Scaling the Uptake of Agricultural Innovations: The role of sustainable extension and advisory services

Q & A Transcript

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Julie: All right, good morning, afternoon and evening, everyone, and welcome to the October 30 edition of the Ag Sector Council Seminar Series. My name is Julie McCarty and I am a Knowledge Management Specialist with the USAID Bureau for Food Security.

I'll be facilitating your webinar today and kind of just helping things move along; managing the Q&A and such, so you'll be hearing from me throughout the webinar.

The concept of bringing agricultural technologies to scale in the developing world has emerged as a really hot topic at USAID and beyond and so we're delighted to bring three excellent speakers together today to discuss three aspects of scaling agricultural technologies through public private partnerships and we will introduce our speakers in just a moment but first I wanted to just give a few reminders for the seminar today.

First of all a PDF of the PowerPoint that you'll be seeing today is available in the little file downloads box that is on the left of your screen right now. So you'll be able to download that PowerPoint as well as a few additional suggested resources from our speakers today in that file downloads box, and that'll disappear during the bulk of our presentation but will reappear during the Q&A.

So if you want to wait and download those files a bit later that's fine. Also this session is being recorded so you'll be able to access it later on the AgroLinks.org website and share it with you colleague.

We'll also send out an e-mail to everyone who attended the webinar today and who registered for the webinar with some post-even resources to make sure that you don't miss out on anything in relation to this webinar.

I've noticed that a few people have shared their Twitter handles in the chat box. If you are a social media person and you would like to tweet along with this webinar please use the hashtag 'AgEvents.' You'll see it on your screen right there next to the Twitter Icon. We encourage the following along on Twitter.

One of our communications staff will be monitoring Twitter and we had some great engagement during the last Ag Sector Council, so we highly encourage that as well. Now if you're an Ag Sector Council regular you know that we usually have an in-person component to our events but for September and October we have been doing the AgSector Council as a webinar only.

Now if your favorite part of Ag Sector Council is the coffee and bagels that we provide don't worry, we'll start back up with the in-person soon but one of the benefits of the webinar only aspect is the enhanced opportunity for networking and through the webinar we can, of course, bring together people from all over the United States and the world.

And so briefly I just wanted to highlight some of the ways that you can network at the Ag Sector Council Webinar. Of course we encourage everyone to introduce yourself; let us know where you're joining from.

We also highly-encourage sharing your Twitter handle, your personal or professional websites, or your Linked In profile. This is a good opportunity to share those items and if you work for an organization that has relevance to the topic today, ah, we highly encourage sharing, ah, resources from your organization or any other resources that you think would be relevant to the audience for this webinar.

Also feel free to say hello to your colleagues and connect with new contacts just in the general chatbox but if you'd like to do a private chat with someone, ah, specific that you see on the webinar you can find their name in the attendee's box up at the top right of the screen and simply hover over their name and you'll see a little 'Start private chat' indicator pop up and that's just one way if you'd like to, ah, that you can privately chat and no one else will be able to see, ah, what you're chatting with your – ah, your colleague.

So we hope that you all will connect and, ah, keep an active chat box during the webinar today. That'll help us out, so thank you all for sharing, ah, your e-mails and your Twitter handles. I can see lots going on in the chat box right now.

All right, well to give an introduction to our topic and to our speakers I would like to introduce Margaret Spheres who is the Director of the Office of Market and Partnership Innovations in the USA Bureau for Food Security. Her office leads private sector engagement for Feed the Future, so she is a very appropriate person to give a brief intro to our topic today and so I will go ahead and pass the microphone over to Margaret Spheris. So, Margaret?

Margaret: Okay. Thank you for joining today's Ag Sector Council Webinar discussing engaging the private sector and the scaling of agricultural technologies to small holder farmers. Feed the Future, President Obama's Global Hunger and Food Security Initiative is the United States Contribution to global efforts to significantly reduce poverty and under-nutrition.

Led by U.S. aid the initiative draws on the agricultural trade, investment, development and policy resources and expertise of 10 Federal agencies. Feed the Future is engaging the private sector in a meaningful comprehensive way to meet the global food security challenge through models that are integral to core business strategies.

Agricultural development depends on the strength of public and private institutions working and investing together, building new markets and supply chains, sustainably taking new initiatives to scale and improving global economic potential. Working with and through private sector markets is crucial for scaling agricultural technologies beyond any given donor project to make the technology widely available and accessible to small holders.

Ah, one example of how Feed the Future catalyzes this is the Feed the Future partnering for innovation program which provides grants that help commercialize proven transformational technologies to quickly and sustainably put them into the hands of small holder farmers to improve their productivity and incomes.

We are excited to have three excellent speakers joining us for today's webinar, each discussing a different aspect of scaling technologies through private sector markets. First up, Bob Rabotski, Program Director of Feed the Future partnering for innovation will present on commercialization models for scaling technology to small holder farmers.

For more than a decade Barbara served as Centrex Senior Vice-President. He has more than 25 years of experience designing, managing and evaluating U.S. aid and multi-lateral economic development programs in Africa, Asia, Eastern Europe and Latin America. Next up, Mike Gavin, CEO of PortaScience, Incorporated; we'll discuss his company's work, bringing their udder check technology to dairy farmers in Rwanda through a partnering for innovation technologies support sub-award.

Mike has 30 years of experience commercializing more than 30 products which have generated more than $500 million in revenue

in both business development and product development capacity at Bayer Diagnostics ITC and Somerset Consulting. As Vice-President of Research and Development at ITC he was responsible for development of the first FDA-approved prothrombin time monitor for home use.

Lastly, Sara Budinger will discuss findings from a recent study co-funded by U.S. Aid and the Sangenta Foundation for sustainable agriculture that looked at the practical issues in scaling agricultural technologies and rural markets for adoption by poor households.

Sara is a Senior Advisor at Sangenta Foundation and adjunct Assistant Professor at UC Berkeley in the Department of Agricultural and Resource Economics. Her work focuses on innovation, deployment and adoption of technologies impacting the lives of the poor.

This includes the man-driven innovation, public-private partnerships, commercialization strategies, intellectual property rights and new product development principles applied to technologies for the poor.

Thank you to all of our speakers for participating today. I will go – go ahead and hand it back to Julie.

Julie: Thank you so much, Margaret, ah, and thank you for introducing our speakers. So I'm going to go ahead and pass it along to each of our speakers in turn and we encourage you to post questions in the chat box throughout their presentations.

If there are clarifying questions we'll probably ask them after each speaker but we'll hold some of the larger questions until all three speakers have had a chance to present, uh, but please feel free to enter them at any time but we'll – we'll ask them kind of at the breaking point as we go along.

And so first off is Bob Rabotski and, ah, please go ahead and take it away, Bob.

Bob: Okay, thank you, good morning, and thank you to Julie for organizing this event and to Margaret and Laura Chismo from USAID MPI team for inviting Partnership for Innovation to present today.

Ah, I first want to provide a little background – hey now, we're having trouble with the slide – okay, there we go. I want to

provide some background on our team's capacity to scale technology to small holders. This is the space we work in. We're currently implementing five Feed the Future programs in four countries worldwide and the model used is to promote improved technology such as seeds, fertilizer, soil management, water and weed management, and post-harvest handling with the objective of moving subsistence farmers to the commercial sector.

The results are measured in income, sales and in improved food security. This field work has helped inform how we implement partnering for innovation.

In September of last year USAID initiated the Feed the Future Partnering for Innovation Program to promote the commercialization of off the shelf technologies to small holders.

We're identifying game-changing technologies and potential commercial and mission partners to support new market entry through performance-based grants.

We also want to capture, document and disseminate effective commercialization models that can be replicated to be used by others that are entering this challenging marketplace.

So as part of this leading agenda we're capturing examples to answer these questions and because we're a learning project we want feedback and ideas from you. So, ah, we're looking forward to, ah, questions and comments in the bar on the screen here afterwards.

So what is the challenge? Um, what we're trying to do is to get this farmer who is very poor, very overworked and lacks any source of good reliable information and technology to farm better and – and get her to a point where she can afford better technologies.

I've spoken about learning and a key lesson in getting a piece of equipment such as this, or better seed, or pest management technologies into her hands is not simply that the technology is better than what is currently in use although that's certainly very important.

We've had over a century of technology development since the hoe yet the vast majority of farmers in our target market still use them. Why is that? The challenge is if there's not an appropriate business model used in support of a technology then the prospect

of successfully launching and scaling are very low. So how do we convince her the value of minimum till cedar is worth the cost? Can she be assured that she makes the significant investment that adequate training and services will be available?

Is there financing available for their purchase? Are there other business options to make this technology available to her such as renting the service or leasing the equipment?

Thus far Partnering for Innovation has considered several models of commercialization. We're gonna talk about four here; the distributor model, the aggregator model, the acquisition model, and the accelerator model.

I'll briefly discuss the key characteristics of each as well as their advantages and challenges. I'll close by providing some examples of models used by some of our funded partners and then we'll hear more directly from another company we're supporting through our grant, PortaScience.

So distributorships are what we think of when we're purchasing Ag equipment and supplies as well as other goods and services. We've looked into two types of distributorships; direct and third party. Direct distributorships are like your Apple Stores. They're owned and managed by the company that developed the product.

In agriculture we generally see these when selling higher-end products, such as tractor or other equipment since customer service and support is an important part of the sale. This example here is of the South African Company, Surehatch, which is slowly building a distribution network in Southern and Eastern Africa for its poultry, egg, incubator equipment.

Third party distributorships are either independent wholesalers or retailers where volume-based sales are conducted for products such as seeds, other inputs, pest management products and similar items. Direct distributorships have several advantages such as better product control and pre- and post-sales service and support and these businesses are closer to their markets and so have a much better understanding of their customers' needs.

Challenges include high start-up costs but generally these are paid off over time since sales margins are better. Third party distributorships are less – are a less costly route to get your product into an established distribution channel but your product will be competing with other brands that are handled by the distributor.

There are more intermediaries in the transaction so your margins are going to be lower and usually there's little in the way of post-sales support offered.

A second model we call acquisition which involves entering into a formal agreement to take partial or full ownership of a company. We're seeing mergers and acquisitions in the seed and ag inputs industry, for example, but this is also a strategy with privatization of state-owned enterprises.

Advantages of acquisition include more immediate market access through purchasing not only plant and equipment but also management and sales service personnel who understand the market and local legal regulatory issues, and will have a much greater vested interest in protecting your intellectual property.

On the down side the up-front costs are significant, not only in capital investment but also in management and staff time, in merging different cultures and business values before you reach full efficiency.

A third model we are calling the aggregator model. This is where a nucleus farm or a consolidator will direct small holder outgrowers to produce for a given buyer or market. It's a very common model with the export horticulture industry, with poultry production and dairy production and it's being used more for grain production for animal feed we've been noticing.

The aggregator is meeting certain market specifications and is therefore highly-motivated to promote technologies to outgrowers to improve their productivity, meet market standards and ensure traceability.

Aggregators not only offer a ready market but also training and technical assistance and access to finance so that technology adoption rates are greater. Challenges include the increased costs and time for providing these services, ensuring compliance to market requirements.

Traceability is difficult and also very costly for them and it's a huge challenge, and the aggregator also runs a risk of outgrower side selling which is also an issue that we see in the developing world.

A final model to consider is the accelerator. This is a third-party intermediary either publicly or privately financed, or a public-private partnership that plays a match-making and facilitation role between technology developers and commercial investors.

Accelerators are staffed with personnel who can provide assistance with market research, technology expertise, coaching and business advisory services, and most importantly connection to the investor community.

Accelerators can speed up the technology discovery and commercialization process, and provide business and legal support, especially around IP issues. On the down side they are usually partially or wholly publicly-financed and so funding will be cyclical and accelerators don't often operate in the developing world context but I think that this is beginning to change.

Now let me give you a couple of examples, um, of technology commercialization grants supported by Partnering for Innovation. These are used on one or more of these business models to promote their technology.

The first, Driptech is marketing their InstaKits which is seen here, ah, a drip kit, a one-acre drip kit in a box. They're marketing these through wholesalers and retailers that are established in the Indian market but also they're selling their kids through an aggregator, a company called Global Green.

Global Green is a food processor of Gerkin and other pickle products and, in fact, their products are found on the shelves of American stores, ah, and European stores. So, um, Global Green is actually promoting the use of these drip kits to 1,000 of their outgrowers.

They're helping with financing and installation, and also on technical training in the use of the product so that their growers can increase their counter seasonal production.

Next is an example of a multi-party agreement led by World Cocoa Foundation as well as cocoa industry partners such as Hershey's, the ICT developer, Grameen Foundation and a global telecom giant, Orange.

The project is supporting the roll-out of a smart phone based ICT platform containing apps with production, post-harvest and market information that lead farmers, which they are calling community

knowledge workers, used to promote improved practices by small holder cocoa farmers. These community knowledge workers will work in 120 communities and provide improved extension services that will impact over 5,000 families.

And here's where you can access more information on the Feed the Future Partnering for Innovation Project. Um, this is on, now, our newly-released website, um, so please come in and check us out there; thank you, and I'd like to turn it back over to Julie, uh, for the next presenter.

Julie: Uh, thank you very much, Bob. Um, before we move on to Mike, I thought I might ask just a question or two that came in during your presentation, um, and, ah, Richard Tinsley from Colorado State University asks, "Can small holder farmers dig themselves out of poverty with just a hoe or is some form of mechanization essential?"

He wanted to know just a bit more about, you know, dietary energy balance that might restrict, ah, the work day to four hours or less, kind of – if you wouldn't mind elaborating a bit on mechanization versus non-mechanization.

Bob: Yes, thank you, ah, that's a great question. Um, I would say that he is absolutely spot-on, that, ah, you know, anybody who has done gardening knows that it's very hard work and if you're doing that not over, you know, a few square meters but a few hundred square meters this is really tough work and, um, for example in Africa the – the main people who end up doing this are women and it's back-breaking and it's on top of most of their other daily chores that they handle including the kids and, ah, cooking and cleaning and everything else.

So, um, you know, I would say mechanization is crucial to – to ah, bringing, ah, bringing productivity up in the developing world. The concept that they're – they're – this will displace labor I think is – is a false one, especially during production season and harvesting season labor is a very short commodity and, um, people's days are full and actually, um, doing this manually is – it actually increases the low productivity rates because generally, uh, people get behind schedule, they miss the early rains, ah, because they're waiting for people to help them in their fields to plow and plant.

So anything we can do to mechanize and, ah, speed up this process and also make it a – make it easier for people who are in the

farming sector, anything we can do there, we're definitely supporting.

Julie: Great, thank you. Uh, all right, well I think, uh, the answers to a few of the other questions have actually, uh, been coming in through the chat box. Thank you so much from Feed the Future Partnering for Innovation who has been answering a lot of the questions coming in; we really appreciate it and if you have input on answering anyone else's questions please feel free to answer the question of another participant.

The answers don't only have to come from the presenters. Um, all right. Well I think that we will go ahead and move along to Mike Gavin from PortaScience.

Mike: Terrific.

Julie: Mike, great, you sound good, Mike.

Mike: Good morning, everybody. Um, my name is Mike Gavin and I would like to talk about a recent Partnering for Innovation Award which utilizes a local partnership to enable the distribution of our products as well as educational services in East Africa.

First I want to also thank USAID and Fintrac for inviting me to talk this morning. We are new to these programs and hope to see these types of private partnerships make a real impact in the region.

So first I would like to talk about, ah, a little bit about PortScience and then a short discussion on the dairy industry in Rwanda and then onto ABS, our partner in Rwanda. So first a little background on our company, PortaScience; we were founded in 1999. We're located in Morristown, New Jersey and have 14 full-time employees.

We are an interesting mix of contract R&D and product company and I will talk about the products in just a minute. In this model we typically have started out with SBIR NIH grants. We develop products, find commercial partners that will eventually market and distribute these products.

We have commercialized several products using this model and we're currently active with several other projects of this type. We've been recognized for this success with the National Tibbetts Award. We, uh, typically – let me back up a slide.

We, uh, typically work with, uh, a number of portable, ah, devices. Uh, we have been using for several years different formats. Uh, most of them are very portable; most of them are amenable to very high-volume production and, as I've said, we work in a variety of different test formats in different media.

Most of them are used at point of care and for farmers in particular that becomes very critical. So although along the way we developed our own line of products for the dairy industry and we ended up re-purposing a human diagnostic test, uh, for testing milk quality.

We created a separate entity called PortaCheck which now markets several products to help farmers improve productivity and milk quality. We utilize third party distributors to help navigate the local markets, uh, and we've learned the importance of – of selecting the right distribution partners to ensure success.

So why the dairy industry? Well we ended up in the dairy industry because we saw it as a big opportunity. Uh, milk is a huge global business with nearly $200 billion in sales of fresh whole milk. Price supports exist in most developed countries to help stabilize production.

Some estimates suggest the need for milk will more than quadruple by 2050 but the additional and water needed to produce more meat and milk will not. So there's a tremendous difference in milk production per cow in different regions of the world. Each cow will need to become more productive to meet the need for fresh milk.

Ah, we also know that routine testing and treatment will maximize production in milk quality. Routine testing enables early detection and treatment of common dairy diseases. Two leading issues for cow health are udder infections and ketosis. Ketosis is a metabolic disorder.

If these are not managed properly they can affect the health of the cow, the quality of the milk, and the productivity of the cows over their entire productive lives. Together they cost farmers an estimated $26 billion a year just in developed countries.

We sell three products currently; all use fresh milk as the sample, all use disposable test formats. Our newest test, LDH, is a fast, simple and our least expensive test and we think it's ideal for on-

farm use and it is the test that we are utilizing for this particular project. It helps make for very rapid screening and treatment decisions, ah, and it is a – part of the grant is providing funds to help us scale up this particular product to make – to lower the cost and to allow the product to be used in, ah, less-developed regions of the world.

We segment the worldwide dairy market into three types of farms as shown in this little graphic, and although the large dairies today produce a very significant portion of the developed country's milk it is smaller dairies in the developing nation that will need improvement as they are in regions of very rapid growth.

So for us distributing products to these 65 million dairies across the globe typically in the most rural areas presents a real challenge. The product we intend to use in our pilot is in Rwanda and the product is very simple. You can dip it into a milk sample or squirt the milk sample directly on the, ah, test.

[Clearing throat.] You can compare it to a color chart and it will in – in approximately one minute you can detect the presence of an infection. Ah, the test utilizes lactate dehydrogenase, a known marker for infection.

So the pilot program takes place in Rwanda. Ah, Rwanda is a very small country in East Africa as probably many people here know; Rwanda is about the size of Massachusetts and has a population density about the same as Rhode Island, about 1,000 people per square mile.

A little background on the Rwanda dairy program and a little bit about the dairy industry in general; about 70 percent of the population drinks milk but the per capita is very low, ah, is disproportionately low in fact compared to other countries.

Uh, they have 50 percent of the children suffer from chronic malnutrition resulting in impaired mental and physical development, anemia, higher instances of mortality; fortified milk could play a crucial role in addressing this issue.

Production levels average about one to three liters per cow per day which is very low *[clears throat.]* Most developed countries will see, ah, production in the range of about 20 to 40 liters per day. Small holder farms have very poor access to vet services, ah, poor feed; poor animal management practices and a limited market access.

[Clears throat] excuse me. Government of Rwanda has adopted a national policy of one cow per family. This has had some interesting unintended consequences. As the population of animals increased so did milk production but the market access remained relatively constrained due to lack of processors.

Without the consistent market update milk flooded the local markets and the revenue to the farmer collapsed. This put the entire industry into a difficult financial position in many ways, defeating the one cow per family goal for income generation.

This is now improving, more processors are coming on-line and that had a second unintended consequence which is now that the supply to the processors is adequate. They are demanding higher-quality milk from their producers. This starts the process of measuring milk quality which is a – which is a good thing. It has farmers more concerned about providing high-quality milk, um, in order to, uh, to get payment for their products.

We want to mention probably the most important part of this, ah, particular program and that's our partner in Rwanda, AVS TCM. We have known Nathanial Mahoney, the founder for several years and without his assistance and knowledge of the region this project would be impossible.

Ah, it is this project and AVS has provided both – will provide both education and distribution of our products to the small stakeholders in this particular region.

AVS is headquartered in Nairobi. They provide business services for both – ah, for genetics, artificial insemination, ah, various supplies, animal feeds and milk quality. So they do distribute our product and, ah, a variety of products that they feel, ah, help the local farmers achieve higher production rates.

They have, ah, 33 staff members in four different countries, uh, and they've implemented several development projects in the past and I think they've become known to these agencies for their – not only for the services that they provide, their knowledge of the region, but also their financial accountability and transparency.

So one of the most important parts of this project is that they will provide training in several locations in Rwanda; ah, they've had a lot of experience training local farmers in various areas; milk collection centers in particular will play a key role in the

distribution of our products and the distribution of the knowledge necessary on how to use them. You can see they have offices in Kenya, Rwanda, Uganda and Zimbabwe.

So in conclusion we look forward to this opportunity to bring our products to this region and hope we can show that with proper tools and education Rwandan farmers will see an improvement to their cows' health; their milk quality and their income will improve as well. Thank you very much and, ah, maybe we can take some questions.

Julie: Thank you so much, Mike. Ah, if anyone has clarifying questions specifically for Mike please feel free to type them in the chat box. Mike, we did have one question from Richard Kinsley from Colorado State who asked when animal rearing practices are poor in small holder communities is it usually because of limited knowledge, limited labor or other operational problems.

Mike: Um, I think it's probably limited knowledge, um, as well as access to some of the tools, ah, required, ah, to improve the – ah, the cows' health, especially around, uh, the period of fresh cows and the birthing process.

Um, without the proper tools and, uh, without proper feed additives and, uh, diagnostic products it's difficult for instance to diagnose, for instance, a cow that would – uh, could fall into ketosis. They're very susceptible to ketosis after giving birth. So without that knowledge of the fact that they may have to change their feed, um, in order to prevent this and reduce this occurrence, uh, they can run into some real problems.

So it's really a combination of things but I think education is – is crucial.

Julie: Ah, great, thank you. And, um, Milton Lore from the Kenya Feed the Future Innovation Engine in Nairobi asked do you anticipate that there could be opportunities in the near future for licensing of PortaScience or PortaCheck technologies towards diagnostic manufacture in Africa?

Mike: Yes, that's actually a great question. Ah, I like that question because I think for our products to be, uh, at the lowest, ah, price point possible in order to have the greatest use in countries like, um, Africa, the local, uh, licensing and manufacturing is – is anticipated. Uh, that would be the second phase of what we would like to do is be able to provide the tools locally, ah, in some of

these countries regionally to be able to manufacture the products and distribute the products. Ah, it would get the products to the farmers at the lowest possible price point. So we do anticipate that and actually look forward to being able to do that, ah, in the not too distant future.

Julie: Ah, great, thank you and, let's see, one more question that came in specifically for you was from J.W. Camilia from the USAID Senegal Office, um, who asks or says the ABS device seems very simple to use; I wonder how could transhuman communities in pastoralism zones in the south and in the Horn of Africa could access such a technology, uh, given the nature of transhumans.

Mike: Uh, I'm not sure I follow the transhuman portion but I think that, uh, our distribution model will utilize regional, ah, third party distributors in – in every part of the world where we find some demand. Ah, currently, for instance, ABS is providing that service for us in Africa. We have other distributors in other regions of Africa, ah, that provide access to our products.

Ah, I'm not sure that that completely answers the question but if someone wants to approach me on the side I'd be happy to go into more detail.

Julie: Ah, great and, let's see, one more question came in, ah, from Jimmy Asmund from the USAID Bureau for Food Security. Let's see if I can come up to it – um, all right, he asks in many ways the problem in Rwanda is not a lack of milk but a lack of milk quality standards.

The new test strips are a great new technology but their effectiveness is compromised by a lack of clear signals from the market-backed producers that sub-standard milk will not be accepted. What strategies do you and Nathaniel have to go – go to that the next step of having SCC as being a screaming measure at MCC levels?

Mike: Well that's a great question. I think that, um, in the early phases and I think I talked a little bit about it in terms of the unintended consequences. Uh, there was a time in Rwanda where there was a lack of milk in local and in distribution networks throughout the country, uh, the one cow per family program helped change that and relatively dramatically increased the milk production to the point that it – uh, it couldn't be handled by the processors, um, forcing the milk prices to collapse.

The second unintended consequence of that was that, uh, in fact the processors then became picky about what milk they were going to buy from the local farmers and so the first screening element went into place where they did have and have begun to use the somatic cell count, the SCC which is probably the most common measure of milk quality worldwide as a screening tool to determine which milk they would utilize in their – at their processing plants.

So this was – the first step was to make sure that there was enough milk supply and the second step was, okay, now that we have a supply, now we can utilize quality indicators to make sure that the quality of the milk is improving and then that feeds back to the farmers and they recognize that now there's a need for not only producing milk but also to track and measure the quality of the milk; otherwise, they may not be paid for their milk and as the model has developed in other parts of the world there's payments and bonus payments that are paid to farmers based on the level of quality of the milk.

It's common in most developed countries to have a bonus payment system that the lower they keep their somatic cell count the higher their payment is for milk. So we begin to see the very, very early stages of this system being implemented in countries like Rwanda. I think there's a number of natural stages that these countries need to go through before they reach that stage where they're gonna have a consistent level of quality and that quality is demanded by the processors and knowingly supplied by the farmers, the local farmers.

So I think we see the beginning of that but many of these countries have a long way to go.

Julie: Great, well thank you so much, Mike. I think we'll go ahead and move along to Sara now. Mike, if you wouldn't mind just taking a glance at some of the comments that came in to the chat box while you were speaking, um, maybe there's a chance to respond to some of the additional comments, ah, in the chat. But we'll go ahead and move –

Mike: Will do.

Julie: -- along to a – thank you, Mike – to Sara Bodinger from Sengenta Foundation from Sustainable Agriculture and to UC Berkeley. So Sara, please go ahead and take it away.

Sara: Thanks. Ah, so I'm gonna tell you a little bit about this project planning per scale that I've been leading Sangenta Foundation in U.S.A. It has funded a great team of consultants that have been working on scaling in cheap systems in sub-Saharan Africa but the project was really designed to look at the scaling issues across a number of different agricultural technologies.

So it should provide a broader interest to a lot of different sides and a lot of different people in this webinar and it's also designed to try to speak to the more practical side of scaling. Scale is such a buzz word in international development but when you come down to asking questions about how we get better at catalyzing scale, how we should be funding in this space, how we should be designing programs to scale.

Ah, it's pretty hard to find things on that sort of practical – practical level. So this is designed to at least try to hit some of the more practical sides. It's got a lot of moving parts to it, the project. We started by – start most of my products, projects by getting onto Skype and spending long hours talking to really smart people around the world.

We did a lot of interviews and came up with a document called, "Crowd Sourced Lessons" for scaling feed systems that should be downloadable from this site here and it's got some – some fantastic practical advice from around the world.

We also came up in those interviews with a lot of stories -- stories that have great lessons; some successes, a lot of failures unfortunately about where, ah, we – we should have scaled or we tried to and didn't. So we started writing those up.

There's seven vignettes currently on-line at the ag partner exchange website and there's more in the pipeline. We've got a great one coming up on fake seed, just sort of looking more broadly also at the issues of counterfeit products and brand equity in rural markets which are very – have a really big impact on scaling but the real meat of the project is in – outside of briefs, there are nine briefs. You can see some of the topics here on the slide.

Um, these are a deeper dive into some really key issues in how to scale. Now this convening is about public private partnership so I'm gonna drill down into that particular area, um, and leave you read the briefs as they came up.

They should be out, um, these ones should be out in early December and also posted on the Ag Partner Exchange website but before I get into some – some particular lessons in public private partnerships and scaling agricultural technologies I need to go to one sort of foundational piece of our work which was our definition of scale.

But it was a little different from – from some of the way that scale has been approached in the past. There's two fundamental components. Uh, the first is, uh, that our definition is that a successful scale has to be driven by really understanding the farmer's decision making.

So it has to start by understanding what is the farmer thinking about when they're deciding whether to use your technology; what are the risks that they're facing, what other technologies are available, what's that farmer's return on investment to adopting this technology, and all of those – those answers to those questions really drive the whole process, ah, way back up into even a research and development stage and in seed the plant breeding stage.

Um, it seems like a sensible, ah, sensible idea to have the market and the customer driving scale but we have not done this historically so much in international development. We often have sort of panels of experts making decisions and not enough feedback from the ground up.

A good example might be in seeds that, ah, we naturally and, ah, appropriately focus a lot on yield as a trait but if you focus on yield to the exclusion of other traits like taste, color even, and texture, cooking time, processing characteristics; you're gonna end up with a feed that really isn't gonna be adopted and isn't gonna go to scale.

So our approach is very much to focus from the farmer up and that that's the way that successful scaling is gonna happen. The second component of our definition is that we need to strive for sustainability over time in the scale.

We all know examples of technologies that have been successful in scaling but when that grant disappears or when that subsidy disappears the use of the technology drops precipitously so, again, a fairly sensible way to approach scale but also one that we really haven't paid enough attention to in terms of trying to catalyze impacts that will be long-lasting after our investment has finished.

So these two pieces make it a demand-driven scale – another buzzword. I seem to have spent the entire year defining buzzwords in international development.

Ah, this was another, ah, team – great team of consultants for the world bank. I see that, ah, catapult innovation is on-line here and they partnered with us to try to define what, 'demand driven' means in terms of commercializing technologies in international development and that work was on a website called, 'DemandDriven.org,' but you can see from this definition that – that the private sector is really critical in our – if you define scale the way we're defining it in this – in the work that we're doing you can't achieve scale without the private sector and you need the private sector all across the spectrum, um, in a lot of diverse parts.

Information and communication technologies are a key piece. These are some of the technologies that you can invest in that will have a sort of – a big catalytic change. We've been using mobile phones for a while in international development, mostly to push out information to farmers and the next generation of this, I think, is gonna be -- and has already started pulling back in information to understand market intelligence, to understand adoption decisions.

When you couple what's going on in mobile phones with some really interesting advances in remote sensing, in wireless sensors, we're really getting towards the point where these ideas of demand-driven scale can really be supported but we need the private sector in there.

Um, we also need the private sector for diagnostics. The, ah, presentation before is a great example. This is, a very low-tech moisture meter for maze. You, ah, put salt and the maze in a bottle, shake it up and – and the salt absorbs the moisture and sticks to the side of the glass but it turns out that the diagnostics tools in – in ah, livestock, in food, in, um, ah, in a lot of different areas and soil are really critical and we need the private sector there.

We also of course need the private sector for sustainable manufacturing, sustainable supply channels over time, we need great access to R&D capacity that comes from public private partnerships, intellectual property rights, know-how; all of these things are places where we can think of public private partnerships that exist and we need a lot more of them.

Connecting farmers to market, a very critical piece; this is a picture of Cassava flour. Many of you will know the SAB Miller public private partnership that's created a mobile processing unit for Cassava which has addressed one of the most frustrating pieces of the Cassava value chain that's been a constraint to really connecting farmers to markets.

Buhler, the global processing equipment manufacturer has just made a mobile maze mill and it's kind of one of the areas I have been watching is what happens if we were to decentralize some of the processing. Again, private sector is really important for connecting farmers to markets.

So given that you had a very fast tour and I think most of the people on-line here recognize the importance of the private sector in these different areas it remains true that we really don't do the best job in the public sector and I use 'we' coming from a university background and a foundation background, so very much from the public sector side we could be doing a lot better.

So I'm gonna close the presentation in this four area – there are many but I've kept it to four areas where I think we could really prioritize some work in getting us to understand how to partner better in public private partnerships.

The first is, ah, we really need to build some institutional capacity in brokering public private partnerships. These are not easy, ah, to broker. They're – it's hard to understand where the opportunities are. This – these kinds of, ah, capacity doesn't really exist in companies. It's being built some – in some public sector institutions; CJR centers for instance had – had started really building their capacity to do this.

[Coughing.]

Ah, but, ah, but that's not necessarily the most efficient way to do it. I think there's a real need to figure out what should be commonly shared in terms of these functions. Our work has identified five functions that need to be performed in order to really get better at brokering public private partnerships.

The second area, ah, that I'd like to talk about is metrics. In the public sector we really need to up our game, ah, on metrics in public private partnerships. This is always a contentious piece, always something that needs to be negotiated in a partnership.

Private sector manages and collects data very differently than the public sector and those pieces do get worked out in partnership deals but in the process we're actually have a lot to learn from the private sector.

The private sector, ah, uses metrics to manage operations and use them in a much more real-time way than we do. They don't wait several years afterwards and look back and decide whether or not, ah, we were successful.

So in addition to the – to the really important impact measurements that we do in the public sector we – we have a long way to go in starting to make use of more real-time metrics to improve how we do things.

The second way, ah, just to highlight some of the work that needs to be done on metrics is to look at this, the question of cost-effectiveness. In the private sector, ah, of course, ah, you're only gonna pay for information as long as it's of value to you but we don't tend to take that perspective in the public sector, so a much more careful look at how much it costs us to collect this information and, ah, and where the really valuable pieces are to get that onto the agenda.

The third of four areas that I think we need to work on is understanding the role of private capital. So in the public private partnerships that we usually think of the company that's involved is often giving in kind, ah, and a lot of the partnerships that we think of, there isn't necessarily a cash financing piece but there's a whole other sector of the private, ah, that, ah, of, ah, the private sector that's involved in financing partnerships, enterprises, um, programs that have a real impact in the markets that we are concerned with.

The flow of private capital is of course really important to stealing issues and I think we miss out on understanding what's going on in private equity. Private equity is sort of exploding in sub-Saharan Africa, in impact investing, in corporate social responsibility there's some really big changes happening and sort of integrating that kind of risks and returns framework from the private capital world and the decision-making that goes on there is really going to be important for creating scaling strategies.

And the last one I'll focus on, ah, before I end, is, ah, that we – we also need to recognize the limitations of the private sector. There's

– in some of the work that I do there's a sort of mythology that if you create a good technology in the public sector you'll somehow have a – be able to hand it off and the private sector will scale it.

The reality is that that's – that doesn't happen in quite as simple a way. Of course reality is a lot more complex than we'd like to think. Um, in feed if you think about it, the most advanced feed systems in the world, the role of the public sector has changed over time but it's still critical, it's still there, ah, and in feed there will always be props, variety, populations that are just not served by the private sector and this is true in most technologies.

If you look at, ah, the sort of holy grail of scale; the cell phone, the mobile phone, ah, which has scaled faster than anyone can imagine we're still at this point where the numbers just don't make sense for companies to put up cell phone towers in – in really rural places.

So, ah, the cost of building and running the towers means that there's a constraint to how far those networks go and that's what we're – as a public sector, you know, that's the role now is to try to get these networks further out to people that need coverage.

So the one piece in all this sort of moving target of how the public sector's role changes as things scale I think the one piece that doesn't change is our responsibility for stewardship. It's really – we're the ones that have to keep asking the questions. I have to keep driving for the social and environmental impact and really, um, keep trying to figure out whether small holder farmers are getting the technology that they need to feed their families and to bring themselves out of poverty.

So that's a very fast whirlwind tour through some of what's on my desk right now and, ah, happy to answer questions. Thank you.

Julie: Great, thank you so much, Sara. Ah, we had a couple of clarifying questions that came in. Ah, Florence Reed from Sustainable Harvest International asks how does Sengenta Foundation define sustainable agriculture and Sofia Vanderbilts from the USA Bureau for Food Security asked if you can provide examples of the real-time metrics that you mentioned?

Sara: *[Laughing.]* Um, so, uh, in terms of the real-time metrics question this is, you know, sort of understanding from a – from if you're a program director, um, are you – are you, um, implementing your program in the most effective way possible? So these are not, you

know, what the outcomes of your program are but they're really whether or not you could be reaching more people in a different way, whether you're doing things and putting the incentives in the right place for your staff, am, so they're sort of the basic metrics that businesses use to understand whether they could be, uh, doing better.

Am, in terms of, ah, sustainable agriculture in the Sengenta Foundation, and I think we all recognize that, ah, that the constraints globally knowing that we have to feed more people on less land, ah, and with a lower impact on the environment. So it's – it's that nexus that we're all coping with, trying to figure out how – how to do that.

I think Sengenta Foundation does believe, ah, that, ah, and certainly in my work that technology plays a big role in that in allowing us to be able to do that.

Julie: Thank you. We also had a question from Kittie Cardwell with the National Institute of Food and Agriculture at USDA in D.C. She asks how do we put commercial value on knowledge products.

A great deal of ag development research results in systems understanding. However, the public sector doesn't always have the ability to scale knowledge lacking a commercial or private sector interest. How does Sengenta deal with knowledge products?

Sara: *[Chuckling.]* That's a great question and I think it's actually a – um, a piece that I need to address in the next round of my work that – a lot of my work focuses on products and services but the reality is that the products and services.

Ah, and this was one of the comments from a reviewer for our work, you need the knowledge to go along with it that the value of those products really isn't there unless the knowledge is there and commercializing knowledge is a really difficult whole other, ah – it's a whole other activity and there is a much bigger role for the public sector.

It's someplace where we've tried and we've seen in some market information systems and trying to get – um, for instance, price data to farmers, ah, weather data to farmers. It's really hard to commercialize, ah, information and knowledge.

Ah, so I think that's a – that's a hard one, am, that there are a lot of models out there but personally I think there's a – it's a – it's one

of the areas where there's just a much bigger role for the public sector to remain involved.

Julie: Thank you, Sara, and Bob actually wanted to jump in and provide another answer to Kittie's question. So, Bob, please feel free to do so, and Bob, just make sure that you unmute your microphone before speaking.

Bob: Okay, is it working now?

Julie: Yeah.

Bob: Hello, okay. Uh, yeah it's knowledge --

Sara: Yeah.

Bob: -- knowledge dissemination is really a big issue, um, in the countries where we work in. I agree with Julie, you know, more public sector investment in that is critical. Also in the dissemination of knowledge such as market information or production information or, you know, any kind of ag-based information I think that those can be embedded services that are provided to enhance the, um, competitiveness of a private company.

For instance if you are a – you're a consolidator or a transporter, you know, the infamous coyotes, ah, middle men, if you're providing more market information or more product quality information back to the – to the farm level then you know you're – you're giving the farmers more value for – for the services you are providing, so that's another approach that we can look at certainly.

Julie: Great, thank you, Bob and, ah, at this point I think we can go ahead and take additional questions for all three of our speakers. Ah, if anyone has questions please feel free to enter them into the chat box. We've been tracking all the questions that have been coming in and, um, if we happen to have missed your question, um, and you really want it answered please feel free to enter it and again.

We'll also make sure to kind of comb through for all the resources that have been shared or for all the requests from resources from the presenters and make sure that we collect those resources and send them out along with the post-event e-mail that we'll send out.

So if there's something you, ah, you're looking for we'll do our best to comb through and address it. Um, one question that came

in from Eric Fernhaber from the USAID project a Fentrac that was entered during Sara's presentation but each presenter might have an answer, um, was, ah, in relation to the point that Sara made about ICT typically only being used for pushing info do you have any examples of projects or strategies that are effective at pulling info back from farmers in the private sector using ICT, thus creating feedback loops.

Julie: Um, Sara, I didn't know if you had an answer to that question or if anyone else did.

Sara: I'm happy to – and this is actually something that we've written about in the work that's coming out in mid-December. We are beginning to use inclusing surveys with small holder farmers, uh, to, uh, to uh, understand better what their adoption decisions are.

We're not there yet. Ah, Sangenta Foundation is working on a verification of adoption which is a – right now the model is very close to a Disbroxo model – I don't know if you're familiar with that but it's where you – there's a – in the packaging there's a scratch card and as a – as a farmer might be on a bag of seed you type in the code, ah, and SMS it to a free number and it's a – it's a verification that you adopted this particular technology.

We don't have that right now. Ah, you know, when we put technology that, ah, we have very little idea where they end up. Ah, so that's another example of how we could begin to get that market information back up.

There's also some interesting advances in geolocation, sort of understanding as feature phones in rural parts of the world start to get cheap enough to have and applications that have GPS connected to them, I think there's a lot of possibility for really beginning to understand and interface back with the market and the customers.

Julie: Thank you, Sara. Uh, Bob or Mike, do you have like can you collaborate?

Bob: Um, hi, this is Bob. Yeah, um, that's a great question and actually we've been talking to Sara about efficient ways to do this because obviously tracking – tracking technology adoption and seeing how these things are scaling up, especially after our grant is over is something that's, ah, we're very interested in trying to do.

Um, the – the second case I provided on World Cocoa Foundation actually that's a wonderful platform where these community knowledge workers who are out in the – out in the villages, out in their communities can actually provide information responses to survey questions fairly inexpensively.

You can shoot them out a couple of questions about, okay, how many of the farmers that you've trained have – have begun to weed – let's say weed their – their cocoa patch or something along those lines and they can go out and check and feed that information back so you can track – track technology adaption and I was very interested in reading about over the weekend, um, the – the USAID mission in Afghanistan and they're struggling with tracking the impact of their programs as the U.S. Military pulls out and, ah, just as Sara was mentioning a lot of the crowd sourcing ideas are being explored there so that may be a place we want to keep our eye on for – for low cost whole ICT information.

Julie: Excellent, thank you. Um, Sara, Laura Cisnero from the Bureau for Food Security asked can you elaborate on your previous comment on the evolving role of the public sector in technology scaling and how the private sector can best engage in scaling technologies in relation to public sector efforts?

Sara: Sure, um, so I think there's a – the first part in that interface is that we identify the area where the private sector may have – may have opportunities and there are the need for accessing markets, there's reputational issues. There's a whole bunch of incentives as to why private sector gets involved.

Um, a huge one actually right now in the larger companies that I work with is because it – it improves their ability to retain staff when they are engaged, ah, in these kinds of programs, ah, but there's a lot more in terms of accessing markets, in terms of building their brand equity of their – so that when the populations that we work with do end up coming up and the companies look at their new levels of income and they recognize the brand that's there.

So there's a lot of reason which is just sort of understanding why the private sector might engage, then the public sector can really tailor some of those pieces to encourage that. There's also now a bridge that needs building there. It might be just in the information. It's not common in a lot of companies to really think about outside this box to understand these issues, so it may be just presenting it in a particular way to a company, it may be in

reducing some of the risks around it which are too high for a company, ah, but there's a – there's a catalyst there. Am, some of the partnerships that I work on, the public private partnerships, there's a revenue pique that the company, you know, wants to invest, can see that the sort of longer term is a good investment but they need, um, they need that initial piece to – that's maybe provided by a foundation to get over that hurdle.

So I think there's – that's one role for the public sector. Ah, there's also the knowledge role we talked about. There's also, am, in the particular markets that we know really won't be served by the private sector. So there are – there are, ah, the reason it's a moving target is because that you just don't know how the markets are gonna unfold.

Um, we could have said five years ago that Cassava wouldn't be a commercial crop in Sub-Saharan Africa and that it would remain a food security crop for small holder farmers but that's potentially changing now.

Ah, so I think it's the job of the public sector to keep an eye on that moving target and to keep figuring out where they can draw in more private sector activity and where that private sector activity probably isn't gonna go, um, and so therefore where they're using sort of longer-term investments.

Julie: Great, thank you, and Bob, you have a comment.

Bob: Um, yes, thank you. Ah, that's a great question, Laura. Um, I think, ah, one thing we've been learning is that the public sector really has to make the IP, the ownership of the technology available to the private sector in order for the private sector to commit to the investment to scale it up and, ah, we're seeing this in several examples, ah, through these – through these, um, ah, these centers, um, that we've been supporting and that the USDA is supporting. So that's one key issue there.

Julie: Thank you, Bob. We'll continue to take a few more questions but I also wanted to let you know for anyone who is looking to jump off the webinar that we do have a survey that we'd love for you to complete to help us improve future ag sector councils and, right now, I'll go ahead and put the short link to the survey in the chat box, um, so if you need to take off we'd appreciate if, ah – if you would take that survey.

All right, and so looking at a few of the other questions that have come in, ah, we had a question from Ron Corsack from Water Stewardship who would like to know, ah, if you know of any projects that are simultaneously looking at the scalability of water quality protection practices, ah, while impacting yield and food security, just if anyone knew of those, and perhaps you don't, and if anyone – anyone participating in the webinar has answers for that question please feel free to enter them in.

Bob: Yeah, nothing comes to mind here. I'll allow water quality is critical for sure.

Mike: Yeah, I second that there's *[clears throat]* it's critical for – in the dairy industry for sanitation purposes and it's one of the large problems to overcome in trying to keep cows clean, ah, with – with water, with good, clean water sources not being available everywhere.

Julie: Right. We also had a – a question that I'm not surprised was asked earlier in, ah, in the presentation about the definition of scale and scaling and I wasn't sure if – if any one of you wanted to provide a general answer to the definition or what resources you would suggest as, ah, the best resources for getting a handle on the issue of scale.

Mike: That's a very difficult question. I think it differs –

Bob: Ah –

Julie: Let's see, Bob, why don't you –

Mike: Go ahead.

Julie: -- go ahead first or – yeah, or Mike.

Bob: Oh, okay, you pick.

Julie: Go on, Mike *[chuckling.]*

Mike: Okay, ah, it's a very difficult question because I think it, um, varies based on technology to a large extent or the product type in particular what the – the scale is in absolute number. So I think it's a very difficult question to ask. I think, ah, in terms of some of our areas of expertise we're always talking about the word 'scale' and 'scaling' and, um, in some products, uh, scaling means you need to get over 10, 15, 20 million units per year. In other

products it may mean a thousand units per year to hit scale. Um, and then scale on a public-private partnership basis could mean totally different things, so I'm not – I'm not sure how to even answer that question. Bob may have a better suggestion.

Bob: No, I mean I – that's a great answer and a commercial answer which, ah, you know, is I think something that we need to keep in mind. You know we have to – we have to do our work under the assumption that we eventually will not be needed any longer and that, ah, you know, either the established, ah, private sector in a country or the private and the public sector in a country can – can take and run with these – these technologies.

And so, um, yeah, the scaling question I think is can we hand off and can it successfully continue itself, ah, without – without our assistance.

Julie: Ah, thank you both for your answers and we had a question come in from Jeanie Harvey from BFS who has a question about Sara's suggestion to Focus From the Farmer Up. It seems that often due to funding, timing and other factors this necessary step gets skipped. Can folks talk a little bit about how you are ensuring that the step does not get missed and, in fact, farmer's voices are involved in design and suggestions are passed for scaling? Sara, I don't know if you had –

Mike: I'm there.

Julie: Oh, all three.

Sara: *[Laughing.]* This is um –

Julie: We'll let Sara take it away first.

Sara: *[Laughing.]* This is where I stand up on my soap box and say, absolutely Jeannie, we need to – we need to do this and – and it doesn't happen enough. Um, part of it is a cost issue for sure, ah, but – but that needs that we need to invest in cheaper ways to do it.

We can get information back up the chain from farmers in not as expensive ways but we need to figure out how to do that and we need to make those – those methods available but the other piece is really in the incentive structure of the organizations that are further up the chain.

And those – ah, those don't respond to, ah, to the market. They're not built that way in the public sector. They're built, ah, to have different incentive structures, so I think there's a lot of work to be done and ultimately to me that's the critical piece in whether you're gonna be successful in scaling and whether you – you really can turn your – your – and turn the innovation process and the scaling process to – to look towards the market and have it inform what you're doing.

Mike: I have a comment. I think in this – in our particular grant it was important to get the voice of the farmer into how we were going to, uh, not only provide educational services but where they're gonna be provided *[clears throat]* and then for the product how we would package the product that would make sense in the local economy, in the local use.

So we – we asked our partner, ABS in this case, to do a preliminary survey and a little further along in this particular process they're gonna do a more formal survey to try to get that information from the farmers to make sure that we are providing the services that they need, um, and understand, ah, in formats and in locations, um, that are applicable to their needs.

So I think it's a very – it's a very good question. It's a very, ah, important process I think for, ah, all commercial companies to – to get the voice of the customer into the process and I think this is just another mechanism to do just that. So we've, ah, allowed some funds to be used, ah, for surveys to try to get to that.

Julie: Thank you, Mike. Bob, did you have a comment too?

Bob: Hi this – yeah, absolutely. I mean this is – this is – this is a great question and obviously the most important question in scaling any type of technology. It is, as Sara said, you know, expensive and difficult but I think it's doable and – and with the use of newer technologies I mean and this marketplace is more accessible but it's really something that, um, that technology developers or commercial companies, um, the reason they're not in these markets is they don't understand them and they don't see them as profitable and so getting information back to them that – that informs them on that is important.

Um, and for us we're looking for projects that really have a good on the ground connection. Um, we understand that the – maybe the commercial company with the technology won't have that but they need to be partnered up with someone who does and who can

provide farmers with, uh, with good training, uh, with demonstrations – I mean basically blatant marketing but demonstrations are marketing and – and support, um, and something that I think we all need to look at is, um, what's the repurchase rate for – for technology or an idea?

You know, if you go through and you promote it and they purchase it once that's fine but are they coming back and buying it and wanting more of it because it works so well? That's – that's a key thing to look at.

Julie: Great, thank you all for providing such helpful answers to these questions and for also, um, so definitely working from three different locations to jump in, ah, for the answers to these questions.

Sara: Can I pick – pick up Bob's off comment?

Julie: Go ahead, Sara.

Sara: Um, so I think this – this idea of, um, repeat custom is a super-important metric. Uh, you know if – if a – uh, ah, farmer comes back to buy an input for instance the next season it's – you know – it's an implicit demonstration that that input was worth it to them and it is a really sound endorsement of the value that we don't usually have.

But that repeat custom metric which is, you know, ideally, and particular technology is what you base sort of scaling success on. Unfortunately it just doesn't exist for a lot of technologies if you're, ah, trying to, um, scale up drip irrigation for instance.

Ah, there – the repeat custom isn't there in the same way, ah, so you need to – you need to try to figure out how to approximate that. Um, it might be in, ah, in continued maintenance to understand, well, you know, a lot of drip systems fail to be – continue to be used because of the maintenance issue.

So if people are still engaged in maintenance it means that the drip system has had value and they want to keep using it but, ah, for technologies like open-pollenated, ah, varieties of crops, we can't use that repeat custom, ah, metric, ah, to look at scale but I do think it's an important one, ah, to think about.

Julie: Fantastic, thank you. Well we only have about, ah, three or four minutes left and so I wasn't sure if any of the speakers had, ah, a

final comment that they wanted to make or a final question they wanted to ask of either all of the participants or of the other speakers and so, ah, Bob, I don't know if you'd like to start off with any closing comments?

Bob: Um, ah, well thank you again for giving us the opportunity. As I said, ah, you know, we're learning, um, and we're – we want to take a look at, ah, the different commercialization models that we – we see out there, um, and that people are using and see where they're – where they're applicable and practical.

And also I mean we – we are able to kind of design in places where projects like this one and other donor-supported projects can intervene to – to kind of – ah, to, um, boost those, uh, models and support them so that they can, um, in the end get sustained and established in a country. So – so that's certainly something we're looking at.

Julie: Thank you, Mike, do you have any closing comments?

Mike: Well I just wanted to thank everybody for giving us the opportunity to – to speak to everyone today and, uh, Fintrac and USAID in particular for sponsoring this particular grant, uh, we look forward to, um, uh, being able to provide some feedback as we move through the process and I think Fintrac has done a great job in helping us identify some of the metrics that were talked about here today in providing, ah, trying to get the – the attention to the farmer and get their voice into this process, um, getting, uh, women into this process and providing metrics also for success in which we're looking for repeat business.

We're looking for those farmers to come back and utilize the products in – through several cycles and to measure that as part of our – the overall performance. So we thank them for their insight and their help in trying to put this – ah, this grant together. So thanks.

Julie: Thank you, Mike. Lastly, Sara, is there anything, uh, you'd like to say to wrap up?

Sara: Sure, uh, just as the – the questions have been great and the sort of theme that, um, the person who says, you know, "What is scale?" *[Laughing]* and if you look at 'scale' as a buzz word and you look at 'demand driven' as a buzz word this is a larger conversation that we need all the input we can get on.

Uh, to really start translating these concepts that we've been talking about for a long time that are so important in benefitting small holder farmers to translate them into some practical pieces. So – so I look forward to a lot of feedback from everybody that's out there on this webinar and really hearing more insight on both of those topics.

Julie: Thank you, Sara. We completely agree that this is part of a – a much larger conversation and that the – the definitions of these key terms are evolving and um an important piece of our work going forward and, uh, on that note we are actually going to continue with the scaling topic for the November 20th Ag Sector Council Seminar, uh, and our presenters will be from the modernizing extension and advisory services project funded by USAID, so we'll be looking at scaling and extension and we hope that you will come and continue the conversation for that event.

Uh, well thank you all so much. We're right about at wrap-up time. I truly, truly appreciate the dedication of our speakers; Bob, Mike and Sara, and also Margaret Spheris for giving a wonderful introduction, and mostly to our participants.

Um, we wouldn't be putting together Ag Sector Council if it wasn't for you and we were very excited to have such a large participation today and some really great comments and resources shared in the chat box.

As a reminder we recorded the presentation today, we'll get it up on AgroLinks, uh, as soon as we can, hopefully by the end of the week and we'll send an e-mail to everyone who participated in this webinar, ah, with all of the resources that we're able to pull out of this event.

So thank you all so very much for attending today and, ah, we will be in touch soon. So thank you very much and that concludes today's webinar.

[End of Audio]