HarvestPlus
Better Crops • Better Nutrition

Marketing And Processing Of Biofortified Crops In Uganda

Lessons Learnt

Improved access to Planting Materials and Seeds for Biofortified Crops through markets

Background: **The USAID-funded MENU** Activity implemented by HarvestPlus Uganda set out to increase the production, marketing, and consumption of biofortified crops in Uganda as part of a broader effort to improve the nutritional status of 420,000 Ugandans, particularly women of reproductive age and of children under five. The project objectives were developed around a hypothesis that widespread production and consumption of biofortified staple food crops would result in malnutrition reversal in the target population. To generate enough output for market off-take, any agricultural value chain development starts with the acquisition and utilization of planting materials or seeds. The MENU Activity, therefore, emphasized the multiplication of high-quality planting materials for OSP and seeds for iron-rich beans and the delivery system of these to producers.

Challenges: The marketing of healthy planting materials for OSP continues to be a challenge because of its rapid perishability, the heavy viral loads associated with the vegetative material, propensity for mixtures at the farm level, and the constraint of its limited carry over after every dry season. Another challenge to commercialization is the widespread social practice of freely sharing vines in most sweet potato production communities. The marketing of iron-rich beans seed was also constrained by their visual similarity to some low iron bean varieties, low stocking levels by input dealers,

the wide prevalence of mixing at both farmstead and aggregator levels, and limited knowledge of their nutritional value.

Initiatives: After identifying and supporting multipliers at various levels to multiply and conserve clean OSP materials from NARO and CIP, various options were proposed for their marketing and delivery to producers and other institutional buyers. Farmer groups that produced iron-rich beans were also supported to access markets. These included promotions through seed fairs and supporting the participation of key multipliers and input dealers at different agricultural trade shows. Radio spot messages were carried on various regional-based radios, for example, Unity FM in northern Uganda, CBS in Central Buganda, and Open Gate FM in the eastern region. Consumers and farmers were linked to branded input dealers and vine multipliers for seed/vines so that they could access the right varieties.

Marketing OSP planting materials included some incentive-based options, including encouraging farmers to buy a bag and receive one free, supporting vulnerable farmers to receive in-kind grants for the materials, and supporting a voucher system where sellers would redeem the portion (about 50%) not covered by farmers. Iron-rich beans marketing was also partially supported through a voucher system and through building the capacity of input dealers on the nutritional and performance benefits of utilizing the seed.

Analysis and Lessons Learned: Supporting the marketing of OSP vines and iron-rich beans was an experience of both good success and limited accomplishment. In areas where the voucher system was piloted, farmers have continued to collect money and procure seed, especially for iron beans and some input dealers still purchase iron beans

from seed companies to sell in their localities. This worked quite well for beans but not so much for sweet potatoes. Seed groups that were linked to government programs have continued to supply them with iron-rich beans and OSP vines.

Some initiatives required underwriting transaction costs, for example, covering the cost of transport to enable a multiplier of OSP planting materials or high iron bean seeds to deliver his/her stock to a new distant area that had the business potential to grow. This was covered for some multipliers, but it proved unsustainable. It made more sense to link traders/transporters to producer groups and encourage them to develop these linkages.

Overall, all the marketing initiatives needed to be given time to mature but the project cycle process, project reporting requirements, and financial verification control required before and after implementation constrained their execution. It's important to manage project expectations and set more moderate targets because the marketplace operates differently and will not always wait for institutional mechanisms to first be satisfied. Alternatively, a funding window could be opened through which various initiatives can be tested out with flexibility akin to private sector players like the telecom and soft drinks companies.

2. Market linkages to drive the Commercialization of biofortified crops.

Background: One component of the MENU Activity focused on supporting smallholders to get connected to markets for orange sweet potato (OSP) and iron-rich beans for production that had been stimulated in various parts of the country.

Challenges: At the start of project implementation, there was little tangible presence of biofortified crops on the market yet there were clusters of farmers who produced these crops but were hardly able to get them onto the market due to undeveloped linkages between producers, traders, and consumers. The biofortified crops were new and there was a lack of consistent supplies of them on the market, which presented challenges to consumers regarding when and where to access these foods. Farmers that produced OSP roots became demotivated after they could not readily market them

off to obtain some income. This situation was also experienced by iron-rich bean farmers who largely produced them without a clear understanding of where they would sell them. Because of the appearance of some varieties, some of the bean varieties

were considered mixed on the market (which typically lowered their market value) while most buyers had limited knowledge about their nutrition values, a factor that would increase their market price.

Initiatives: To achieve commercialization, HarvestPlus set out to expand marketable volumes by targeting various consumer segments and their supply chains. First, the activity supported the setup of roadside and other market outlets in locations where production was highest and in areas where there was substantial consumption. Spot messages were run on different radio stations that reached out to a wide market audience, in addition to other market promotion activities that included participation in trade and agricultural shows all aimed at increasing awareness about the nutrition values associated with consuming biofortified crops, and where they could be purchased from. Off-season production was started to promote the continuous supply of OSP for identified markets. In addition, 10 market extension workers and market link farmers were engaged on a seasonal basis to support the supply chain through the aggregation of information on prices, buyers, and suppliers for biofortified crops. They supported entrepreneurial farmers to set up roadside sales points in strategic areas and were points of contact utilized by producers and traders.

Highly visible tents of orange color were placed with selected traders along some roads, including the Kampala-Masaka, Jinja- Iganga, Kamwenge- Fort portal, Lira- Kamdini, and Mbale-Soroti highways. In total, 10 branded tents were issued to selected sweet potato traders located in the districts of Bukedea, Kamwenge, Masindi, Kumi, Iganga, and Mpigi. Some kiosks along these highways were also branded in a similar way to be points of sale for OSP roots and vines.

Collaboration was initiated with Export Trading Group (ETG) to develop a production

base of some bean types for export. To this end, 10 demonstrations were set up mostly in western Uganda to showcase improved bean production practices for improved yields. The demonstrations successfully showcased production-enhancing practices, but the company was unable to secure the volumes required for export because of the relatively high national prices of beans. Two exporters of OSP were linked to aggregators and producers of the crop who made shipments of about 2 tons each per week for an average duration of 2 months per season.

Analysis and Lessons Learned: These initiatives worked in getting the biofortified crops onto the market and sold at specific points of sale where they were not mixed. Branding increased awareness and increases sales of biofortified crops but placement and accessibility of the sales points are important. The most successful points of sale were those operated by entrepreneurial sweet potato traders located at busy and strategic points along highways, who manned their sales points for most of the day. The less successful points of sale were those that were sporadically manned during the week, mostly by farmers who were only available for part of the day or week. The use of branded umbrellas in the markets was not as successful because they tended to be obscured by other umbrellas and kiosks in the markets. Visibility, availability of the OSP roots, traffic volumes, and regular manning of sales points were key in driving up volumes of OSP sold at various sales points. It was observed that sales of OSP like other sweet potato types were relatively higher in markets that mostly serve the urban poor such as Katwe, Wabigalo, Namuwongo and Kamwonkya in comparison to others that mostly serve the more prosperous clientele like Nakasero, Bugolobi, and Ntinda, all in Kampala.

The failure of an exporter to access affordable supplies of export quality beans is indicative of strong domestic demand at the current production volumes while the small volumes of OSP exported underscored the importance of focusing on the domestic market as the major crop outlet. It is only when these biofortified foods are consumed in-county that they play their part in decreasing micronutrient deficiency.

When dealing with relatively new crops such as biofortified orange sweet potato and beans, largely produced by small-holder farmers, each producing small volumes, spread over wide production areas, it is important to establish a mechanism such as the use of extension link farmers and Market Extension Workers (MEWs) to address the challenge. The MEWs were of great assistance in supporting the coordination of marketing which

involved building a database of growers with information for example, on crop acreages, approximate yields, and their locations. They were useful in supporting the marketing function for biofortified crops grown and were able to direct traders to these sources of supply. Market link farmers have continued to be a point of linkage even after project closure.

The nature and attributes of some of the varieties promoted caused confusion and placed constraints on their uptake in the marketplace. The black mottled NARO Bean 1 for example had the good attribute of yield and good taste when fresh but its white parts turned to brown after two months of storage and became quite hard to cook in comparison to others. There was difficulty distinguishing the red mottled NARO Bean 2 from Nabe 1, Nabe 17, and Saitoti which made it prone to admixtures. NARO Bean 3 was also largely indistinguishable from the traditional yellow beans on the market. As research is refined further, it will be important to align distinguishable appearances with the iron-rich content for greater clarity and uptake.

Because of imperfect information flow between production and the market in a production system spread over a large area involving thousands of smallholder farmers, with relatively small marketable surpluses, there is always a mismatch between what is produced and the market demand. Building market linkages, therefore, played an important role in stimulating and sustaining production, increasing supplies of biofortified crops to the market, and facilitating their access to consumers.

3. Private sector entry into biofortification processing to improve market pathways and adoption

Background: One of the major activity outputs involved attracting private sector companies and entrepreneurs to invest in the processing and product development of biofortified crops. The anticipated investments would ultimately provide a pull to support production by farmers through the utilization of the processed products by consumers.

Challenges: The advancement of research has enabled the availability of clean planting materials for orange flesh potatoes with high yields. Various projects and programs implemented in Uganda by NGOs, donor organizations, and the government have all contributed to the increased production levels of a biofortified staple food crop like orange sweet potatoes. HarvestPlus has enabled at least 7 varieties of Orange sweet

potatoes and 7 varieties of iron-rich beans to get into the production system and reach the market. Consequently, farmers produced substantial volumes of OSP and iron-rich beans but with largely undeveloped markets for them. Secondly, because the fresh OSP roots do not store for much longer than a week when they were unsold during this period, most of the roots were lost through rotting. The production of substantial volumes amidst largely undeveloped markets led to a steep fall in prices, which had a depressing effect on follow-on production. While this is characteristic of most agricultural products, this phenomenon was acute regarding orange flesh potato because of its relatively short shelf life.

Initiatives: The processing of sweet potatoes into flour and other composites is relatively new in the country. HarvestPlus engaged with several private sector partners to incorporate biofortified crops (orange flesh potato and iron-rich beans) in their processing and add to their product portfolio to foster adoption and greater utilization of the crops. The MENU Activity identified three companies that were already involved in the processing of various flour composites and only needed technical and marketing support for them to initiate the processing and introduction of the products with biofortified crops on the market.

Namugongo Millers, a processor that was already making other composite products such as millet and soya combinations was one of those engaged. After capacity building by HarvestPlus, they tested out different OSP flour combinations constituted with millet, soya, or rice, and another with three components constituted from OSP, millet, and soya. A UGX 5 million grant was utilized to purchase a chipper and construct a drier. HarvestPlus also assisted with the branding of its packaging materials. It also ran radio adverts on one of the leading radio stations in Uganda; Capital FM and conducted market activation and testing in collaboration with Capital Shoppers and Senana supermarkets. These were important in providing confidence to both the miller and the supermarket chain that the products constituted were attractive to customers. Namugongo Millers and SESACO have subsequently continued to process the various composites, utilizing about 1MT of OSP every 2 weeks for about 2 months after each season's harvest. These were procured and sold through two supermarkets, including the Capital Shoppers supermarket chain.

Engagements with other processors including SESACO and NUTREAL were around market activation, branding, and promotion for their instant porridge products that incorporated OSP and iron-rich beans. Linkages were built between NUTREAL and the Senana supermarket group, resulting in placing on their shelves; four products, one that had a composition of milk, OSP, iron beans, and sugar while another has maize, OSP, beans, and soya. After successful marketing of its products, SESACO is initiating exports to Kenya. By the beginning of 2021, more than six companies were involved in processing product combinations that included orange sweet potatoes while two are involved in the processing of iron-rich beans.

Analysis and Lessons Learned: For successful engagement with private sector partners to promote various products that include biofortified crops in their constitution, it was important for the raw materials of OSP and iron beans to be readily available (this was the case immediately after seasonal harvests), be comparatively well priced in relation to other sources of raw material, be relatively easy to process, and be made into products that can establish a niche or favorably compete with similar products in the marketplace. The support rendered is most effective when it is tailored to what the private sector actor really needs to get a foothold in the market which may include critical pieces of processing equipment, linkage to prospective market off-takers, market activation, and promotion in the mass media to facilitate market entry for the new products on the market.

Some processors had high expectations from HarvestPlus that were unrealistic and were not met. It is important to manage the expectations of any prospective private sector partners. It should be clear from the beginning that any intervention is at best catalytic to their own well-thought-out business objectives, with any support extended enabling the partner to attain these faster. It should not be perceived as a risk-free 'helping HarvestPlus to do their thing'. Any support cannot be a substitute for a well-laid business case to which they are prepared to commit their own time and resources to actualize and grow it.

It was easier to engage with small-medium scale millers who have a vision of growing their product portfolio, but large-scale millers had little interest because of the limited volumes involved. The volumes available for utilization are still small, but these will grow as the various products developed and processed get traction in the market. It was thus, not only important to engage with entrepreneurs who are willing to take risks but who also allow time for their products to get established among consumers.

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