



COMMERCIALIZATION OPPORTUNITIES FOR ORANGE FLESHED SWEET POTATO: KENYA, MALAWI AND SOUTH AFRICA

QUESTION AND ANSWER TRANSCRIPT

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Aviva Kutnick:

Thank you so much CJ for the presentation on the three countries, Kenya, Malawi and South Africa. First, I'd like to draw everyone's attention to some of the links in the box on the left of your screen. The first of which is value added food month on Agrilinks. This webinar is part of a suite of blogs, postings on various topics all related to value added foods. And what we mean by value added foods, that includes crops or foods that have been enhanced through various improvements including processing, fortification, increased safety, nutrition or better packaging for extended storage.

And the benefits include providing better nutrition, particularly to children and mothers, greater income for producers for the farmers or small-scale processors and traders involved in that supply chain as well as access to new markets as well as new processes to improve packaging and storage, reducing waste, to insure greater food safety. One of the really interesting innovations that I think CJ brought up during the presentation is new advancements in cold storage and especially in chilled transport that could potentially be making major gains in terms of reducing costs, in terms of getting processed or fresh food stuff from African markets to the international markets. So I wanted to draw your attention there.

We've had a very robust chat window during this webinar. So thanks very much for everyone who has participated. Keep your questions coming and we'll have some time right now to address those questions. Carlijn and CJ live and of course Tiwanda as you've been doing in the chat box. Thank you so much Tiwanda. So I'll go ahead and kick off with a question generally.

So thank you very much Carlijn and CJ. I wanted to ask, this methodology we've really gone in deep talking about orange flesh sweet potato. But more broadly how is this methodology on commercial opportunities – how do you see it applied generally as development professionals look to scale technologies and particular crops and food systems?

Carlijn Nouwen:

Yeah. That's a great question. Thank you, Aviva. And one of the reasons why we took somewhat longer to explain to you how we were thinking about this and why we looked at certain parts of the potential set of applications and not others was to actually illustrate this methodology. This approach is very suitable to be applied to

other products, other crops. In fact, we have already applied variations of this in a few different settings, most of it with ISP as well, and been able to either unlock some significant investment particularly in the edible oil sector in Tanzania that had been in a bit of a gridlock until we took much more of a demand than investor approach and were able to identify what truly stood in the way and helped overcome that and bring an investor in. Or in some other cases been able to actually help dispel the myths or burst the bubble of something that just isn't ready for private sector investment and then doesn't warrant a continued donor or government engagement in trying to drag the private sector along when they're not ready to move forward.

So I think this methodology really helps you to identify where are those sweet spots and where there is a need to unlock something or to bring some partners together. Where are areas that are actually about to kick off already, move out of their own accords and just meet you according by the site line and stepping in if and when some help is needed. And where there are areas that fundamentally are not yet or may never be viable opportunities for private sector investment.

Aviva Kutnick:

Great. Thank you. And that also helps us as development professionals prioritize and understand where public sector dollars can be invested and where private sector dollars can be facilitated or catalyzed or not. So it really that methodology really helps us in terms of knowing what elements we should be supporting in various crops and technologies. Ok. Wonderful.

Now we'll turn to some of the questions from the chat box now. Looking at the question from Mywish Maridia asks did the study authors look into consumer preferences and willingness to pay or purchase for orange flesh sweet potato based processed products. For example, the bread example that we went into in Kenya. So I'll turn that question over to Carlijn.

Carlijn Nouwen:

A little bit. It wasn't the core focus of our work and we predominantly tried to answer that question through understanding what the processors and producers of these products felt about it. Because ultimately what matters when they're about to make a decision whether or not to pull the product from the market is what they believe about the consumer preferences. And we did actually look at the bread in

Kenya which was already on the market in Tuskys Supermarket. And we actually sent out researchers a couple of days to just simply count the number of loaves on the shelves in a number of Tuskys Supermarkets at different times of the day to confirm that a) the product was available and b) it was actually being sold.

So we had people go in morning, afternoon and evening to count the number of loaves and with that were able to confirm what Tuskys had been sharing as their sort of sales volume. The reason we did that and the reason we didn't just take Tuskys word for it was related to a dynamic that CJ already described around the bun cutter in Malawi. There is a reality where private sector actors are not oblivious of the fact that development agencies want them to come to the table and are keen to have development support and know that there's money on the table for that. So they do sometimes have an incentive to play things up a little and make an opportunity look somewhat bigger so that they get more support in making it real.

So with that in mind, we didn't just take Tuskys' word for it and we actually went and checked and confirmed that the order of magnitude estimate that they gave around their sales was correct. We did not go out and research and ask individual consumers because what we wanted to look at was proven buying behavior rather than stated preferences. If you go out and ask people and have them taste products or ask them about products they have there is a whole deep body of research that says there isn't the biggest link between what people state they want to buy and what they actually buy.

You see that a lot in sort of products when people say what's the premium they're willing to buy for those products. And you look at actual buying behavior and they're accepting a much lower premium. So stated preference is not the best predictor of actual buying behavior. So we stay as close to the actual buying behavior as we possibly could.

Aviva Kutnick:

Great. Thank you Carlijn. Looking at another question coming in on Nigeria. So it's true. This study focused on three countries and it was no accident. We did intentionally choose countries of various size, market size and its different states of economic development in order just to broadly define some topologies for where there may or may not be opportunities for large scale commercialization of orange

flesh sweet potato. So a question came in on Nigeria. And though we didn't study it deeply perhaps we could say some sort of broad thing about potential in Nigeria or what one would have to look at if they wanted to start studying the viability of commercial investment in Nigeria.

Carlijn Nouwen:

Yeah. So we've taken a look at that. That's not that different from what we did in the other countries where you look at income segmentation and consumption of processed products with a particular focus on bread again as the sort of entry product and the biggest product to see what that bread consumption is and to see how that market is evolving. And then compare that to the current growing profile. What we did consistently in each of the countries – and we didn't focus that much on it today because it wasn't the focus of the presentation but we did make sure that growing OFSP for farmers made sense.

So you look at the farm gate price and the yield and what it would result in terms of income for them for a particular crop size to make sure that this is better than something else they could be doing. So you would always do that analysis so that you don't actually trick farmers into doing something that is actually deterioration of their livelihood from an economic perspective. So you would do that side and then the market, market sizing particularly for domestic consumption for bread and how that evolved.

And then the subsequent step is we see that that leads to potential viable case, then you would be looking at how the cost of wheat in Nigeria and the availability of wheat have been evolving through the analysis that CJ showed for Kenya and we see how that compared to the cost of getting OFSP and processing OFSP into bread. And then the subsequent step would be to engage with the bakers to see what, like whether their interested, so the baking industry whether they're interested.

And that is very linked also to the structure of that industry. So as CJ mentioned in South Africa for example the baking industry is vertically integrated so almost all bakeries actually own wheat farms. So that and wheat mills. So it doesn't make a hell of a lot of sense for them to switch over because what are they going to do with the wheat that they're growing and that they're owning. So that industry sector actually dispels and opportunity a little. So you would have to look at that as well to really

put yourself in their industry and the bakers' shoes in this case. Like what is the full on cost savings and investment that they need to make to start using OFSP.

Aviva Kutnick:

Great. Thank you. We're sitting – Carlijn and myself are sitting in Washington DC at USAID headquarters and CJ is in Kigali, Rwanda. So CJ, just wanted to give an opportunity if you wanted to make any comments on a few of the previous questions as well.

CJ Fonzi:

It's always hard to add much thought following someone as sharp as Carlijn. I will say to the Nigeria point, knowing what we know about Nigeria, large middle class, large population, I think the study that needs to be run really is the study around structure and cost as Carlijn pointed out. And so, I would encourage someone – and maybe that's you whoever asked the question to begin to really look at what is the structure of bakeries and processed food and what are their cost structures and their access to wheat.

What's happening to wheat cost in Nigeria? I think I would hypothesize that small holder farmers would benefit from growing OFSP certainly over growing maize or wheat. And so, if I were to choose a range of African countries where I would want to do this study next, Nigeria would be high in the list. So to whomever asked that question, I do hope you continue to pursue it and push it.

Aviva Kutnick:

Thank you, CJ. Your contributions are very much valued from Kigali. Thank you so much. Looking at more questions and comments that keep coming in through the chat window. So we really appreciate everyone's very active participation. Turning back to Carlijn you had mentioned this methodology being used in Tanzania and I think you mentioned edible oil. So curiosity about which edible oil and has this been used, has the methodology been used for other crops in Tanzania.

Carlijn Nouwen:

Yeah. So we've used a variation of this methodology so far on livestock, horticulture and small-scale irrigation technologies which obviously are not crops but a supporting tool as well as sunflower oil and edible oils in Tanzania. And just a few words on that edible oils work. Like for many other countries, edible oils in Tanzania is a very big part of their import and therefore a big draw on their _____.

It's the second biggest commodity or product that they import in terms of volume and value. Whereas the country is actually quite suited to grow oil seeds but local processing of oil to a refined quality which is what consumers prefer to buy hasn't led to price parity with imported refined palm oil.

So and the main reason for that actually was not as governments and researchers and development actors had been thinking for a long time because of agronomic shortfalls, low yields and poor seed performer level. But it was actually because the step that is required to get enough and yield on the refinement for sunflower oil to be price competitive with palm oil is a processing step that requires a very large minimum buyable scale. So that requires industrial production whereas most of the processing of oil was farm size processing and operative level processing which is a mechanical process and doesn't yield enough oil out of the seed to actually yield a product that is price competitive with importers and palm oil.

And as an interesting side note, Kenyan traders have actually picked up on this opportunity. And what they did was they bought oil seed cake which is a residue once you press sunflower oil and brought it to Kenya, process it there industrially and then sell both the oil back to Tanzania as well as the oil seed cake which is a really interesting animal feed product. So you take something that is basically waste, an oily seed cake, and you product it into two very valuable products.

Once we had identified that and we did that with the help of an industrial actor who was at the table from the get go, what we were able to identify was that there was a very, very healthy business case here for a local FMCG player to set up that industrial scale processing and start selling homemade, Tanzania made sunflower oil, refined sunflower oil and be able to do so profitably at a price that was at or below the price of imported palm oil. But what it required was a clear look at what stood in the way which in this case was the way that processing was structured. And it not being at viable enough scale to justify the use of the technology that was required.

Interestingly that meant in terms of support from donors and from the Tanzanian government that the TA type effort and the effort into different seeds and different agronomic processes and increased yields was not necessary for this opportunity to be viable for both the investor and the small holder farmers. Obviously always

helpful to further increase yield and further increase quality. But it was not the stumbling block. And that meant that the government of Tanzania could focus just on its tax policy around the oils which were necessary to create a bit of a break, window in which the oils could come up at price parity.

Aviva Kutnick:

Great. Thank you, Carlijn. I know that the work with Tanzania government in that case working on the tax policies was really transformative not just for the oil seed sector but then largely in terms of investment, promotion and being more attractive market for others to come in with food processing and other investments. In the course of the analysis on OFSP how did policy play a role? And if so, how so? I know it wasn't the focus this time but just curious if it came up in discussions with potential investors or processors.

Carlijn Nouwen:

So the place where policy came up was actually in the international trade and particularly on the requirements that are placed on food products going into for example Europe which would be the destination market for this food, this shelf stable puree that was an interesting opportunity for Kenya. That product goes into for example organic baby food. And you can understand that that has a very high bar in terms of quality, traceability, food safety, etcetera.

And so, it did come up there. And the reason why those was this export opportunity and it hasn't been capitalized on yet is because the opportunity itself is relatively new. So the opportunity, the viable opportunity for fresh is linked as you rightly said earlier to the recent availability of cold chain transport and the opportunity, the viable opportunity for process of this export is linked to the recent introduction of a FDA approved technology to produce a shelf stable puree at a scale that doesn't require a massive industrial set up but is actually commensurate with how the value chains are structured in a country like Kenya.

So a lot of things came together really nicely there and it was a really innovative US company that has been with us on this journey and has introduced that technology. And their FDA approval basically takes care of that food safety set of requirements to exporting this product.

Aviva Kutnick: Carlijn, could you share the name of that?

Carlijn Nouwen: Sure.

Aviva Kutnick: I wasn't sure.

Carlijn Nouwen: Yes. So the company is called Sunnova Tech and they produce technologies that basically uses microwave technology to create juices and purees of agricultural product of different viscosity levels. And that juice is relatively easy and making juices shelf stable is not that hard but making purees shelf stable and sterilizing them appropriately is actually technically quite hard because the product can burn very easily with a thermal treatment. So they have come up with a really interesting approach to using a microwave technology there. And they have designed their machinery in such a way that it actually can go to again relatively low scale production.

This is not you buy a machine and you put it on farm level and use it at farm level. It's still a couple of tons a day and it's still a machine that costs \$100,000.00 to \$150,000.00. But it's not the type of equipment where a line of processing costs a couple of million dollars and actually needs all of the production of overseeing an entire country to be running that at full speed.

Aviva Kutnick: Great. Thank you. Yeah. And I believe the company is also based in North Carolina in the United States. And I just put up the link to their website if people are interested to look more at the technology and to explore. It's used widely in the United States already and a lot of potential applications in Africa and elsewhere in the developing world. Wonderful. Looks like we have several more questions coming in. I know that Tiwanda is busily answering all the technical questions. We thank him very much, on sugar content, on a variety of issues.

We saw, back to CJ in Rwanda. We saw there was a question on orange flesh sweet potato processing and adoption in Rwanda. And though of course that wasn't the

focus of the research for this study, CJ just wanted to give you an opportunity if you wanted opine or discuss some opportunities in Rwanda either on OFSP or this methodology applied to other opportunities in Rwanda.

CJ Fonzi:

Yes. Have a bit of a perspective on both. So I will say I like the framing that OFSP has been successful in Rwanda and I agree. It has been successful and we've seen some great program backed by USAID and others to increase the consumption of OFSP in Rwanda. I think we have also seen OFSP attempt to make its way into processing. And we've seen some business actors that I would commend for their innovation and their willingness to step into OFSP begin to try to take on OFSP product production in Rwanda.

My sense is that Rwanda has a lot of the similar characteristics that Malawi does. It's a very small population. Though we are experiencing incredible economic growth and a booming middle class, we're still a very poor country. We still have a per capita GDP that's much less than half even out of Kenya. And so, I think much of what we see in Rwanda is a market that looks a lot like Malawi when it comes to OFSP. And I think has it been successful? Yes, it's great that we have some really good programs that are ensuring that children in many of the poorest districts have access to increased amounts of OFSP. And we're seeing nutritional advantages there. I don't want to belittle that because that's incredibly important.

But where we have seen attempts to commercialize OFSP in Rwanda I think the results have been mixed. And I think we've seen perhaps some business cases and niches that are playing out. But to Carilijn's lens of would I put my pension money there, I don't know. I think we're seeing success but maybe not on a commercial side. I will pivot a bit and answer the Rwanda more broadly question. We are engaged in some work with the ISP team and USAID here looking across a number of value chains right now.

And I think there's a range of things that make a cross for a particular value chain in Rwanda particularly competitive. One would be that it is a labor-intensive thing to do that requires little land. We're a hilly country without a lot of flat farmland and so things like French beans we see doing really well because they can be produced with a lot of inexpensive labor on a small plot of land. The other factor that is often

very important in Rwanda is very important is things that are highly perishable. We have great infrastructure and an airline that's becoming better and better at shipping things quickly and coolly directly to Europe. And so, the ability to leverage that asset can help us to play in certain value chains.

However, others and I think OFSP exports would unfortunately fall into this bucket where some of our neighbors are able to export by sea, we just would run the risk of not being competitive there. So I think I'm excited – right now I'm very excited about horticulture. And we're doing some tests into a range of other value chains ranging from fish to macadamia nuts to chilis that I think could be quite interesting and stay tuned for the output of that work. But for now, very interested in horticulture, not so excited about commercialization of OFSP in Rwanda.

Aviva Kutnick:

Great. Thank you, CJ. We'll take one more question from the very active participants. Thanks everyone for really participating, providing questions as well as resources. This has been a great learning process just over the last hour and a half or so. We'll go to Charles Davis asks a question on annual income analysis for farmers, how these costs were calculated and what requirements there might be. So I'll turn that over to Carlijn.

Carlijn Nouwen:

Yeah. It's a great question because it actually allows us to highlight another aspect of the approach. The interesting thing of this approach is that you don't have to do that analysis. And it's a complicated and resource intense analysis but it's not needed. Just as when we looked at the consumer preferences and we said instead of asking consumers or doing that analysis, we just look at what's happening in the market. We did something similar when it comes to the farmer processor dynamic. There is a market clearing price. There is a price at which the farmers sell this product and a price at which the producers therefore or the processors buy that product. And given that farmers have alternatives in both selling this produce at the fresh market as well as over multiple seasons obviously choosing whether or not to plant this crop, one can assume that that clearance price is a price that holds viability for the farmers.

Now if the focus of this work has been to look at maximizing economic livelihood for farmers and choosing exactly which crop and which production method would

be optimal, then obviously we would have gone into a lot of depth there. I'm not saying that this approach touches on everything that's relevant. But it actually allows you to say we look at what's happening in the market and particularly in a market that is actually quite nascent like OFSP processing where there isn't yet a dynamic as one very big buyer that the farmer has no choice but to sell to that buyer and are completely price takers.

That's actually not the reality of the current market because it's so nascent. So that's another reason to believe that that market clearance price, market clearing price is actually not an exploitive price that represents a power disbalance. So that's an interesting aspect of this methodology. As to your question on the water use. I'm sorry. I don't know the answer to that. And I therefore cannot answer whether.

CJ Fonzi:

We did look into water use. And the other piece that we did look into was not necessarily the cost of producing OFSP from the perspective of how do we get to the precise income increase for our farmers because as Carlijn pointed out, some of those costs are pretty small and don't feed into the overall story. But the one thing that was important for us to understand was could small holder farmers access what they needed to produce it. And so, for example, if it were, if root stock for OFSP were to be very, very expensive, prohibitively expensive that would be a bad sign and that would actually be a barrier.

And so, we did validate that root stock was available. It's increasingly available and available in better and better and better quantities and conditions and varieties due to the hard work of CIP. So thank you Simone and Tiwanda who are actively continue to be answering questions I think because that work has made this more viable from an input perspective. And then on water, it consumes less water. Pretty much what people in the three countries we looked at that are not growing OFSP the opportunity for the base case is maize. And so OFSP is both more resilient and easier for a farmer from an input standpoint than maize. So it's actually a better crop all around.

Aviva Kutnick:

Great. Thank you, CJ. Participants will notice that there's a number of questions that are brought up on the screen. So please go ahead and review the questions. We're interested in your feedback, your interests also going forward. This of course

is not the end of this discussion but just one point as we are working deeply either in orange flesh sweet potato or other food commodities in Africa or beyond. But thinking about how we can apply this commercialization methodology to understanding will products – or is it likely that products will scale based on private sector appetite and can that – is that a realistic kind of development hypothesis or thesis that will be proven out in market dynamics.

So quite important to this work in many countries, not just the Kenya, Malawi, South Africa. But we see many Nigeria, Ghana, Rwanda. Lots of countries have come up in the course of this conversation. So moving to our last few minutes, Carlijn I'll turn to you for a few takeaways in terms of the content. What should people in just a few discreet points be really distilling and taking away from this presentation today?

Carlijn Nouwen:

So in terms of content if you look across the three countries, I would say from a development perspective and accelerating that fly wheel of economic growth, focus on the opportunities in Kenya. Do not focus on the opportunities in South Africa because they just don't have enough developments. And when engaging in Malawi be mindful of the fact that the commercial and investment opportunities are limited and the outlook for that isn't all that good. You may still want to engage because it still has nutritional benefits. It still offers opportunities for farmers. But you should do so with realistic expectations as to what the private sector engagement will be.

Aviva Kutnick:

And just to clarify we're really – we just looked at the processing for pureed orange flesh sweet potatoes. So we did not take a look at the fresh market opportunities or other things. So just to be very clear on that.

Carlijn Nouwen:

Yeah. Puree or other like chips and fries and that's not a puree but processing is what we looked at here.

Aviva Kutnick:

And then in Kenya?

Carlijn Nouwen:

So in Kenya, yes, do – across the street countries focus on Kenya. And many of you have commented on the interesting opportunity that exists for export. We are very excited about that. The more domestic opportunity around bread baking is also viable. It doesn't have as much of a margin and a buffer as people have also picked up from our numbers and does require that we market to come a little bit more with the global trend on wheat pricing.

Aviva Kutnick:

Great. Thank you. And then Carlijn in terms of takeaways on the methodology that we utilized. Because though we studied orange flesh sweet potato deeply, really this is an approach that kind of USAID and other donors as we see specific practices, services, technologies that can come in and really have the opportunity to be transformative in the agriculture sector we sort of – we want to know what are the opportunities for that technology or innovation to scale. And if that scaling process is likely to happen through a commercial pathway. So how can this methodology be applied and what are some key takeaways to understand what to be looking for?

Carlijn Nouwen:

Yeah. I think there's a few key takeaways. One is make sure that you understand what demand and be realistic and clear eyed about that. I remember the first big presentation we had in this project in Malawi when we were talking about demand and a question from the audience came. Well, if we just taught people how healthy it was wouldn't they start eating it? And we had actually just finished the tea break where the deep-fried snacks had gone like crazy and they were just completely finished within a couple of minutes. I told the audience I'm sure you all know that those weren't the healthiest snacks for you but still they were finished within two minutes.

So let's be clear eyes and not kid ourselves about where demand is going to come from and just telling people about how healthy a product is will actually not generate demand and will not generate an investor interest. So take a very good understanding of demand. Segment it smartly, the way we have done around systematic growth, import substitution and export opportunity and understand that.

The second key takeaway would be take an investor perspective and do so relatively ruthlessly because – and that's not to kill all other interesting opportunities but to make sure that you focus on the things that really can have a transformative impact.

This export opportunity from Kenya exists but its by no means completely ready to go without any form of support because it needs different parties to come to the table, Sunnova Tech, a buyer from Europe. And that will need engagement and support which in my opinion should probably be spent on that rather than on many smaller opportunities for maybe like school feeding programs if you want to look at the commercial opportunity and not just the nutritional benefits.

So make sure that you take an investor led approach and do so relatively ruthlessly to help yourself prioritize. And then the last I would is those two will help you in your analysis focus on the things you truly need to understand so that you don't have to spend things that you don't so this effort needs to understand. So to the consumer preferences, the farmer pricing, the things that we spoke about you can use a lot of the what's actually happening in the market as pointers for that reality and the reality that investors will take as cues.

Aviva Kutnick:

Great. Thank you so much Carljijn. Well, we're wrapping up this webinar today. I wanted to thank again CJ Fonzi in Kigali, Rwanda. Thank you for joining, CJ. Thanking Carljijn Nouwen in Washington DC with us. Also thanking Tiwanda for being very active in the chat box and providing lots of critical technical answers throughout the webinar. And then finally thank you to everyone at Agrilinks for facilitating and making this learning community possible. And with that we'll close the webinar today. Thanks for all the participation.

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