



AG SECTOR COUNCIL | DISCUSSION SERIES

THE INFORMAL SEED SECTOR: A BEHIND THE SEEDS LOOK

AUDIO TRANSCRIPT

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Presenters

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Mark Huisenga, USAID Bureau for Food Security (Introductions)

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Presentation

Julie MacCartee:

All right. We're going to go ahead and get started. Thank you very much for joining us today. Good morning, everyone, and welcome to the November edition of the Ag Center Council's seminar series entitled "The Informal Seed Sector: A Behind the Seeds Look."

So I'm going to introduce our introducer, Mark Huisenga, who'll give a very brief preview and introduce our speakers. He is senior program manager with the USAID Bureau for Food Security's Markets, Partnerships, and Innovation Office, and is the AOR for the Scaling Seeds and Technology Partnership that we have with AGRA. So Mark, I'll pass the mic to you.

Mark Huisenga:

Thank you, Julie. Well, this is I hope going to be an educational event today. We don't really know a lot about the informal seed sector. We at USAID a couple of years ago – actually just a year ago, did a study looking at the – developing a maize seed systems map. And one of the big gaps in that map was what's happening with the informal seed systems? It's not something that we have a lot of information on. I think the number of people looking at this issue is a small number. We are interested in trying to leverage the informal seed system to the extent that we're able to. What that would look like we're hoping to hear something about today.

So without further ado, I'd like to introduce Karl Zimmerer, who's the key speaker here today. He's a geographer and environmental scientist from Pennsylvania State University, currently a visiting scholar with the David Rockefeller Center in Latin America Studies at Harvard University. He has his PhD from Berkeley, California.

Also, as you heard their disembodied voices, we have speakers one of them is with AVRDC, based in Tanzania, working on vegetable seed issues and informal sector approaches there, as well as the Katalyst Project through the Swisscontact, Swiss Foundation for Technical Cooperation in Bangladesh. I'm very excited to hear what the Swisscontact, Swiss Foundation has to say, because we're starting to work with them more closely now in Mozambique. So it'll be exciting to hear what else they're doing in the world. So without further ado, Karl?

Karl Zimmerer:

Thanks for this opportunity. Here's my talk. Here's me. This is what I would like to talk about. I'll describe a few points associated with what I'm referring to as SIBER science, not the C-Y, but rather a different SIBER science applied to informal seed systems and the informal seed sector is where I'll concentrate my attention, with a few

takeaways.

So what am I referring to by SIBER science? And this is really in a way the kind of gist of the talk. These are perspectives that I myself, my research group, and also a significant number of other groups and institutions are really building into sciences of human-environment interactions, and applying those to the informal seed sector and informal seed systems.

So a focus on smallholders, small scale farmers. I'll refer to this point at least a couple of times, 2 to 2.5 billion small scale farmers, demographically still a really big part of the global landscape. How can we think about informal seed systems in the context of intensification and sustainable intensification? Obviously, a major global challenge and issue. AID has I think some really interesting and important initiatives in this direction.

I will definitely give my talk as promised, but I really look forward to interacting and talking with you all about any and all of these points. Biodiversity perspective is pretty central here. Informal seed sectors are associated with the significant use of biodiversity, especially what people refer to as agro-biodiversity, so the biodiversity of cultivated biota, crops and livestock and associated wild relatives.

And the idea of enhancing resilience is really central here, too. So how to build the capacity to respond to shocks in these systems. So these shocks could be environmental shocks associated with drought or other sorts of stressors, as well as socioeconomic ones, market failure, etcetera. So how can we think about the above points in the context of strengthening resilience in these kinds of systems?

And I'll talk about science. I am a scientist. But I have a really broad definition of what that means. It's just evidence-based knowledge system, so – for me in this context. So I'm really interested actually in kind of the knowledge management challenges and issues and opportunities that I see as really important to the informal seed sector.

So smallholders in the informal seed sector. We're basically looking at kind of the multiple nodes or uses of local seed or the informal seed sector, not necessarily local. Some of these informal seed sectors are scaled at national and even international levels.

We're looking at interactions, too, between informal and formal seed sectors. There's not like – there's not a firewall between these kinds of systems. So it's actually really interesting to think about varieties that do move between these, and I could go into that. But just to put it out there as an idea, the – in the upper right, what we're looking at

is a study of 11 countries where we are actually – Mark's point was really well-taken. There's not much information out there. We are starting to come up with some really interesting country level studies. This is a massive data, 11 countries, looking at an index of informal seed systems as a function of seed size.

And the takeaway on this is just the concentration of higher level, higher reliance on informal seed in the smaller scale farms. So this really is a smallholder issue, and we can draw different regression lines for different world regions and different crops, and minor crops, major crops, etcetera.

But all of those lines show a lot of concentration of informal seed sector reliance among smallholder populations, so that's just a really strong link or linkage in these systems that's a big part of what we're doing and what we're working on.

The intensification piece, the 'I' in the SIBER that I'm referring to, is really important. Conventional wisdom is that as agriculture intensifies, you have a drop-off of biodiversity. We're actually – that certainly is the general rule of thumb, and yet there really are different pathways. I think that's the bottom line. And we're – you know, in a sense, the goal is to stay on one of these upper curves, where you can incorporate more biodiversity into intensification.

And on the right side of this slide is just an example of where in an extended case study – the axes are different. Don't try to wrap your mind around that graph in the upper right. But the bottom line is that there's a lot of biodiversity incorporated into an intensification trajectory. In a Bolivian case study that we did between 2000 and 2010, high levels of biodiversity, and it totally depended on the informal seed sector supplying seed that farmers were able to put into kind of new fields, smaller fields, differently sequenced fields, fields with different growing seasons. All those kind of new opportunities, innovations, that were going on, in order to kind of change things as part of intensification depended on seed inputs from the informal seed sector.

So for me, I'm not saying that this is like an ironclad rule, but there are opportunities here to connect the informal seed sector to kind of type two trajectories to try to stay on the upper part of that curve, keep agro-biodiversity in these systems, while intensification occurs. That depends on informal seed. So when my – in my research, in my group, we're really trying to connect the intensification issue and the informal seed issue.

Biodiversity in these systems can be very high. Often, it's more on the moderate level. But basically, the way I like to think of it, if you

go back to the diagram of the informal seed sector, there are a lot of nodes. There are a lot of different places where farmers are using or obtaining seed. Each of those nodes represents an opportunity for a different variation to kind of pop up in this system. So these do tend to be higher diversity seed systems. There's nothing kind of inherent about that. There's no intrinsic property. But if you think about – it's all about networks, in a way. If you think about an informal seed system as having many nodes in the network, each of those nodes represents an opportunity for variation to kind of buildup in the system. So these do tend to be higher agro-biodiversity systems. And again, tons of details there.

But here, we're back up to the ER, the enhancing resilience piece of these systems. And really, I think the importance of informal seed here is that it provides farmers the capacity to respond in low, medium, high intensity systems. This is way kind of resilience thinking works. We're aiming to have either resilient or even like hyper-resilient so-called opportunistic responses, avoid collapses.

But seeds provide – the informal seed sector really does provide a capacity to respond to shocks. Where that's happening globally right now is often in terms of diversity of seeds providing different maturation periods or growing seasons. So if there are droughts, if, as in Mexico, Central and South America, East Africa, where I'm working, crops are moving typically up slope in response to climate changes, that depends on informal seed systems providing different maturation periods in the seed lots that farmers can access. For me, that's a good example of resilience, right, in these systems. They're responding to shocks that are occurring, and they're accessing seeds that are short maturation, short cycle kinds of seeds. So there are lots of different examples of that, but that's just one that I can toss out there.

So we went through the SIBER piece, smallholders, intensification, biodiversity, enhancing resilience. I probably have a few minutes left, and so I will go to some applications, talk about seed system structure and function, social participation and crowd sourcing approach that we're developing, and what I call markets and mixed approaches. I have no idea if I'll get to all of these, but however far I get, you know that this is kind of looming in the background, so feel free to – I welcome the chance to talk about this.

In terms of seed system structure and function in informal seeds, like I was saying, it is about the networks. And these are networks that exist that – these are individual communities, and what this map shows is a lot of seed that's being exchanged within communities, but also between communities.

So when we think about the structure, one of the things we think about is the spatial structure, and this is really important, because it's often the flow of seeds from outside of communities that replenishes in the case of drought or some other kind of shock. So resilience requires these multiple levels.

And the way seeds move in these systems, it's important for resilience, but it's very basic to like the environmental properties of the systems. So if we think about adaptive capacity environmentally, I don't want to go into a big ecology tangent, but basically, adaptive capacity in seeds depends on where they're grown. They kind of co-evolve with those environments. And where they're grown depends on these – where they move through the networks.

So in a sense, those networks are driving the type of adaptive capacity in these seeds. So we need to see the seed networks as very related to the adaptive capacity of different varieties and different species, and this is just the ecological test of that, that's part of what I work on and several other groups and institutions.

So what's the strategy? What's a take home that we can get out of this? I think the take home here is the importance of identifying and connecting the networks across scale. So it's not just about networks. It's about networks of networks. So it's about how the networks connect. And informal seed sector knowledge right now has a huge opportunity, because most of what we've worked on is community and village level systems, and that's extremely important. There's lots of sort of nice low-hanging fruit kinds of opportunities.

But what we really need to do in terms of knowledge systems and on the ground programs and projects is connect those village and community systems to the landscape and region scale seed systems, which is – it's at those higher levels where the seed's kind of coming from. It moves – in a sense, it moves both up and down the ladder. So when this village has a drought event, for example, they replenish as a result of informal networks from the landscape. If there's a landscape scale event, a market failure or drought or whatever, it could replenish through the region level.

So we really need to think about how can we connect the networks, and we have an idea really for a project that we call the Bridging the Gaps Project. This would be to work with community groups, to work with NGOs and government agencies. A lot of this is work that I do with CG centers. In this case, it's with SIP and with SIOT, SIOT in Colombia, but also in Vietnam. And we really want to see that we can kind of build capacity in connecting across these gaps, which I think is a – is a really nice opportunity right now.

In my lab, we do a lot of geographic information systems, remote sensing. Some of that technological capacity turns out to be really well suited. But also just a lot of on the ground partnerships with all kinds of groups and institutions are really integral to these projects, too.

Okay, second application is to this idea of social participation and crowd sourcing. This is another CG collaboration that I have with Bioversity International. And the idea is to share information, build social inclusivity through social participation and crowd sourcing approaches. I'll give the example of the India part of this project. We also have plans for Ethiopia and for Central America.

In the India part of this project, it's work on wheat and rice. In the case of the crowd sourcing, it's really information sharing at this point. There are 15,000 farmers who are sharing information about wheat varieties. And I could go into like vast details about this, but I think what I want to emphasize is that we're – that it's an amazingly effective way of kind of upscaling information. In a way, it goes right back to Mark's point, too, about kind of an information poor setting. How do we generate information in these contexts? And crowd sourcing is really interesting in this regard. Technologically, it's really interesting. We certainly have kind of an interest in online and cell phone accessible kinds of technologies for this information.

And for me, the strategy point, the takeaway that I'd like to emphasize as part of this that my group's working on a lot, which is one of the really interesting parts about crowd sourcing, which is very much kind of like a bottom – ground up process, very local, but it generates masses and masses and masses of information that are no longer local.

So this is a really interesting like information management issue. So lots of different parts of that information management, but the strategy that we're working on is visualization tools. So this is a lot of work that we do in my GeosyntheSES Lab, and other groups, is how can we – how can we share this information in visual forms?

So these are actually variety-specific maps. So we're looking at 20 different varieties and their performance spatially and geographically across these areas in India, either in – at higher level of ranking or lower level. Basically, farmers rank varieties relatively as top, middle, bottom. Each farmer works with three varieties. And then we amass and process that information.

This is just really simple kind of visualization and statistics. There are actually some really interesting statistical approaches that can drive the mapping. So that's actually another thing we're working on, is

how do you visualize kind of the statistically generated information, but then put that back in the hands of farmers?

So citizen scientists, so, I mean, this citizen science and crowd sourcing, so interesting that it starts with simple information. It becomes complex information. And then you want to sort of be able to make it accessible again. So I think it's really interesting opportunities.

Markets and mixed approaches. These informal seed systems have a huge market component. It's often mixed with non-market sort of uses. So the familiar dividing a harvest between sale and marketing and seed and consumption. And here's some statistics based on extensive surveys and what it means in terms of varieties on the land.

But the bottom line for me on something like this is that these informal seed systems are extremely mixed. We tend to dichotomize, oh, is it for the market or not for the market? There is so much fluidity, and I think that there are interesting opportunities there, too. So strategy-wise, for – the example I'll give is just this is an example of maize. I tend to work with staple crops. You've seen the potatoes. I work with maize. I work with wheat. I worked with rice.

This is just looking at market sales, but also local seed exchange, and using remote sensing and geographic information systems. We're looking at a smallholder landscape, where the fields cluster, so farmers, to coordinate water use and other reasons, they will grow – tend to grow maize fields next to each other, and then they share seed.

And so that's a kind of – what we call a spatial externality, but a positive spatial externality, and how can we kind of use that to potentially generate a ripple or a cascading effect where maybe a small investment could produce a large, positive change across a landscape? So that's the idea of that.

Perfect timing. I think I am on takeaways. Oops. Just go to takeaways. I think these are a few of the main takeaways that I want to end with, is that idea of identifying and connecting networks across scales. I really feel like the knowledge in informal seed sectors projects and activities have evolved to where we really need to move up from community and village-based systems, and think about landscape and regional levels and seed moving up and down those ladders. How can we get that knowledge? How do we manage that knowledge? It won't be the same as the village and community-based kinds of partnerships that are extremely local, etcetera. There's a role for expert knowledge kind of combined with that extremely sort of locally based knowledge.

I emphasized the crowd sourcing and participatory approaches, in that opportunities there, which I think are really interesting for generating knowledge, and the importance of visualizing it. And just in general, I don't know the extent to which we have a familiar idea, thinking about seeds and breeding as the G cross E model of genotype and environment. Well, when I think of seeds, I think of seeds interacting with the environment, and then with the social and economic context of farmers and farming communities.

So I think kind of having that three piece framework underlies everything I said. All those elements of seed system, environment, and farmer, socioeconomic, and cultural, those are all kind of behind the scenes. I think that was in the title here. Those were all like behind the scenes here.

I really need to be sure to acknowledge a lot of collaborators in these projects. All my work is collaborative. I have and I do appreciate opportunities of collaborating with USAID. I also have worked with the National Science Foundation. I have a lab called the GeosyntheSES Lab, and lots of peasant, indigenous smallholder communities and collaborators, several of the CG systems, international, national, universities, and these citizen science and crowd sourcing groups have become an important part of this collaboration mix for me as well.

So thank you for this opportunity.

[Applause]

Julie MacCartee: I'm sure there will be some questions for you during our Q&A period at the end. But for now, we are going to shift over to Victor from AVRDC, the World Vegetable Center. So let's make sure that we can hear you, Victor.

Victor Afari-Sefa: Yeah. I'm online.

Julie MacCartee: Yes. All right. So we'll bring up your volume in here a little bit, but you sound good to me. So please go ahead.

Victor Afari-Sefa: Okay. So I will maybe focus more on the vegetables seed systems. And I will be focusing more on what has been done in Tanzania and in other parts of Eastern Africa. So as you can see, my name is Victor Afari-Sefa, and I work at with AVRDC in Tanzania. I'll give you a brief overview of what informal seed systems are. I think as Karl already gave a comprehensive overview of that, but I give it from an individual or kind of group system.

So for individuals, smallholder farmers, exchanging seeds, or through barter, or it can be through a gift, or sometimes even through labor exchange or even for certain social obligations, where seed becomes a form of exchange.

It could also be through a means by which a group of farmers, and this can either be a formal group or informal group, coming together to produce seeds that are specifically adapted to the agro-ecological systems, and with preferences for consumption.

Now this is by far the most important source of seeds for most farmers within sub-Saharan Africa in general. Now we also have recognized community seed production systems, and these normally could be either project based, where funding is coming from different donors, and also through internal relations between traders and farmers, or sometimes traders.

Now in most parts of sub-Saharan Africa, this type of informal seed system, which we normally call farmer-led seed enterprises, account for between 75 to 80 percent of the total seeds that are used for production. So you see that it is quite, very, very significant. The formal sector accounts for quite a very small proportion of these, and I think this is well-documented already.

Now the question is why farmer-based seed enterprises, and particularly in most parts of sub-Saharan Africa, in the seventies and eighties, there was a lot of state-owned enterprises, and most of the seed production and supply systems were managed by the public sector through lots of structural adjustment programs. There was – that led to the privatization of most of these.

Of course, around that same time, too, the level of emergency seed, but once you realize that the fact that the privatization was to make the process much more efficient. Now unlike the public sector, most of the private sector tried to emphasize more profit maximization, which is really quite different, and they focused on high value cash crops, and of course, tried to concentrate on lower volume, and linkages to market to ensure that they get the right demand.

Due to the exclusivity or the need to have formalized property rights and make sure that the business is not all that competitors, they tried to focus more on hybrid seed, but of course, this varies from one region to the other.

And the main challenge now is that there's a lot of seed adulteration now, even for the private seed companies who are producing seeds that are not certified and that they're trying to sell.

Now what are the requirements of small farmers or smallholders? They normally want flexibility and of course diversity in terms of the variety, and then the requirements of various expectations to get from such seed.

So the diverse agro-ecology, and the need for more specific seed preference, there's a need for them to look beyond both the private sector and some of the public sector.

Now the typical characteristics of these farmer led seed enterprises are that of course you want to encourage farmers try to do that, and there is a lot of discussion on the farmer rights. In this particular case, farmers get involved in participatory crop improvement, and we realize that they get involved and try to contribute, rather than having it more at a kind of top down approach.

And then, of course, the seeds that are produced are the local supply tailored to the specific demand of the agro-climate, and also the taste and preferences of the farmers.

So the key characteristics, of course, we realize that these operate at the local level, and most of them are a wide range of exchange. I think that Karl also mentioned about that, people try to exchange seed for various things. And then, of course, these varieties address the immediate needs of the farmer in terms of the timing of planting for the season, and then the private sector is able to reach certain communities from their main operating cities, where they produce the seeds.

And then, of course, things like information gaps, and then the value of the seed are best interpreted by the farmer.

Now certification is a key issue, because of the fact that most of these seeds are not actually certified, and certification is just based on mutual trust or what we call social certification.

So now critically we realize that most of these are technically well equipped. We have the market-driven, because in most cases, it's demand-driven. And then, of course, the seed business is quite autonomous, where the farmers may have their own rights to know about their issues, and this is much more decentralized.

So now I want to focus on one particular type of seed system here in Tanzania called the quality declared seed, and I think that most of you are aware of this. It was introduced by the FAO in 2004, and typical examples were in Tanzania and Madagascar. And this is the kind of seeds that are produced within a specific agro-ecological zone, maybe a semi-arid region, and then seeds that are produced are

supposed to be certified done by the certification body, but it just happens that also that in the restriction you are supposed to sell the seed within that agro-ecological zone. So that's kind of a limitation.

And the other thing is that things that are farmer led, in most cases, they have to use manual seed extraction procedures, and this can be quite laborious.

Now the challenge here is that we realize that as we try to compare the quality declared seed with the seed contract system that was funded by Irish Aid and ASARECA in Tanzania, and this is the collaboration, again, with extension and private sector, where we try to compare a private seed or contract model with the quality declared seed.

Now we realize that we made selection for purpose of sampling. We did the baseline study. We build the capacity of the farmers to be able to produce the seeds. And then, of course, we organize training of trainer workshops. We took monitoring visits, and then we tried to compare the two farmer led seed enterprises based on representative farm and also the detailed household surveys.

Now the interesting thing is that we found that farmers made more – get more money from producing seed than producing vegetables themselves. Now actually, the benefit-cost ratio was about 2.27 for the contract seed model, but interestingly, very high for the quality declared seeds, simply because they need much local systems compared to the private seed company label. Now the revenues from the sale of seeds was about 2.3 times if farmers are able to access certified seeds.

Now difficulties encountered by some farmers in accessing viable markets, as I said, trying to access markets beyond that local sector can sometimes be difficult, and the fact that the seed is not much differentiated than other seed sold in the market. So branding was critical to ensure success.

Now the last thing is that we also require farmer partnerships to be able to ensure the success of these, particularly if you want to get into the private seed sector model.

Then, of course, because of the regulatory requirements, an enabling environment is required for that, particularly if they are to be sustainable. And then, of course, the issue of capacity building and also collaborative network between the extension systems.

Now I'll just highlight a little bit on another seed model, which is integrated seed sector development, funded by the Dutch

government and the Bill and Melinda Gates Foundation. We realize that in this particular instance, we try to link formal and informal systems quite more accurately, and this is quite interesting to bridge that gap between the formal and the informal seed sectors.

Now there is also the village voice seed enterprise, but basically, a kind of facilitation by ICARDA, where people come together in a village and try to produce seeds. And then, based on that, they come together and then ICARDA tries to do a kind of facilitation for to ensure that the seeds are produced, and farmers can make significant profits.

Now already there are a lot of voices trying to bridge this system between the formal and informal sectors. We have Africa Seed Program. AGRA is doing quite a lot. We have the West Africa Seed Alliance, and several others.

And by way of conclusion, I will just highlight a few things. I realize that most of these informal seed sectors, particularly the community sector, we need to try to institutionalize this by encouraging private sector investment, where possible. And then, of course, we need to consider all the technical issues related to most of these seed systems to make it also quite sustainable. And then, of course, there is the need to link these informal seed systems to the formal seed sector to get seed - the capacity building component is quite critical.

Now there's also no one size fits all for farmer led seed enterprises or the informal seed sector. And of course, critical is that they're demand-driven.

So that is where I want to end my talk, and thanks very much for your attention, and now I look forward to answering questions later in the seminar. Thank you.

[Applause]

Julie MacCartee:

Wonderful. Thank you, Victor, and thank you for staying within time, as requested. And I'd just like to let our in person participants know that these slides will be available on Agrilinks.org this afternoon. There was a lot of rich information in these slides, and so if you go to Agrilinks.org, you should be able to access them under events on the event page for this seminar. And we'll also be sending out a link to all of you who attended today with the recording of this event, the slides, and any other associated resources, so you can review all of those after the fact.

All right. So next up, our last presentation. We have Mehedi and

Tashfiq from Swisscontact, the Katalyst Project, joining us from Bangladesh. So please go ahead.

Mehedi Hasan: Hello?

Julie MacCartee: Yes. We can hear you.

Mehedi Hasan: Hello? I'm extremely delighted to be one of the presenters of this seminar today. I will represent a story, a story that change life for poor vegetable farmers in Bangladesh.

Julie MacCartee: All right. And –

[Crosstalk]

Julie MacCartee: This is just a suggestion –

[Crosstalk]

Julie MacCartee: Oh, sorry, didn't mean to interrupt you. Just a suggestion to speak somewhat slowly to make sure that we can hear easily in the room here.

Mehedi Hasan: I will be presenting, and Tashfiq Ahsan will be more active in the question and answer session.

Okay. This is our presentation agenda. First of all, we talk a little about our project and approach, and then we'll go to the intervention area, and then finally, we'll talk about the way forward and key takeaways from this presentation.

Okay. At first, I would like to introduce my project to you. Katalyst is a market development project that aims to contribute to increasing the income of both men and women in rural areas. It does by facilitating changes in services, input, and product markets, increasing the competitiveness of farmers and small enterprises. Our Phase 3 is co-funded by SDC, DFID, and DANIDA. During Phase 2, Katalyst has benefited 2.4 million farmers, and in Phase 3, it plans to benefit 1.4 million farmers, and aims to increase income of \$250 million US.

So these are the sectors we currently work. We have three core sectors, namely vegetables, farmed fish, and maize. And we have cross-sectors, women economic empowerment and local agribusiness networks and information channels.

I will go through how Katalyst works. A farmer is poor. It is not a problem for us. Rather, this is a symptom. So we analyze why and how a farmer is poor, and then why does not the market system work

to solve the problem. Eventually, what you get as answer is the underlying causes of why farmer is poor. This guides us to develop the intervention that changes the market systems. As a result, poor gets access to market, improved services, etcetera, which in turn increases the income and thereby reduce poverty.

So as you can see, the context of the vegetable seed market in Bangladesh, large farmer has access to quality seed. Around 20 to 25 percent of the farmers use quality seeds, and they get higher yields, but on the other hand, the poor farmers do not use quality seeds, and they are not getting higher yield.

So as you can see from here, that 70 percent of seeds are being supplied by the informal sector, which are basically – which are basically locally produced by the local farmers and others.

So why this is happening? Large farmer have access to quality seed. They have big lands and money to buy quality seed. But on the other hand, small and homestead farmers, they rarely use quality seeds, due to many reasons. A few reasons include that limited information and can't identify the quality seed. They are not aware of the benefit of using quality seed. Even if they're aware, they do not need the quantity available in the regular packets of quality seed. So they use substandard seed saved from the previous harvest, or buying inferior quality seed, so that they do not get higher yield.

So from this, we found the intervention area, which is basically availability of quality vegetable seed catering to the needs of poor small and homestead farmers.

Before going to our main intervention, I would like to go back to another intervention which was done previously by Katalyst. In 2008, Katalyst started working with a seed company, by including mobile seed vendors, MSVs, in the company's distribution channel. Mobile seed vendors are basically seed sellers who visit different markets and sell seeds.

Up to this point, MSVs had been selling only inferior quality, non-packaged seeds to poor farmers. Within two years, this initial intervention had been widely adopted by other companies, and showed there was a high market demand for quality vegetable seed from poor farmers. It was also observed from this intervention that small farmers are buying seeds sold by the MSVs from open packet. Basically, what the MSVs were actually doing, they were cutting the large packet and selling in small quantity as the need of the poor farmers was for small quantity seed. This market need reinforced the idea of smaller packets of seeds.

So in March 2011, Katalyst partnered with two leading private seed companies to introduce mini-packets of quality vegetable seeds, catering to the needs of smallholder farmers. The idea was very simple. They could sell more seeds probably to an untapped section of the farmers if they had appropriately sized and priced product. And if you would also read this, the opportunities for adulteration by distributors, retailers, and vendors, and it was basically identified as the major interest of the seed companies.

So mini-packs of 35 varieties which would cover around .03 acres to .04 acres were introduced in the market, and also, the price of the mini-packets were \$0.12 for varieties and to \$0.25 for hybrid varieties, whereas the regular packets were priced at \$1.00 to \$2.00 US.

So basically, this is our resulting of how the intervention has evolved. Initially, we facilitated two seed companies to assess the market, develop strategic plan and packaging for promoting vegetable seeds in mini-packs. Then the companies started promoting and distributing quality vegetable seeds to farmers through networks of knowledgeable mobile seed vendors.

Then it happened that channel members were making quality seed available to the farmers through mini-packets. And the smallholder farmers had increased access and usage of quality seeds, and the farm – hello?

So initially, the intervention was initially piloted in three districts. One company expanded it in 55 districts within a year. How did that happen? Well, in the first year the target was to sell 100,000 mini-packets, but they overshot and sold 558,000 mini-packets. In the following year, one of our partners, alone sold 1.3 million mini-packs.

So though the idea is very simple, but why it wasn't as easy to implement? Because companies focus on large farmers as ROI is higher, and also, it was not a guaranteed business case for them, so the companies were reluctant to invest. In Bangladesh, most companies perceived first mover advantage as short-lived, so they were not interested to invest in this mini-packet idea. But when we showed them the mini-pack – when we showed them the market scenario, what happened in the mobile seed vendor intervention, and they were on board to implement.

So when engaging a private sector partner, what you look for is like first of all, their incentives, which include profit. They will – they're increasing market share, and also, they will have a good reputation in the area for catering to small farmers.

Another point is very important, which is scalability, and we ask the

questions, are the companies capable enough to do it on their own, when we will no longer be able to support? And also, we ask the questions, are the financials strong enough?

Another key element is the quality of inputs or services they provide, because we see their market reputation, product quality, and then, we engage them as a partner.

So here is the impact. I will talk about it briefly. The number of beneficiaries from mini-packets grew from 236,000 to 458,000. And repeat buying from 15 to 41 percent, and till December 2013, as you can see, our total number of beneficiaries was 579,000. And average beneficiary has an average of .03 to .05 acres of land, and around 80 percent of the beneficiaries lived by the \$2.50 a day poverty line. At least 90 percent of the beneficiaries also used the produce grown from mini-packets to feed their families. And there were about 100,000 female beneficiaries.

The mini-packets have also been successful in having demonstration effect on all farmers, small, medium, marginal, homestead, or even large farmers. Mini-packets also benefit medium or large farmers to experiment with new crops. Farmers are also able to use better quality seed.

And we found that homestead farmers are having access to quality seeds because of the appropriate-sized product, and most of the homestead farmers are women, so it has a strong gender inclusion.

It was also observed that optimal utility from the packets has sometimes been hindered due to limited knowledge of poor farmers and home gardeners, and local cultivation taking.

A rather interesting learning was a strong distribution channel with the appropriate product has a strong impact on access. The companies' own analysis showed that growth of its mini-packs sales also contributed to the growth of their normal packs, which has grown by 35 percent since the introduction of mini-packets.

And our impact on income was we had income increase for \$25 million USD, and each farmer – we found that each farmer was benefiting income for \$34 a year.

So what we are doing now? After learning from this intervention, we are doing a few other things. We are partnering with other companies to scale up in more remote areas, and so that the quality seeds are available in remote areas. And we are also providing cultivation information on the seed packets, so that the farmers become aware of the cultivation knowledge and make it a proper vegetable

cultivation.

And key takeaways from this presentation will be the idea was very simple. So as you can see, a very simple business idea can have big impact on poor lives. And we should not focus on complex things only. Rather, the simple ideas can change the lives of thousands of poor farmers. Also, the timing of the intervention is very critical. Sometimes to implement an intervention, it is necessary to create pre-intervention measures.

Another very important takeaway is product quality does its own promotion, and if the private sector companies have quality products, they can effectively reach all farmers for a sustainable development initiative.

So this was all from our site. Thank you, everyone. And to know more about our product, please visit our website, as it is mentioned, and if you have any questions, please feel free to ask us. Thank you.

[Applause]

[End of Audio]

Q&A

Julie MacCartee: Thank you very much. All right. We have some time now for questions, comments, opinions from the audience on the informal seed sector. Please state your name and organization, if you don't mind, as we pass the microphone around. And also, feel free to direct a question to one or all of the speakers. And Karl, do you want to come up to the front here to make it a bit easier? And I'll up the lights as well.

So do we have any questions from our in person audience? And we'll take some from our online as well, but we'll start here in person.

Robert Jacoby: Hi. First of all, I want to thank you. It was very interesting and informative presentations. My name's Robert **Jacoby**. I'm with DAI. And my question is for the Katalyst Project in Bangladesh, and with the packaging, did the project pay for the new packaging? And how did you identify the seed company, and who paid for the new packaging? Was it the project that paid, or the private?

Julie MacCartee: Mehedi, over to you?

Mehedi Hasan: Sorry, we didn't get that. Can you please –

Julie MacCartee: To repeat the question?

Robert Jacoby: Yeah, Mehedi, yes, I was wondering, did the project pay the seed suppliers for the new packaging, or did the seed suppliers use their own investments for the new packaging? And if – regardless of who paid, after the next planting season, is it sustainable?

[Background noise]

Mehedi Hasan: Thank you very much for the question. Can you hear me?

Julie MacCartee: Yes. We can hear you now.

Mehedi Hasan: Thank you. So the first question, we at Katalyst work on a cost sharing basis. So initially, we shared the cost _____, but let's say rather the launching of the product, and basically identify all the study that went on beforehand to identify which seed varieties would be working more. For example, as you can tell from this entire discussion, the open pollination varieties are more let's say available at local level, so these formal companies also compete with the informal sector in that segment.

So selecting that was where we added value. Also, in terms of promoting the mini-packet idea in forms of farmer training, demonstration, is where we shared costs. But in terms of the actual packaging, no costs were shared, the answer to the first segment.

The second segment was was it sustainable, if I'm correct. Well, as we

shared already, we started the intervention in 2011, and we kind of stopped our cost sharing or our activities with them in – by 2012, and it's already 2015, and we see it has already reached around 600,000 beneficiaries on their own. So they are continuing to do that, so in many ways, it's a sustaining activity. I hope I have answered your query properly.

Female 1:

So let's take a question from our online audience. A question was posed on the event page of the Agrilinks website prior to the event. **Bobocar** asks what are locally envisioned solutions to short cycle hybrids and locally adapted varieties? Is that a question you can chime in on, Karl?

Karl Zimmerer:

Well, I wonder – solutions to what exactly in that case? Maybe the availability would be what – or access sorts of issues are what come to mind. And the – I think the immediate response there is kind of the general topic of our seminar, right? That the informal seed sector really has a wide range of capacities involved that really does include hybrids and short cycle varieties. So the informal sector doesn't have kind of an exclusive hold to those sorts of seed products, but it certainly does have the capacity to circulate and make accessible and available those kinds of planting materials.

So it's a generally relevant point to what we're interested in. I guess it illustrates kind of the scope of what the informal seed sector does cover in terms of products like short cycle and hybrid seeds. Yeah.

Ariella Zikerman:

Hi. I'm **Ariella Zikerman**. I'm a AAAS fellow at NSF. I have two questions, one for Karl and one for the Katalyst group, so I'll start with Karl, because he's in the room. So in that graph you showed that said you can keep biodiversity high even in the face of intensification if you stay on the upper curve, I want to know what that looks like in reality, how that works out.

Karl Zimmerer:

Right.

Ariella Zikerman:

And my questions for the Katalyst people is from your \$0.12 mini-packs, how much of the yields go to food? How much to seed savings? And how much to the marketplace?

Karl Zimmerer:

So that is the \$64,000.00 question of how to stay on that upper curve, how can intensification trajectories occur while biodiversity is being conserved, and there's a really lot of interesting, important work looking at sort of different angles of that.

One way of addressing it, and maybe the one that's most consistent with what I was talking about in the slide there, is that there's a very high level of case study or local specificity in those solutions as to how intensification trajectories occur, and biodiversity is – conservation is compatible with those scenarios.

So in the case that I was talking about, I mean, it's a good and important question, farmers were able to basically intensify increased levels of production in certain field systems while resizing, re-scoping their high agro-biodiversity field systems, largely because in that context, they really

value those seeds and those high agro-biodiversity foodstuffs for local consumption and local marketing.

So those rationales were kind of the behind the seeds forces that drove a lot of innovation, right? I mean, they were working with smaller fields. They were working with fields with different growing seasons. Water management turns out to be really related to this. And the point that I want to connect to is that all those innovations that they made that they were open to, that they were creating, depended on an informal seed system circulating material that worked for them. Right?

The seeds were present. It's a pretty densely populated area where – in a very – in my view, in a pretty positive way. Part of that smallholder landscape is that people buy and sell seeds, and that created an informal system that kept pumping in shorter cycle material or material that worked for the latest, greatest way of making a favorite locally consumed item, or whatever.

And that's also like – that's my view in the sense of like definitely an ecology and food emphasis. That's kind of where I come from when I think about intensification, is ecology and food security issues. Other people do it differently, but that's like how I – those are the kind of analyses that I emphasize.

Julie MacCartee:

Great. And Katalyst, could you address the breakdown of the \$0.12 of your seed packets and where the money is going to?

Mebedi Hasan:

We observed that 60 percent of the seeds were commercial farmers, and 40 percent were _____ farmers. So from the 60 percent of the commercial farmers, we found that most of the producers sold in the marketplace, and that for the homestead farmers, 50 percent were sold in the marketplace, and 50 percent were consumed by the homestead farmers and their _____ family members.

But we didn't observe any seed saving as such from this intervention, but I guess they saved – we couldn't – maybe we couldn't like track that out. I guess this answer your question, right? Thank you.

Female 1:

All right. We'll take a question from online and then come back up here. So **Colin Query** has a question. There's been some online discussion about the role of seed laws and how that trickles down to smallholder farmers. And he's interested in hearing about successful experiences where informal seed systems can coexist and thrive where there are strong national seed laws. His experience has been that overly restrictive laws can harm the informal system, but has heard that perhaps in other areas they can work together to be mutually supportive. Have you seen greater benefit or harm? Is that something that, Victor, you might like to chime in on, or – and Karl or – or anyone?

Victor Afari-Sefa:

I didn't get that quite clear.

Julie MacCartee: Victor, if you'd like to chime in, and it was a question about seed laws and how the informal seed sector can still operate well if seed laws might be a little bit too restrictive in some cases, successful examples.

Victor Afari-Sefa: Sorry. It's still not quite clear to me here.

Karl Zimmerer: No, I mean, I –

[Crosstalk]

Victor Afari-Sefa: Oh, I see. I – well, _____ take that, now the seed laws, I mean, I think it varies from location to location. But in principle, the seed laws are there, but I think the challenge is the implementation. Most of these are _____ sub-sector, but we all know about the challenges that they are _____ understaffed, and then in some cases, too, they are too centralized, and they are not able to be able to reach some of these communities that are in the hinterland, and therefore, people just – they do stuff and they are not checked. So a lot of seed, for example, is sold that are not certified in countries where they're supposed to be certified. So that is a challenge.

Peter Boone: I'm Peter Boone. I guess I'd direct my question a little bit –

[Background voices]

Peter Boone: Oh, sorry. To Karl and Victor. In terms of the informal seed sectors, I didn't hear a lot of the major challenges of the informal seed sector coming out of your discussions, that I did hear in the Swisscontact one. Some of the challenges are pretty well-known, that there's just in general a lot of low quality – you don't hear a lot of quality seed coming out of an informal system. There's almost no potential that I know of for hybrids coming out of there, when you're talking drought resistant.

So there's – the list of challenges is – at least in a lot of places I've been, is almost overwhelming. They're often saving the lowest quality seed from the plant that survived in the field, but never produced a lot. And then when they do store it, it's not under very good conditions.

So when we talk about all this exciting interconnecting and scaling up and crowd sourcing and all this information, that's an investment. And I'm just wondering, you know, at the cost-benefit level, are we investing in a very weak and almost broken system, just because it's out there?

[Crosstalk]

Victor Afari-Sefa: To answer your question, I think that a lot of the main challenges of the informal seed system is that – trying to get them institutionalized, because, like I said, most of them are still _____ funding, and then _____ the project comes to a close, the sustainability component is not well laid out. And then it becomes a challenge.

But even in the course of implementing some of the _____ projects, _____ there are issues, a lot of them, but maybe I'll talk about three. One that we

particularly found _____ in Tanzania was the issue of differentiation of the _____ whatever seeds that are produced, because you also have farmers selling seeds that are not certified or not grown to _____ the _____ systems, and are sold in the market.

Now we also have facilitated and worked with farmers to produce seed _____ quality declared seed system, but we do not have any basis for _____ options to brand it, you know. In Tanzania, for example, seeds are sold in empty match boxes, for example, and you cannot differentiate between what a farmer has taken out from his or her harvest and then the one that we went through the certification process to get certified, and _____ of course _____ better quality. They are sold in the same container, so there was no branding, and that was a big challenge in trying to differentiate which product from what could also be a seed that is not of good quality.

One other thing that we face which is also causing challenges _____ implementation is also the processing. _____ they mostly have to use low cost materials to do manual processing, and this can sometimes be a challenge, particularly when it's on a small scale. So sometimes we will need like a seed extractor to be able to improve the quality _____.

Again, we talk about a very important or critical issue. In the case of informal seed, and particularly for _____ _____, one of the main challenges that farmers encounter is seed viability. _____ type of _____, normally, once a seed is harvested, it's processed and kept at room temperature. Most of them will lose viability after six months if they are not kept under cold storage or proper storage requirements. _____ _____ to have cold storage and things to keep _____ atmosphere balanced.

But farmers just keep them in their house. So after six months they lose viability, and some of them will keep trying to grow them or sell them in the next season _____ _____, you know. And _____ _____ requires – we need to do a lot of capacity building and training them _____ _____ talk about something like _____ plant, it's so bad _____ after six months it lose viability, and _____ have to be kept in cold storage conditions.

So maybe _____ challenges, these three, but the main thing is that we need to try to get these informal seed systems _____ institutionalized _____ and by linking them to formal seed systems _____ have a lot of programs trying to get this done, and that probably is one way to strengthen these systems.

Julie MacCartee:

Great. And Karl?

Karl Zimmerer:

So that's a great question. I think that one way I tend to think about it is that the extent of these smallholder informal sector seed systems is so vast, that there's actually a huge amount of variation within it. And for – I mean, I'm a researcher, so for me, it kind of opens the question, what about the variation of seed quality across or within that system? Because the thing about seed quality is growers themselves are highly aware of seed quality differences. They're not technical experts, but they're not –

Peter Boone:

They care a lot about –

Karl Zimmerer:

They care a lot about it. It has an immediate impact. So in some sense what we're looking at is kind of the tradeoffs between accessibility of seed, meaning low cost, and quality of seed that tends to be associated with higher prices. And so there's a range there, and kind of looking at that variation and looking at sort of viable kind of combinations in that range I think is a really interesting – going back to Mark's point at the beginning, this is just – in some ways, this is a knowledge gap in terms of understanding these systems.

That said, I think it's also interesting that there is at least some evidence that these informal sector seeds and varieties in particular can perform pretty well. So for example, in the India case, it's roughly – those varieties that are being sort of performance tested, this is not seed per se, but it gets to that question of sort of the traditional, typically underperforming components. The traditional varieties are certainly performing better than the lowest end of the improved varieties, and in fact, there are a couple of traditional varieties that are up in the upper part of the range. So that –

Peter Boone:

They might be disease resist – locally disease –

Karl Zimmerer:

Disease resistant, and so that is to say that the informal seed system does have material in it that's relatively high performing.

The last point is just I see this as potentially an opportunity. Seed quality is of interest to everyone. If you think about crowd sourcing as a sharing of information, not only about types of seed, but about seed quality, best practices, etcetera, those kinds of crowd sourcing and information sharing can connect dots between type of variety and quality of seed. That's very kind of inherently linked, compatible material.

And so to understand some of these approaches potentially brings in issues that are totally relevant, but not necessarily a part of existing discussions.

Julie MacCartee:

We have time for a couple more questions, but in the meantime, if you need to take off early, we always ask you to fill out the survey that was on your seat. It helps us improve the events for the future. And you can either leave it on the table or drop it off at the table as you're heading out. And also, take as much food as you desire on your way out if you're here in person. All right. So we'll take a couple more. I'll throw it back and just see if we have one more from our online audience. And also, let us know how many people were joining online.

Female 1:

Yes. So we had I think about 80 people joining us online today, so – and there was a robust online discussion as well that we will be posting to the event page. So if people would like to take a look at some of the questions that were talked about in other programs, please do check back in.

We have a question from **Steven** Walsh, who is curious about the efforts to impart quality on the seed sector. Has there been more of a focus of embedding capacity to assess quality at the seed merchant and producer

level? Or has quality been left more to an inspection system and regulatory environment?

Julie MacCartee:

Interesting. Where is the quality being verified and assessed? And actually, I'll just jump in really quickly to let everyone here and online know that we have a Agrilinks webinar next Tuesday on e-verification of agricultural inputs that includes seeds as well as fertilizer. So that almost might contribute to this discussion, a webinar-only event next Tuesday.

Karl Zimmerer:

Maybe the online people would have that sort of seed merchant perspective? I don't know.

Julie MacCartee:

Victor or the Katalyst team, do you want to jump in on that?

Victor Afari-Sefa:

_____ hear the question.

Julie MacCartee:

It was hard to hear the question? It was mostly about verifying the quality of seed, where that occurs along the value chain. Does it occur –

Female 1:

Yeah, at the regulation – also just –

[Crosstalk]

Female 1:

– capacity to assess.

Victor Afari-Sefa:

Okay. If I can _____, so the quality, normally, it's _____ the production, so in the case of Tanzania, for example, the seed is _____ initially, and they need to get information about the plots where the seeds were grown, and then _____ they need to also have already _____ seeds planted or certified. So that was already _____ in the course of _____ seed _____, they would _____ at some point in the production cycle, at least twice, and in most cases also just before harvest.

And then once it is harvested, we also take it to the lab to do some testing, and _____ seed then is approved, then we can certify that. So – and I think it varies from country to country. But _____ seed production, and also _____ seeds have _____.

Julie MacCartee:

Our last question?

Tom Timber:

Tom **Timber**, consultant. So following up on Mr. Boone's question, I don't –

[Background noise]

Tom Timber:

Following on Mr. Boone's question, I don't think anybody would lack admiration for the kind of research you're doing because of its focus on the bulk of small farmers and subsistence etcetera. The question that might be raised is the value of public sector involvement in promoting these networks or public sector investment. The question is, can that add value? Do you have any studies that would indicate the cost-benefit analysis of

those kinds of investments from the point of view of increasing income or even resilience?

Karl Zimmerer: Yeah, that's –

[Operator]

[Laughter]

Karl Zimmerer: Okay. What a nice prelude. So yeah, I think that's relevant to a lot of this. Certainly there's a ton of added value in the – my most general answer is there's a ton of added value in the informal seed sector. This is extensive. There are value chains where value gets added, and we should never lose sight of that. It's not necessarily the same margins. It's not necessarily the same – it's probably – presumably, it's a much more kind of incremental, smaller additions, but multiply it across large numbers of actors and individuals. So again, maybe this goes to Mark's kind of information gap. We don't know that much about the kind of medium or large scale value chains in the informal seed sector that I'm aware of.

So in a general sense, I think that's relevant. Another point that I always need to make in the case of my research is that's an extremely pertinent question, and yet biodiversity conservation, which is just one part of what I'm talking about, but that's – it's difficult to do valuation studies there. Those are public goods with kind of these broad spectrum benefits. And there are certain many economists who specialize in these kinds of issues. It's my impression and understanding that they too would not have like cost-benefit kinds of comparisons that they could pull out right away, but they would refer to specific public good kinds of values and functioning of biodiversity, the biodiversity piece of this.

So those are maybe a couple of responses to where's the value in this. And I didn't come up with a cost-benefit, but I do think addressing value is extremely relevant and important. Thanks for the question.

[Background voices]

Julie MacCartee: Great. We are coming up on time, and I always like to end our seminars right on time. So I'd like to say, wonderful, thank you, to Karl, to Victor, and to our team from Katalyst for presenting today. And most importantly, thank you to everyone who joined us in person and online. And keep an eye out for future emails about future events. Thank you.

[Applause]

[End of Audio]