

## 2020 Conference Note 2

# Farmer, Trader, and Consumer Decisionmaking: Toward Sustainable Marketing of Orange-Fleshed Sweet Potato in Mozambique and Uganda

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**This note provides more information about the case study described in the 2020 conference paper and brief *Value Chains for Nutrition* by Corinna Hawkes and Marie T. Ruel.**

### Introduction

Most sweet potatoes grown and consumed in Africa are white fleshed. Replacing these in the diet of rural and urban consumers with beta-carotene-rich, orange-fleshed sweet potato (OFSP) varieties has the potential to reduce vitamin A deficiency. To help achieve this potential, the HarvestPlus project Reaching End Users undertook a series of activities to (1) increase the production, availability, and consumption among rural producer households; (2) raise income among those who sell their excess production of OFSP; and (3) promote and increase the consumption of OFSP among nonproducing households who purchase this excess production. The project included the dissemination of OFSP vines to more than 24,000 producer households in Mozambique and Uganda from 2007 to 2009. This note focuses on the latter two aims and the value-chain approach taken to achieve them. It briefly describes the activities undertaken to develop a market for OFSP in order to increase the income of producers and traders and to stimulate purchase and consumption among nonproducer households. The note also summarizes some of the research activities and findings that helped guide implementation of the project's strategies.

### Developing a Market for OFSP

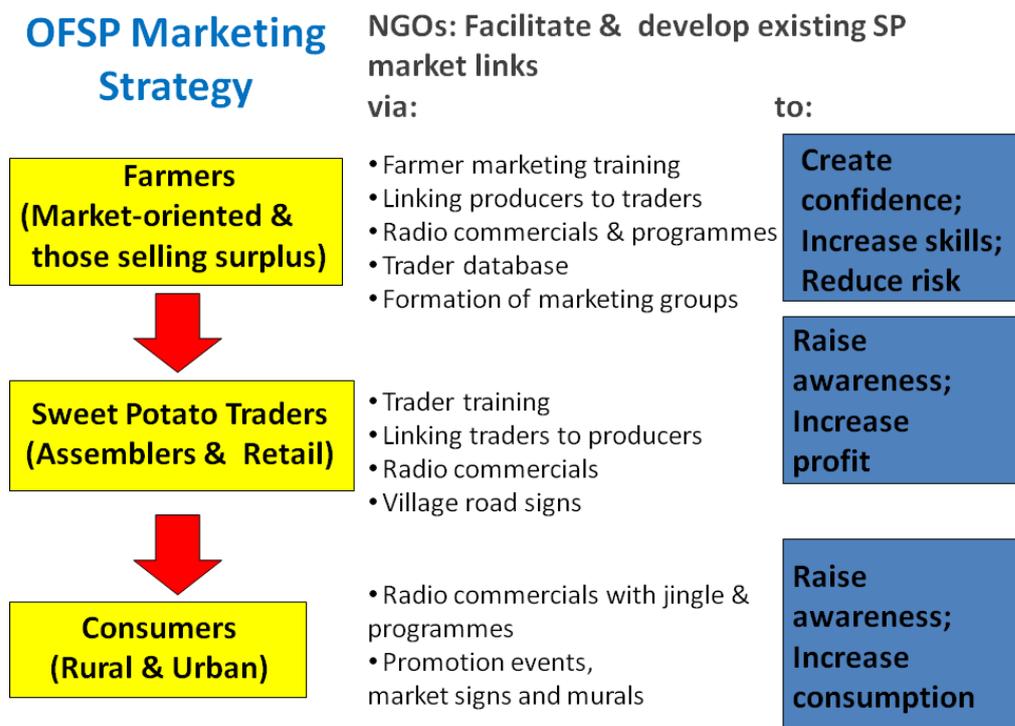
Conventional approaches to new-crop introduction involve providing inputs to farmers and guaranteeing them a market. In the case of OFSP, however, there was no assured market in the areas where the project

was implemented. OFSP was rarely seen in the markets, except mixed in with white-fleshed sweet potato (WFSP) heaps. In order to build a market for OFSP, the project developed and adopted a facilitative marketing strategy, working with existing sweet potato value chains and raising awareness with market actors along the chains, specifically both small- and large-scale producers, traders, and consumers.

Actions taken to develop the value chain at the three levels—farmer, trader, and consumer—are presented in Figure 1. The rationale for these actions is as follows:

- At the **farmer** level, it was important to build confidence that both markets and market demand existed and to increase skills in marketing. It should be noted that not all farmers wanted to sell some of their OFSP and that the location of some of the project sites—selected because of the limited availability of sources of vitamin A—precluded access to larger OFSP markets.
- At the **trader** level it was important to raise awareness of the nutritional advantages of OFSP, identify where it could be sourced, and define the role traders could play in promoting consumption. It was also important to show traders they could make higher returns from selling OFSP because diagnostic work indicated it was often sold at higher prices. This was substantiated by willingness-to-pay studies with purchasers.
- For **consumers**, it was vital to raise awareness of OFSP's nutritional benefits and encourage replacement of white-fleshed varieties with the more vitamin A-rich orange varieties.

**Figure 1—Elements of the OFSP marketing strategy and market development activities undertaken by implementing agencies**



At the *farmer* level, training in marketing was provided. It covered business aspects of farming and costs of production; grading and sorting produce; linking with traders; and ways to promote and sell produce, including selling as a group. In two project areas in Uganda this training led to the emergence of OFSP bicycle traders—young entrepreneurial men—who saw an opportunity to earn an income from buying OFSP from farmers (women particularly appreciated this service) and selling it to retail traders in the district capital.

To address *traders'* concerns about their perceived lack of demand for OFSP, trader training was undertaken at rural markets in the project areas and at urban markets outside the project areas. More than 400 traders (both men and women) received training. Delivered in the local language over a couple of hours, training covered the profitability of trading in OFSP, the product's nutritional benefits, ways to prepare it, and the importance of telling customers about it. Trained traders were provided with small, folding painted boards advertising the nutritional benefits of OFSP, as well as orange T-shirts, wraps (for women), aprons, and caps. They were also taken to production areas and introduced to producers with OFSP for sale. A database of traders and their contact details was maintained.

In Mozambique, OFSP started to be produced in significant quantities in certain locations early on due to a

bridging project that included some medium-scale, more market-oriented producers. Around 50 medium-scale producers (MSPs) produced OFSP for sale in the first year, and about half reported difficulties in selling OFSP. After market development work was undertaken, a much greater proportion of the MSPs (82 percent of 110) indicated it had become significantly easier to sell or exchange OFSP. All marketing activities implemented were judged helpful to marketing, with 62 percent of



MSPs indicating that road signs directing buyers to the location of OFSP-producing villages had greatest impact on their sales while 44 percent reported that radio spot messages were more important in creating demand for their produce.

To engage and alert OFSP *purchasers and consumers*, promotion days for OFSP were organized in urban markets. Orange market and road sign boards and murals were erected around towns to advertise OFSP in markets. Radio spots reminding listeners of the benefits of OFSP, together with a catchy song, were broadcast regularly along with radio programs covering farming and nutritional aspects in more detail. One production area was on the border with Malawi, and Malawian traders were traditional buyers. Promotional work was undertaken at a cross-border buying zone with the aid of a local priest who gathered local leaders and traders for the event. Radio spots were broadcast in Malawi to alert traders and consumers to the availability of OFSP in Mozambique. Village road signs, advertising the presence of an OFSP production group, helped traders to locate OFSP sources. As sweet potato is sometimes considered a low-status staple, it was important to encourage higher-income consumers to purchase OFSP in order to give it market credibility. Product promotion in Uganda also included provision of free samples to restaurants and eating houses.

The next section describes the qualitative and quantitative research that was undertaken to help select and design the set of interventions needed at the levels of producers, traders, and consumers to promote the production, marketing, and consumption of OFSP in the targeted populations.

## How Research Was Used to Guide the Selection and Design of Interventions to Promote Production, Marketing, and Consumption of OFSP

Early qualitative diagnostic work indicated the importance of small-scale traders in maintaining a steady supply of white-fleshed sweet potato varieties in urban markets and responding to customer demands for particular product characteristics. These small-scale traders are made up of assemblers and retailers, many of whom were hesitant to start marketing OFSP because of their customers' lack of familiarity with the product and their perception that customers would not purchase it. To overcome these barriers, research was undertaken to understand the attributes that consumers wanted in sweet potatoes and whether or not consumers' acceptability and willingness to pay for OFSP would change if they were informed about OFSP's nutritional qualities and benefits. OFSP had been introduced to

farmers as a higher-value crop, due to its added attributes and possible higher costs of production. It was also observed during market diagnostic work that where OFSP was available, it was usually sold in smaller heap sizes, which indicated a higher price per weight, and purchased by educated people, including nurses, teachers, and foreigners.

### Consumer preference and acceptance

Research was undertaken in Uganda to assess whether (1) differences in appearance, taste, and texture of OFSP roots were an advantage or a barrier to consumer acceptance—an important question because sweet potato is a primary staple in Uganda—and (2) the orange color of the biofortified sweet potatoes was an advantage for promotion and dissemination. The first investigation, conducted in 2007 in three urban and rural markets in Uganda before any vine distribution, found that 89 percent of the 474 consumers interviewed gave high acceptance scores to OFSP. The study also identified four different types of sweet potato consumer—sweet-potatophiles,<sup>1</sup> orangephiles, light-orangephobes,<sup>2</sup> and orangephobes—and from this could predict potential behavior with respect to sweet potato. This typology also suggested potential strategies for marketing and promotion:

- Sweet-potatophiles (59 percent of consumers): These consumers like OFSP but also like other types equally well. They require strong promotional and marketing strategies to encourage them to switch to orange.
- Orangephiles (23 percent of consumers): These consumers are the ideal targets for marketing and promotional activities. They prefer orange varieties to others and would be the most likely to eat OFSP if the product were available at an acceptable price.
- Light-orangephobes (11 percent of consumers): These consumers disliked the light orange color of the variety. Strong promotional and marketing programs are needed to encourage them to eat OFSP.
- Orangephobes (7 percent of consumers): These consumers disliked the bright orange color of the variety. Strong promotional and marketing programs are needed to encourage them to eat OFSP.

The proportion of these consumers differed by location (rural and urban), with the highest proportion of sweet-potatophiles in the rural areas (63–73 percent compared to 41 percent in urban areas) where sweet pota-

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<sup>1</sup> *-phile*: loving or having an affinity for

<sup>2</sup> *-phobe*: dislike of something

to is a staple food, and more orangephiles in the urban areas (31 percent compared to 16–18 percent in rural areas) where consumers have a wider choice of foods. Overall, the majority of consumers found OFSP tasty and acceptable.

The orangephiles were the only group whose rating of sweet potato acceptability correlated with increasing carotenoid content and, hence, provitamin-A levels. While they represented only 23 percent of those interviewed, this was significant because their acceptance was directly related to the nutritional benefits of OFSP. Furthermore, anecdotal evidence at the start of the project had suggested that OFSP would not be acceptable to Ugandan consumers due to its soft, watery texture. It was reassuring that a larger, more rigorous study found that a relatively large proportion of consumers exhibited a preference for OFSP and that an even larger proportion liked OFSP as much as the white sweet potato varieties. A similar pattern was noted when school children were interviewed in acceptance tests. Thus, it was recommended that the orange trait be used to identify OFSP in the markets, especially in the presence of WFSP, and the high acceptance figures of 84 percent (for children) to 89 percent (for adults) indicated that this should be used in promotion and marketing strategies.

### **Consumers' willingness to pay**

A question following from acceptability is whether consumers in Uganda had a willingness to pay (WTP) more for micronutrient-dense, biofortified foods such as OFSP. This question was explored using a choice experiment. Some consumers would be parting with real money as part of the experiment, while others only imagined parting with their money ("cheap talk") when indicating a price. The study also considered the extent to which the provision of nutritional information affects valuation. This research provided particularly important information because eliciting price information from people with low incomes presents different challenges from eliciting information from higher income consumers, and this is one of the few such experiments to have been undertaken in Africa.

The results suggest that in the absence of nutritional information, there is no difference in the WTP for white versus orange varieties, but there is a discount for yellow sweet potato (which does not have any beta-carotene). The provision of nutritional information did translate into substantial premiums for the orange varieties, indicating that an information campaign may be the key to driving market acceptance of the new product. Finally, there is a substantial hypothetical bias in both the WTP and the marginal WTP for the new varie-

ties, and while cheap talk mitigates this bias, it does not eliminate it. The results indicated that OFSP would still be saleable in the absence of nutritional information, but providing that information translated into premiums for OFSP of 17 percent for light orange to 54 percent for deep orange. This concurred with some traders' views that OFSP could be sold for a higher amount (reflected in a smaller heap size) where people were aware of its benefits.

The importance of these research findings regarding price, acceptance, and nutritional information is that while nutritional information can encourage consumers to try a new product, it is taste that drives subsequent repeat purchases, but only if the price is appropriate. In reality, although taste was considered highly important, consumers mentioned the ongoing benefits of increased vitamin A availability in their diet and the savings gained from the reduced need to purchase medicines as they and their children got sick less often. The issue of perception of price is less easy to discern. Consumers are familiar with purchasing a volume of sweet potato for a particular price, but there can be a large variation in heap weight for a given price. At least two different heap sizes with a concomitant price differential are usually sold by each trader, but buying a larger heap may not give a lower unit price but rather provide large-sized, better-quality roots.

Further research investigated consumer acceptance in rural markets in Bukedea and urban markets in Mbale (eastern Uganda) in 2009. This study confirmed that OFSP, and, in particular, all of the released OFSP varieties (*Ejumula*, *Kakamega*, *Kabode*, and *Vita*), were acceptable to consumers, traders, and farmers. However, there were differences between each group of actors in the market chain. Farmers had a preference for varieties that were easy to grow and sell; traders preferred varieties that were easy to purchase and sell; and consumers were most interested in availability and taste. Price data collection in urban markets in Uganda did not pick up any difference between OFSP and WFSP varieties, although qualitative interview data indicated that in some places OFSP varieties were sold in markets at a higher price and sold easily.

In Mozambique, significantly higher retail prices of OFSP were recorded in 2009. Information on consumer acceptability was included in the trader training material as was information on the advantage of using the orange color to indicate its availability to purchasers. In several markets in Mozambique, sweet potato traders promoted their OFSP (which is often externally indistinguishable from white varieties) by breaking off the tip to show its color.

## Impacts of the Project

### Market development

The proportion of OFSP compared to WFSP sold in four urban markets in Mozambique increased from virtually 0 percent in 2006 to 18 percent in 2008 to 50 percent in 2009. A price differential—in favor of OFSP—evolved in three of these markets, with the price being broadly equal in the fourth. Figure 2 shows the price differential observed in one of these markets. A number of factors contributed to the differential—product promotion; urban consumers’ concerns about their family’s health, particularly of young children; traders’ understanding of the value of the produce and their keenness to sell it (partly influenced by the radio promotion and fuss made by the project staff) because it had a faster turnover; time needed to obtain new supplies or for other activities; and limited supplies reaching the market.

### Consumption of OFSP

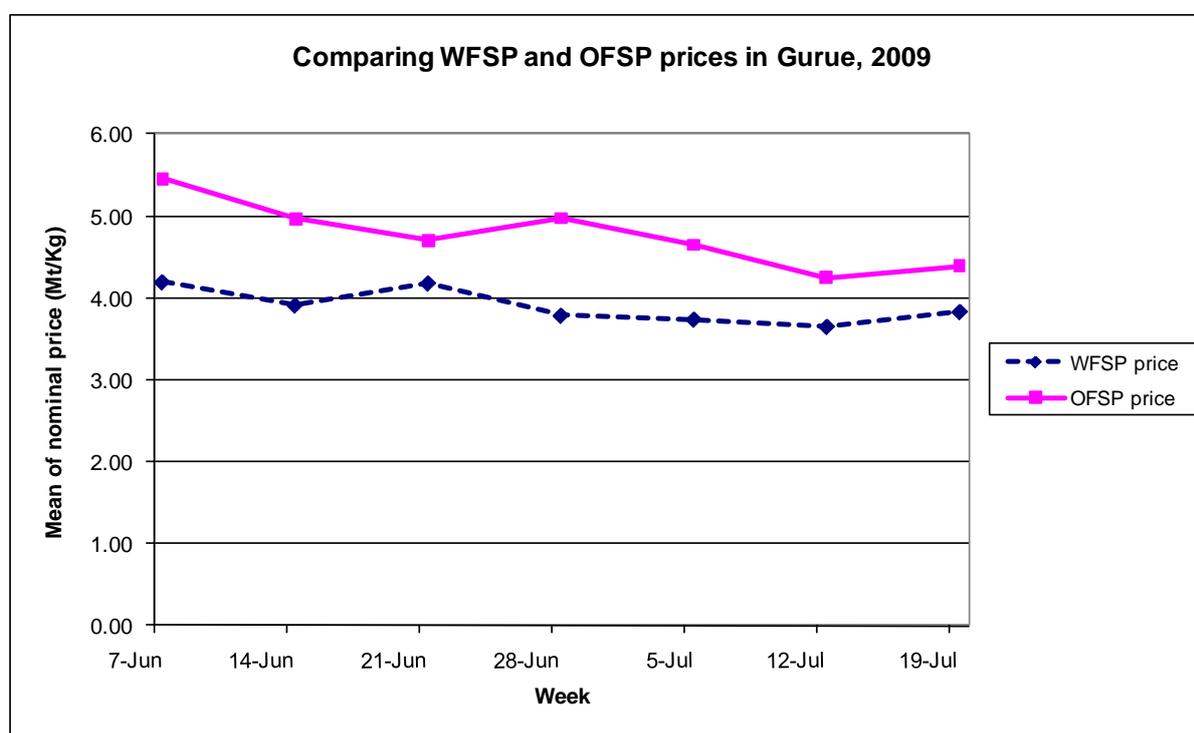
In Mozambique in 2009, 82 percent of 491 sweet potato purchasers in 10 markets indicated they would buy OFSP in the future, and more than 50 percent said they bought it because of its nutritional and health benefits, which they had learned from the education messages (radio commercials, programs, promotion events, market signs, and murals) implemented as part of the

project. The highest percentages were in urban and roadside markets; in rural markets there was less awareness of the nutritional benefits, particularly among women, possibly due to lack of access to radios. Students made up 48 percent of the study’s respondents, followed by farmers (13 percent), self-employed people (12 percent), unemployed people (10 percent), skilled workers (9 percent), and professional workers (5 percent). Sweet potato is consumed primarily as a breakfast food in southern Africa, and the data suggest that it tends to be eaten by poorer consumers. A survey of 100 consumers in two markets in Mbale, Uganda, in 2009, where sweet potato is eaten as part of main meals, showed that in the market where OFSP had not been promoted only 4 percent purchased it, while in a market where it had been actively promoted, 41 percent of purchasers bought it.

### Conclusions

Where the marketing linkages were made, the traders trained, and the product promoted, it was possible to create a market for OFSP. The existence of a market created an incentive for producers to continue to plant OFSP and to extend their acreage. The orange color was important in identifying the produce in the market, and the nutritional information assisted in promoting the product. Traders were vital in seeking out trading

**Figure 2—Orange- and white-fleshed sweet potato (OFSP and WFSP) price differentials, 2009 season, Ana Rita Market, Gurué, Mozambique (average price of all heap sizes and weights, MZN/kg\*)**



\* Meticais per kilogram

opportunities and were willing to embrace OFSP if given information about it. A high proportion of consumers in both countries reported they would continue to purchase OFSP in the future, and this was strongly supported by both consumer acceptance and the increased premiums in WTP studies when participants were given information about the health benefits.

There was a clear benefit of taking a value-chain approach in this study. It allowed for coordinated actions across the supply chain while also assessing the acceptability and demand for the product. Agriculture was linked to nutrition not just through the greater production of the product but through the market linkages that were created in the value chain, with a focus on the coordination aspects of the chain. Value was con-

ceptualized as economic value for the producers and traders and nutritional and health value for the consumers. Importantly, the majority of consumers found OFSP acceptable; they were willing to pay more for the product when they learned that it could bring them greater nutritional benefits. There had been a concern about the negative effect of farmers selling their OFSP instead of using it for home consumption. However, as the project focused on encouraging increased consumption of OFSP among producer households, the approach increased opportunities for home consumption and hence improved health and nutrition benefits while also enhancing opportunities for gaining more income from selling the OFSP and providing greater access to OFSP in nonproducer households.

This note has not been peer reviewed. Any opinions stated herein are those of the authors and are not necessarily endorsed by or representative of IFPRI or of the cosponsoring organizations.

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