a trait that makes it resistant to the herbicide imazapyr. This seed, treated with imazapyr, kills striga in the field, and eliminates it after seven consecutive planting seasons. CIMMYT and BASF partnered with the African

Agricultural Technology Foundation (AATF) to commercialize this seed technology through six seed companies in Uganda, Kenya and Tanzania. With Partnering for Innovation funding, AATF provided foundation seed to seed companies for replication, provided equipment and technical assistance for these companies to coat, demonstrate, and sell imazapyr-resistant maize seed to smallholder farmers, and monitored seed adoption and sales by agro-dealers. With four years of funding and support, seed companies produced and sold more than 785 MT of seed to smallholder farmers. The partnership overcame a number of challenges, including poor maize yields by seed companies, teaching agro-dealers safe handling and effective marketing of the seed, and farmer education on proper usage.

### **Scaling Quality Vegetable Varieties in Africa**

***Pepijn Schreinemachers, Program Leader – Enabling Impact, World Vegetable Center***

Open-pollinated tomato lines, originally developed for Asia by the World Vegetable Center (WorldVeg), were tested in different locations in Tanzania and two lines were released as varieties (*Tanya* and *Tengeru-97*) in 1997. Superior shelf-life over existing varieties was their main advantage. WorldVeg and partners promoted the varieties and start-up seed companies commercialized seed production. In 2014, 26 tons of seed was produced of these varieties, accounting for 87% of total tomato seed production in Tanzania. These varieties generated US\$ 256 million in economic revenues for farmers and consumers in Tanzania from 1997 to 2014. The introduction of new tomato varieties in Tanzania coincided with the liberalization of the country's seed laws in the early 1990s. Seed companies emerged but had no suitable breeding lines of their own. Multinational seed companies were not yet present. Success was achieved by partnering with the public and private sectors with the support of international donors investing in research. To enable further impact of vegetable varieties, WorldVeg has formalized its partnership with seed companies in Africa and Asia through vegetable breeding consortia under the umbrella of regional seed trade associations. Over thirty seed companies have already joined these consortia, which means that new breeding materials can reach farmers rapidly.

### **From Science to Scale: Aflasafe**

***Ranjit Bankyopadhyay, Principal Plant Pathologist and Leader, Africa-wide Aflasafe Initiative, IITA***

***Abdou Konlambigue, Managing Director, Aflasafe Technology Transfer and Commercialization, IITA***

In Africa, the bio-control product Aflasafe developed by IITA, USDA-ARS and partners, lowers aflatoxins throughout the value chain. The AgResults Initiative in Nigeria works with private-sector partners who disburse Aflasafe. They facilitate access to technical knowledge and inputs that farmers require to boost productivity and move from subsistence to market-driven

producers. The paper provides lessons learned of how Aflasafe Technology Transfer and Commercialization is now working towards handing over the manufacturing and distribution of Aflasafe to Private companies and public entities in 11 sub-Saharan African nations. The Aflasafe case provides a good example how scaling of innovation requires public-private partnerships throughout different phases of technology development and dissemination.

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**Scaling Agricultural Mechanization World-wide:  
Case of the 2-Wheel Tractor (2WT)**

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Smallholders in the tropics increasingly look to agricultural mechanization to speed farm operations, reduce drudgery, and to respond to mounting labor shortages. Questions however remain as how to most efficiently scale what is typically-capital intensive agricultural machinery. Based on North American and European farm models, numerous development programs have popularized four-wheel tractors, though with little sustained success. Two-wheel ‘hand’ tractors (2WTs) are arguably more appropriate to the small field sizes and limited investment capacities that characterize smallholder agriculture. Relatively inexpensive, light-weight and easy to repair, a wide range of equipment can be attached to 2WTs, including precise seed and fertilizer applicators, harvesters, and irrigation pumps. These options offer users a broad and integrated set of services, and can increase the timeliness of farm operations. 2WT owners can also act as scale catalysts – reaching many additional fields and farmers beyond their own – by offering farmers mechanized land preparation, seeding, irrigation, and harvesting on an affordable fee-for-service basis. This case study review’s experiences in Latin America, Sub-Saharan Africa, and South Asia in scaling-out 2WT-based farm machinery services to benefit smallholder farmers’ livelihoods. We review crucial considerations in small-scale farm mechanization – with particular emphasis on multiple farm services provision, adaptable business models, and the facilitation of value chain and private sector ‘push and pull’ to catalyze adoption. The ways in which government subsidies can support or work for or against machinery scaling, and the role of policy and technology targeting in avoiding labor displacement, will be reviewed.

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