



Australia Awards



THE UNIVERSITY
OF QUEENSLAND
AUSTRALIA

CREATE CHANGE

Australia Awards Short Course

Agribusiness 2018

Developing new orange-fleshed sweet potato products in Madagascar



Participant

Raonivelo Sariaka Harisoa has been working at the Madagascan Ministry of Agriculture, Livestock and Fisheries for almost 20 years supporting smallholder and farmers' organisations. For the last three years she has worked in promoting agribusiness and value chain development, then after her participation in the Australia Awards Agribusiness Short Course, she was moved into the new Department of Support to Agribusiness, where she is now in charge of promoting agricultural investment. Her role primarily involves encouraging domestic and international investors into the agriculture sector, including by facilitating market linkages.

Sariaka has a Master's degree from Institut des Régions Chaudes de Montpellier SupAgro in France.

A smallholder farmer tends to her young orange-flesh sweet potato plants



Value Chain Approach

A value chain approach means taking a whole-of-chain perspective from primary producers and their input suppliers, through every stage until the product reaches the end consumer. It examines the flows of products, money and information, with a focus on how these are influenced by the relationships among chain members. Of particular importance is the need to understand markets and consumers, and the state of collaboration among chain members. A value chain approach highlights how effective partners can align better their skills, resources and behaviour to deliver products and services to different market

segments and to reduce waste, with the resultant financial returns being distributed equitably so as to sustain partnerships within the chain. This improves the competitiveness of each business and helps chain members to recognise their interdependence, and the consequent benefits of solving shared problems.

Detailed advice on adopting a value chain approach is provided in *A Guide to Value Chain Analysis and Development for Overseas Development Assistance Projects*, by Ray Collins, Benjamin Dent and Laurie Bonney, available free at aciar.gov.au/publication/mn178.

Context

Agriculture is critical to Madagascar's economy, accounting for about 25 per cent of GDP and employing around 80 per cent of Malagasy families. Yet chronic malnutrition is a major health problem. For example, over 40 per cent of children suffer from Vitamin A deficiency, affecting their immune system and eyesight. Orange-fleshed sweet potato (OFSP) is rich in beta-carotene, which is an excellent source of Vitamin A – just 125g of most OFSP varieties can supply a child's recommended daily allowance of Vitamin A. However, it is seen as food for the poor, and remains unpopular in urban areas, and so despite government initiatives, many farmers have stopped growing it.

Study

Sariaka wanted to investigate a way to tackle Vitamin A deficiency, especially in children. "This would require a product that was both popular and an effective delivery mechanism for Vitamin A. I also wanted to understand how I could ensure it helped farmers' livelihoods, so it was clear that the value chain analysis methodology that I had learnt on my Australia Awards course would be ideal."

"I chose to examine the potential for two new products: sweet potato chips and fries. Malagasy people have a particular preference for craft chips because they are handmade and do not contain preservatives or other chemicals, only oil, salt and natural flavours like garlic or pepper. In addition, many parents are concerned that the snack foods available to school children are unhealthy. For example, both potato and banana chips, and caca pigeons - a flour-based fried snack based on vermicelli - are all low in vitamins. This meant I thought there could be a market-ready snack that was both healthy and that children would enjoy eating."

Importantly, both chips and fries would be cooked in oil. "I had learnt that beta-carotene is best absorbed when it is consumed with fat, so these products would help the absorption of Vitamin A without creating other health concerns because there is no obesity problem amongst school children in Madagascar. They would also be cooked faster than boiling or steaming, so less vitamins would be destroyed."

OFSP is also a suitable crop for improving farmers' livelihoods. "It does not need much fertilizer or pesticide, and it can be harvested in 3-4 months in countries like Madagascar with two rainfall seasons, so a household can have 2-3 OFSP crops in a year. However, previous initiatives to promote production had failed because they had not included a focus on finding markets amongst consumers."

Sariaka chose partners for her project carefully, looking for potential chain members whose size, operations and motivations would be compatible with each other and with the project's objectives. "Given the focus on artisan chips, we worked with an existing craft manufacturer of potato and banana chips. His business was now well-established, and so he was keen to explore opportunities to grow it. We also approached two small retailers who sold at an open-air market next to big schools. Unlike larger stores, they would be able to store and handle the product with great care, which was especially important because our research revealed that having unbroken chips in every bag was important to consumers."

"For the fries, we worked with a seafood restaurant that had already participated in agricultural events, indicating their interest in working with farmers, and the head chef was very receptive to the idea because he understood immediately that adding sweet potato fries to his menu would offer something distinctive to attract diners."

Sariaka and her team interviewed each of the potential chain members, plus farmers and employees of FIFAMANOR (a center for rural development and applied agricultural research), and held focus groups with 35 consumers.

Consumer research

Sariaka's approach to her consumer research reflected two important features of the project. "Since we were investigating new products, we conducted taste tests, because people needed to sample the product before they could talk about their preferences. Secondly, we needed to explore the opinions of both children as the consumers of chips, and mothers who typically would be deciding whether to buy the chips for them." In addition to these focus groups, she also undertook shopper observation and intercept interviews at both a market next to a school and a restaurant. Her findings are presented in Tables 1 (chips) and 2 (fries). These also highlight the Critical Control Points of Value, which are the inputs and activities across the entire chain that can positively or negatively affect those product attributes which most strongly influence decisions over whether, where and how often to buy, and what price to pay.

Table 1: Critical Control Points of Value for Sweet Potato Chips

Product Attribute	Valued Characteristics	Critical Control Points of Value
Handcraft product	<ul style="list-style-type: none"> Handmade, minimal processing with no preservatives or other chemicals added, only oil, salt and natural flavours 	<ul style="list-style-type: none"> Processing practices
Oiliness	<ul style="list-style-type: none"> Not greasy 	<ul style="list-style-type: none"> OFSP variety Draining oil thoroughly during processing
Taste	<ul style="list-style-type: none"> Not too salty Fresh Naturally sweeter taste than potato chips 	<ul style="list-style-type: none"> Oil temperature and length of frying period No added salt or sugar
Colour	<ul style="list-style-type: none"> Bright golden 	<ul style="list-style-type: none"> OFSP variety Harvesting at correct maturity Processing practices (thickness of slices; oil temperature and length of frying period)
Appearance	<ul style="list-style-type: none"> No broken chips 	<ul style="list-style-type: none"> Careful packing, transporting and retailing
Packaging	<ul style="list-style-type: none"> Transparent Well-sealed Not thick, and easy to open Label includes processor's contact details 	<ul style="list-style-type: none"> Packaging design and supply Processor's packaging procurement
Odour	<ul style="list-style-type: none"> Not strong oil smell, or smell of burnt oil due to re-use of oil 	<ul style="list-style-type: none"> Processor's frying practices

Table 2: Critical Control Points of Value for Sweet Potato Fries

Product Attribute	Valued Characteristics	Critical Control Points of Value
Texture	<ul style="list-style-type: none"> Crispy outside and soft inside 	<ul style="list-style-type: none"> OFSP variety Frying by caterer
Colour	<ul style="list-style-type: none"> Golden Brown 	<ul style="list-style-type: none"> OFSP variety Harvesting at right maturity Processing practices (oil temperature and length of frying period)
Oiliness	<ul style="list-style-type: none"> Not greasy 	<ul style="list-style-type: none"> OFSP variety with lower absorbency Well-drained after cooking
Shape	<ul style="list-style-type: none"> Regular stick-shaped 	<ul style="list-style-type: none"> OFSP variety producing suitable size Grading by farmers Cutting fries by caterer
Serving temperature	<ul style="list-style-type: none"> Hot, and fresh from the fryer 	<ul style="list-style-type: none"> Caterer
Appearance	<ul style="list-style-type: none"> How fries are presented on the plate 	<ul style="list-style-type: none"> Caterer

Whole of Chain Perspective

This analysis revealed how chain members need to coordinate their efforts to deliver the characteristics which consumers want, because many product attributes have Critical Control Points of Value spanning different members' activities. "To ensure both new products are popular, we needed to align varietal choice, postharvest handling, processing into chips and cooking into fries. This would rely on retaining the same committed and collaborative chain members, and so we needed to assess the chain for indicators of existing cooperation – and fortunately, we found some!" For example, the research agency and farmers had a track record of working together, and the processor had bought from the same supplier for a long time. "So, we needed to link everyone together, otherwise farmers would grow suitable varieties, but they wouldn't end up being supplied to the processor, and the opportunities would be missed."



Recommendations

Sariaka and her team produced a range of recommendations (Table 3). "This made it clear that interventions need to be coordinated across the chain, rather than previous projects which tackled farming issues in isolation. For example, the processor and restaurant chefs needed training in preparing OFSP chips and fries, and we needed to stimulate demand amongst adults and children, for example by using existing Facebook groups which specialised in culinary and dietetic issues."

"And across the chain members, we should build capacity in inter-personal skills, such as communication, negotiation, production planning and problem-solving."

How Sariaka benefited from the course

Sariaka found the best aspect of the course was the practical, week-long group exercises examining a dairy value chain in Queensland and a yam chain in Ghana. "They demonstrated the importance of walking the whole chain and starting with consumer research in order to understand what they value and will pay for. I also learnt how to work out the Critical Control Points of Value; to map the chain's material and information flows, relationships and waste, and to translate all of that into specific recommendations for every member of the chain."

"They also enabled me to practice my skills of collecting and analyzing value chain data – and helped to improve my English!"

"Then my mentored project gave me experience on how to build a value chain, including by 'starting small'. It also enhanced my leadership and communication skills through building Value Chain Thinking capacity in my team and amongst the chain members."

"And now the new orange-fleshed sweet potato chips and fries value chains we've built through this project are being used by my department as a model to scale up."

Table 3: Recommendations

<p>HIGH</p> <p>↑</p> <p>Impact</p>	<ul style="list-style-type: none"> Team to meet all relevant chain members to report on consumer research, and discuss how Value Chain Thinking can help them create new products and improve their livelihoods 	<ul style="list-style-type: none"> Conduct more sensory testing to understand better different consumer segments' preferences Research for advice on how to make the ideal chips and fries Build all value chain members' capacity in Value Chain Thinking behaviours to enhance their performance and competitiveness 	<ul style="list-style-type: none"> Introduce communication processes, for example for getting feedback from consumers back up the whole chain Train members in conflict management and joint problem-solving
	<ul style="list-style-type: none"> Training on production planning to ensure reliable availability of OFSP for continuity of supply throughout the year Build capacity in postharvest management, prioritising storage to ensure continuity of supply 	<ul style="list-style-type: none"> Support chain members in making the VCT effective, especially building capacity in communication and developing trusting relationships Ongoing facilitation of chain members building partnerships 	<ul style="list-style-type: none"> Build capacity of farmers already working with FIFAMANOR in production, Value Chain Thinking and negotiation
	<ul style="list-style-type: none"> Marketing campaign promoting OFSP's health benefits and new products. In particular, use social media and networks to promote OFSP consumption 	<ul style="list-style-type: none"> Organize awareness campaign for farmers about Value Chain Thinking in agribusiness 	<ul style="list-style-type: none"> Implement more Value Chain Thinking projects to deliver Government's agribusiness strategy
	<p>← LOW Difficulty HIGH →</p>		
	<p>Do it now (short term)</p>	<p>Do it soon (medium term)</p>	<p>Do it later (long term)</p>



Sariaka encourages Malagasy children to taste orange-fleshed sweet potato fries and chips

Australia Awards Short Courses

Australia Awards Short Courses are funded by the Australian Government and help to promote security and prosperity. They enable mid-career professionals and emerging leaders to tap into Australian expertise and gain valuable skills and knowledge. Australia Awards Short Course build enduring links between people and institutions both within Australia and in-country. They provide opportunities for recipients to undertake short-term study, research and professional development in support of key development and foreign affairs priorities.

Australia Awards Short Courses is a tailored program that aims to create skills development through short-term post-graduate training courses of three months or less that are delivered in Australia and/or the country or region specific to the course.

Australia Awards Short Course – Agribusiness 2018

The Agribusiness Short Course, designed by The University of Queensland's International Development unit specifically for participants from 15 African countries, provided learning experiences related to Agribusiness to enhance participants' ability to engage with and influence challenges regarding sustainable economic development in their home country, profession, workplace and community. Key features included using value chain methodology as the context around which the curriculum is delivered. The program balanced content and experiences to maintain engagement and interest, and enabled participants to access value chains of major Australian agricultural industries from a South-East Queensland training base. Furthermore, the course collaborated with African partners during the course design phase to ensure participants were supported upon their return to Africa.

The course comprised of 8 x 1 week long learning modules:

Week 1 – The Value Chain in Context; **Week 2** – Value Chain Innovation in Practice; **Week 3** – Smallholders and Small Business; **Week 4** – Public Sector Perspectives; **Week 5** – Analysing and Improving the Value Chain; **Week 6** – Professional Skills for Agribusinesses; **Week 7** – Value Chain Development in African contexts; **Week 8** – Rapid Value Chain Analysis.

Participants developed a Reintegration Action Plan (RAP) which detailed a unique project outlining an area of change that they will be addressing when returning to their organisation. These projects are devised with the expert knowledge and learnings gained from the course and enable the Course Leader, International Development and Australia Awards to monitor and provide feedback during various stages of the project.

Australia Awards—Africa : australiaawardsafrica.org

International Development: icte.uq.edu.au/international-development