

2012 THE "BORLAUG DIALOGUE"

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Panel Moderator: Steve Sonka

CONVERSATION:

WASTE NOT, WANT NOT: SOLUTIONS FOR REDUCING POST HARVEST LOSS

Panel moderator:

Steve Sonka

Director, ADM Institute for the Prevention of Postharvest Loss - University of Illinois

Panel members:

Betty Bugusu Managing Director, International Food Technology Center, Purdue University

Jeffrey Klein President & CEO, The Global FoodBanking Network

Rajesh Kumar Smallholder Farmer, India

Introduction by:

Catherine Swoboda

Interim Director of Planning, World Food Prize

Good morning, everyone. Great to see you, this group here. You guys must be the ones with the stamina to stick it out 'til Friday. I can tell you it's well worth your time. It's not an exaggeration to say that we have three stellar panels and sessions lined up. And so I'll jump right into it, as I'm looking forward to it, and I know all of you are too.

So with that, I would like to invite Dr. Steve Sonka to the stage. Dr. Sonka is the director of the ADM Institute for the Prevention of Postharvest Loss, and we are so grateful to him for moderating this panel.

CONVERSATION:

WASTE NOT, WANT NOT: SOLUTIONS FOR REDUCING POST HARVEST LOSS

Steve Sonka

Director, ADM Institute for the Prevention of Postharvest Loss - University of Illinois

So I'm going to quickly introduce my panel who, the good news for you, is they're going to do most of the talking, because they have much to share. As I introduce them, I'm hoping they'll join me up here. Otherwise, it's going to be real lonely.

So first of all on our panel is Betty Bugusu, Betty. Betty is the managing director of the International Food Technology Center at Purdue University. We have Jeff Klein. Jeff is president and CEO of the Global FoodBanking Network. And then we have Rajesh Kumar. And Rajesh is a smallholder farmer from India.

So we have a lot of different perspectives to address this increasingly... It's not really increasingly a significant problem, but it's increasingly being recognized, I believe, as a significant problem. It's really been sort of underrecognized for many years.

And as we've focused quite rationally on the need for food and the need for additional food available to consumers in the last few years, we started to understand that just growing more doesn't necessarily guarantee that all of that additional production we hope to achieve actually doesn't get to its intended end use, whatever that intended use may be.

Our panel has many insights to share from their experiences of actually working to reduce waste, to reduce loss in the supply chain.

This is an area of work that in the last, I would say, year we have been somewhat inundated with estimates and with numbers. And so my task here for the next couple of minutes is going to be to show an overview of some of those numbers, using the dreaded PowerPoint. But there's only three and I'll go through them quickly. But that way when the panelists are talking and using and referring to some numbers or referring to some concepts, you'll have seen the numbers. So if I can have the first slide. Good.

This is from a recent FAO study. What we're looking at here is food waste and food loss around the world. This is a 2011 study from FAO. The different bar charts are different regions of the world, Europe, North America, Asia, some more of the developed nations on the left and then developing countries on the right. The colors of the bars are significant, and there's a terminology evolving of distinguishing between food waste and food loss. And at least for communication it's useful to have that distinction.

So the blue or the gray part of the bar is the food loss, and that's loss that occurs in the food supply chain from the producer through being transported, to processing, to the consumer. And these are kilograms per capita per year we're looking at here in terms of losses. The maroon or the red at the top of the bar is loss at the consumer level. Our households, our restaurants, the wonderful banquet that we had last night, the food that's wasted, the food that disappears at the consumer level, we're starting to talk about food waste.

And so you can see kind of logically that the food waste is much more significant in the developed countries. Food loss is a much bigger portion of the problem, food loss being that food lost in the supply chain, is a much bigger problem in developing countries in a relative sense.

Taking some numbers from a recent National Resource Defense Council report, to give some specificity - one of the things I hope we convey to you is, there is a lot of complexity around the food loss, food waste issue. There's no simple template that can be applied in one region and then be applied in another region for a different commodity. When we think about solutions and we understand causes, we get the need for different templates, different actions in different regions.

Here we're looking at the U.S., Canada, Australia and New Zealand, and we're looking at where losses occur for specific commodities. So we're looking at milk, meat, fruits and vegetables, seafood and grain products. And again there's a breakout there of the supply chain food loss, the percent that occurs there - percent of food, and this is the percent of food that's grown, how much is lost in the supply chain. So for vegetables I think that says 36% or something close to that. Then for vegetables in the food waste area, it's 28%. So the percent, though, is the total amount of the total amount produced. So significant losses in the developing countries in the consumer segment, and here consumer again includes outside the home consumption.

And then finally this is a really, particularly in the food chain, this is a very local problem, and I want to impress this notion that I referred to earlier about the complexity. This is a crop called black graham, and black graham is a lentil. In India lentils are very important because they're an important source of protein in the Indian diet.

Maharashtra and Madhya Pradesh are two large states in India, and we did some work. This is from the institute, the ADM Institute at the University of Illinois. We did some work with farmers there, looking at losses in the supply chain. From an outsider's view, these look like very similar. When we were in villages of Maharashtra or villages in Madhya Pradesh, they looked very similar to me, very similar kind of context. What you can see here is the prescription that's needed in Maharashtra is quite different than the response that's needed in Madhya Pradesh because Madhya Pradesh has a very different set of problems and much bigger problems in a relative sense and an absolute sense in the harvesting and drying.

So even here, two states, very similar terrain, crop growing at the same time of the year, really very similar production systems, at least as an outsider would see them - quite different parts of the supply chain where losses are major. And that's one of the complexities that we'll deal with.

Now, the good news is, I'm done with PowerPoint. I'm going to now turn to the panel, and we want to talk a bit about the food loss. And we have three very different perspectives. So as you'll notice, the introductions I gave were very, very brief. And so I'm going to ask, as we talk about a specific from the context of the local worlds and the realities and the specifics that our panel works in, want them to describe their context of whether it's India or the work that Betty does in Africa or the work that Jeff does around the world. Give us some context of what you're doing, what your organization is, but then give us a specific example of kinds of losses, actions, responses that you've had experience with where we've seen improvement in the near or the long term.

And we're going to start kind of at, as the supply chain moves, we're going to start at the farm level. Rajesh is a farmer and an entrepreneur and participant in the food chain in Southern India, so, Rajesh, give us some insights and thoughts of your experience as you've worked in this area relative to food loss.

Rajesh Kumar
Smallholder Farmer

Good morning. I'm Rajesh Kumar, so I come from the southern part of the country where I grow vegetables, mostly vegetables - brinjal, tomatoes, sweet corn, those kind of things. And most of my village or the town where I live in, mostly vegetables are grown.

Pertaining to food loss, it's been a big problem for us, even before harvesting, the loss in the field itself is very high, and then you add it up with the postharvest loss, it's in the highest scale. There are multiple reasons for that, right from handling the produce, packaging, sending it by truck, or distribution and marketing. All that adds up to the stages and there are multiple levels of people involved in different stages.

So again normally the loss of the product, in fact, it adds up to the cost of the product and ultimately the consumers have to pay much more than what's there in the farm gate price.

Steve Sonka

Give us a little vision of Southern India and producing vegetables, and how do you take your vegetables to markets? Maybe talk a little bit about the reasons you moved into the processing sector, and what were some of the goals you hope to achieve there.

Rajesh Kumar

Yeah. India is one of the largest producers of fruits and vegetables, and the figures say it's like number two or three in the world in food production and available production.

But if you look into the processing side, it's hardly two to five percent that's been processed in vegetables. Tally in cereals and some other lentils, it's more, the processing is more. But pertaining to vegetables and fruits, the processing is very less, only 3 or 5 percent, because every part of the country grows fresh fruits and vegetables, and they haven't felt a need for processing yet. But these days it's picking up a bit, because we have Indian retail chains coming up now where the demand for processed food, as people become more affluent they would like to go for processed food also.

Steve Sonka

Let's move a bit to Purdue but also, Betty, I know your center has continued the outstanding work of Professor Nelson, and you have lots of experiences in Africa, developing capabilities that allow producers to become entrepreneurs but also to allow processing to reduce some of the loss. So if you'd talk to us a little bit about the center and some of your experiences in Africa.

Betty Bugusu

Managing Director, International Food Technology Center, Purdue University

Thank you, Steve. So I'm representing the International Food Technology Center from Purdue, and our center really is designed to increase commercial integration of production into markets. And we do so by looking at areas of adding value through processing so that we can have high-quality and nutritious foods and also save foods for the consumers that we are targeting.

So this center is really based on the recognition of Dr. Philip Nelson, who is the laureate of the World Food Prize 2007. Through his work through aseptic processing and looking at value processing so that we can get our produce into the market, mostly applicable to fruits.

And these issues we are talking about are really issues that are personal to me. Ladies and gentlemen, I grew up on a smallholder farm in Western Kenya in a city called Kakamega. And I have witnessed a lot of these losses firsthand. And so when I talk about it, it is a very passionate area that I feel we need to focus on and address. And I'll give you a few examples of some of the cases that I've experienced.

So my parents were early adapters of the hybrid maize, the 511, 512 or 611 in the early seventies. And they grew, they picked up this corn, followed the right agronomic practices, and almost tripled their yield. And it was really great, we were excited we had so much food to eat. But then came along the issues of postharvest handling. And this was more to do with the drying. We'd rely on the sun to dry our crop, and we have to put it outside, in and out - when it's raining, you put it back in. And this was pretty cumbersome, but we overcame that and were able to store our corn into gunny bags.

And the market price at that time was just simply very low, and as you may know, we have limited market access in these parts of the world. And so looking at, how do we get our crop into the market was a very difficult thing. And so my parents thought they were wise - they would store the product and wait when the markets are a little bit up there and then sell their product. It turns out that a few months later, we see the white little moth flying around in the storehouse, and it turns out that the crop is completely infested. Needless to say, we lost all that crop, and I think we ended up selling to a middleman at an even lower price than the time of produce.

So this is an area that I'm very intimate with, and it's not just with my parents. It's a thing that is happening to a lot of smallholder farmers. You heard about Susan from Nigeria talking about this, some of the issues she underwent. And the fact that now things are improving because we are bringing processing technologies, we are bringing storage technologies to the farmers.

So in my opinion I feel like a poor integration of this production into markets is one of the key issues that is leading to food losses and food waste. And so the sooner we think of ideas to integrate into production so that we can cut down this waste, the better we are off. And the fact that we can have two statistics of 800 people going to bed without food and a part of the food being produced going to waste is very sad to me.

Steve Sonka

Well, I didn't realize we had something in common. I grew up in a smallholder farm too, about a hundred miles from here near Cedar Rapids. But we have this wonderful thing called winter, and so the white moths don't bother us here. So I never thought of winter as necessarily an advantage, but I guess in that context it is. Jeff, talk about the world of food banking and what your organization is trying to achieve in its global reach.

Jeffrey Klein

President & CEO, The Global FoodBanking Network

Thank you, Steve. Great to meet everybody. First a little context.

We do all of our work in foodbanking outside the United States, and really we were born out of the Feeding America system, which at the time we were formed was known as America's Second Harvest. And it was really to embrace the global interest in foodbanking as a community, self-help tool.

So since 2006 we've been active, and we're now operating in 24 countries, and we're both kind of part consultant – we help technical assistance, we provide technical assistance and really the know-how to make foodbanking happen from an educational perspective – and then we drive additional resources through the system, and they could be volunteer resources, they could be capital resources that we'll talk about in a little bit, and of course food-related interactions. So I spend a lot of time with a lot of the worldwide grocers and food manufacturers.

And wanted to comment a little bit on some of the challenges. You know, food waste exists throughout the supply chain, as the graphic showed. We tend to be a little bit closer to the consumer, and we'll talk a little bit later about some really exciting developments we've had really close to the consumer.

But think about the products that no longer can go through the commercial sales channel. It might be a dented can of soup, it might be a product line extension for a cereal company that was unsuccessful. It might be a promotion tied to St. Patrick's Day where you can't really sell green cereal the day after St. Patrick's Day.

So every company – and there's countless examples of this – has to make a decision what they're going to do with that food, because it really can't be retailed anymore. So we work with people around the world to do that. And I was asked to comment on a couple of very obvious challenges to the system, and I'm going to talk a lot about – we're moving backwards in the supply chain, because now it's not just about hunger, it's about nutrition and the amazing amount of produce around the world that's produced and I think the graphics said 36% (I've even heard higher) that can't be consumed.

A lot of it is because it doesn't look pretty, and you won't buy it on your grocery shelf if you have a two-headed cucumber. There's just so many things that just don't make it through the distribution channel. I've heard horror stories about produce-rich places in Mexico that experience great loss, not only at the harvest side but also because they don't have cold chain immediately after production, and then they get trucked to markets in very warm countries without the benefit of cold chain, and they have a very high reject rate.

So we're working to accelerate the adoption of cold chain. We're having discussions with large organizations that we want to put their weight behind that. But cold chain is probably the biggest opportunity loss that we're facing around the world. If you think of it in terms of the high-quality products that are in grocery shelves that a grocer needs to determine every day – are they too close to code? Do I have to pull those products, because I can't sell products that are that close to code – nobody is going to buy them. They're your yogurts, your cheeses, your animal proteins, the really high quality, as well as produce as well that might start to look a

little bit older, but it's still highly nutritious. So it's the opportunity loss that we're trying to attack to have enough trucks and cold chain to retrieve those and introduce those to feeding operations around the world.

Panel Discussion

Sonka Good. We're going to continue a little. We're next going to talk about the food waste and component of postharvest lost, which again is at the consumer and out of the home consumption level. And then later we'll turn to food supply chain issues.

This conference is about partnerships. On our screen it says Partnerships & Priorities, right down there. Jeff, you alluded to partnerships. But I'm imagining, whether it's this hotel or a hotel in Mexico, there have to be partnerships created to effectively move food that's been prepared or from grocery stores. Tell us about those partnerships and maybe tell us some of the problems. I'm guessing there might be a problem or two.

Klein No.

Sonka Oh, well, then we'll just move on.

Klein Well, it's very exciting, and this conference is timely. There's two very exciting initiatives that we're working on that we think could be game-changers.

One is something we announced on Tuesday – surprise, surprise, World Food Day. It's with Hilton Worldwide, and we partner a lot with Feeding America programmatically.

Feeding America is looking after this on a U.S. basis, and we're going to run a pilot in Egypt to start, but Hilton is very focused on, you know, they produce an enormous amount of food, as you can imagine, across the world in their kitchens, their food and beverage operations. And we're going to pilot with them to take some of that excess, which is recoverable with appropriate food safety practices, cold chain logistics, everything. We're going to take that food and introduce it.

We have a very robust FoodBanking partner in Egypt, and we're going to redistribute that very safely and efficiently to organizations that will be able to consume what is incredibly high quality. It will be things coming out of weddings, so it's going to be very high-quality product, and our goal there is to have that roll out wherever we can make that work. There's a lot of challenges which are really regulatory and legal in nature – you know, where does the risk stop and start relative to anybody that has a negative health outcome because of that. And we'll talk, I think, a little bit more about that later.

The second really innovative thing we're working on is with the folks at General Mills, and hopefully you saw Ken speak yesterday. You know, we focused on the excess in the commercial channel that comes from, you know, we joked about the St. Patrick's Day cereal, and not many food companies are really willing to admit this – is, they produce the product, there's batching, and there's intermediate steps, and

sometimes things don't go right. It might be that cookie dough that gets mixed with a little bit too much of this and not enough of that. Well, again, is that going to be thrown out, or is it going to be recovered?

So we're working a pilot in Argentina where General Mills has a cold pasta business and kind of a bakery products business. And we're going to take the things that kind of never get to final stage of production, and we're going to intelligently take those and redistribute those. They're very excited about that. There's an enormous opportunity there, and it's not just at General Mills and it's not just in Argentina. So we are creatively thinking moving back in the supply chain, so it's not necessarily what's on the grocery shelf, it's things that never got to the grocery shelf. And you'd be shocked if you went through how much food and food products – they may not be in final form but are available to us. So we're trying to have those discussions with other people, too, and we're very excited about those two progressive examples how to work with companies.

Sonka Betty, from a food technologist's viewpoint and food waste in the household or in external consumption, what's your experiences, what's your thoughts on the food waste issue.

Bugusu Okay, so as we alluded to earlier, food waste is not a very big issue in the areas that we work, and these are mostly developing countries. We are talking Africa, some of the Southeast Asian countries. The key problem out there is food loss, so I'm not aware of any studies or any documentation of serious food waste. And this is not to say that it doesn't exist. It could be existing, but it's not a priority right now, now that we are talking about priorities.

But in terms of the developing country perspective, we are looking at food loss, and this is what happens between after harvest and before you reach the consumer. And in my case, the example I gave, we alluded to some of the problems – postharvest handling; we alluded to lack of processing and value addition, and much more looking to get the surplus into the markets.

So farmers really are very intelligent people, and they can adopt these technologies to increase productivity. But when they run into situations where they have surplus of food, they have gotten enough they can eat, and they're not able to sell what is surplus to them, it becomes really difficult for them to continue to adopt the high-productivity technologies.

So I think we can use this in our own experience at Purdue. We have worked on two big programs. One program is looking at increasing processing and bringing processing close to the farmers so whereby they know where the high market prices are. The infrastructure potential, it doesn't allow them to get their produce into the markets. So bringing processing close to them, value addition, so they can tap into the value of these products.

And so at our center we are working in areas of Africa, especially in western African countries, to develop products that are demanded in the market, so we use the demand-driven approach in looking at what is it that the populations need to eat,

and how can we enhance the processing and making high-quality products so that we can get repeat buyers and get this produce into the market.

Another big area at Purdue that we've worked in is in the area of storage, looking at innovative storage methods that the farmers can use so that they can extend the shelf life of the product, either for their own consumption or for later sale when the markets are good. And we have developed a very good storage technology - it's a hermetic storage bag that has, it's called the "Purdue cowpea," improved cowpea storage bag. And this bag has been used to enhance - it was originally developed to store cowpea, which is blackeyed pea, for some of you. And a lot of research has been done now to enhance it even more so that it can be used for other commodities like maize and other grain legumes.

And in all these things, we don't work by ourselves. In our area of processing we look at empowering the processor so that they can have the ability to produce high-quality products, get them into the markets, and at the same time be able to serve as the outlet for the farmers. And this has really worked in many of these areas we work in.

In that particular case of storing, the farmers are very enthusiastic to buy these bags. They are not given for free. We have worked in the distribution chain to ensure that they are produced in the regions and the farmers have access to them and in all this working with partners, private sector, bringing in some of the investments that are needed to purchase equipment, to produce some of these technologies so we can deliver them to farmers.

Sonka One of the benefits of being a moderator is you don't have to follow your own rules. So I'm going to jump back a little bit, and it's because we had a conversation yesterday. And, Rajesh, I'm going to ask you a question that I didn't tell you I was going to ask, so I'll prepare you for this. But I remember, and we have this image, and the data is all consistent with what Betty just said, that the food waste is a developed country problem, and it is; but it's also significant in developing countries.

And I was thinking about your work, Rajesh, in setting up, I think it's an alliance with the hotel and the Indian weddings, which, if you've ever been to India, is a fascinating event, multiday event. So talk a little bit about the work you've done in particular with, I think it was a hotel you were working with to recover food and make it available and what was sort of involved in that.

Kumar Yeah. This is a pilot kind of a project which we have been doing in a small town in India.

? [inaudible]

Kumar Yeah, like one million. So there are numerous hotels and numerous weddings, all that happening around. So what we are trying to do is, and they, the hotel people throw out the food which is not sold, and we are trying to collect it and distribute it

to orphanages, people who are there on the road and those kind of things. But it's still kind of a pilot project we have been doing.

We are fairly successful to an extent. 200, 300 people have been supplied every day... There are days when we don't supply also, but there are days when we do supply many times a year. It's happening. But we do face a lot of problems, those kind of things. Again, the quality at the end of the day and distributing it to them. Sometimes they might not eat, and so those kind of things. We face the problem.

Sonka And one thing I think is really interesting about this example and why I brought it up - for the past two days we've heard great examples of large organizations, international, national and private sector companies, General Mills, announcing big things. And yet, and as I've learned more and more about food loss and food waste, there's just a lot of work on the ground, and it's individuals doing things. And the more we can foster that and encourage that, I think the better and quicker we will achieve reductions in the kind of waste we see.

And we also kind of run into controversy. And again, now I'm going to surprise Jeff with a question. I recently was in Europe at a conference, and Marks & Spencer was there, and they were talking, and they were very proud of their zero waste, or zero to landfill promise, that from their grocery stores nothing will go to landfill. And that's very impressive and we know that society in many parts of the world, landfills are an issue, climate change related issues.

So that's all very good, but as we were talking at the conference, we learned that the solution primarily was anaerobic digesters and producing fuel. And much of what was going in there was at the time it was going in there, was edible fuel. So we run into sort of ethical issues or questions, not right/wrong questions, but questions.

And so from the world of foodbanking, how do you, Jeff, think about these kinds of solutions, which are solving one problem but maybe not contributing to solutions of other problems?

Klein Well, the UK has been very progressive. There's a movement known as WRAP, which really raised the profile years before a lot of other people were even talking about food waste. I think there's a cradle-to-grave philosophy of disposal that the UK has always embraced. I don't know if it's because they have an inherent shortage of landfills or what drove it. So they have a lot of educational events to squeeze waste out of the system in any way you can.

So the challenge that we would have as an industry, and we do have a nice operation there known as FareShare that has 18 locations across the UK, would be to see if we have the logistical wherewithal to provide a competitive alternative. At all stages of the waterfall of - What do you do with excess product? - a company has a decision to make. There's always animal feeding opportunities, which is a revenue event. In many cultures there's a black market or secondary market where brands trade into that market.

It's starting to happen in the U.S. at the Family Dollar stores. If you go to the Family Dollar stores, you will see branded product that's probably at or just past shelf expiration on a cereal basis – nobody is going to die if they eat a day-old cereal – trust me.

But the point I'm trying to make is – the company has a difficult decision, and a lot of it's cultural, and a lot of it's philosophical. And they have shareholders too, so they're going to always evaluate what's the highest and best purpose for the excess product that they have. And it's our job, I guess my job, and our people around the world to educate them and to show them that we have great capability.

Now, the constraint on capability I mentioned earlier is, you know, we're a classic NGO – we're meaningfully undercapitalized everywhere where we work in the world. We never have enough trucks, we never have enough material-handling equipment. We often have volunteer drivers. The FoodBanking model is 90% a volunteer model, and that's where we get our impact in scale. We're just, you know, everybody's scrapping every day for the resources to continue to run those enterprises.

So until we can convince people that have other alternatives that we can be at the gate of the store every Monday, Wednesday and Friday at nine o'clock with a refrigerated truck, then they're going to do what they have to do. So it's education, it's awareness, and it's making sure that people who care about food loss and feeding people know and understand our conundrum, which is, we have a desire to do things, but we're serially undercapitalized, serial not as a pun.

And we're talking to government organizations about this and say – If you want to get serious – and talking to FAO about it, and we put together a white paper forum, and I'm going to see them next week in Rome – you know, if they're serious about food waste, then they may have to do some things on the policy side. And then we have to find ways to introduce more capital into the system. And then Marks & Spencer, who is a good corporate citizen – they don't really want to take this road, but they probably have found that they don't have another realistic alternative for the types of volumes that they're talking about.

So you always have to intersect commercial interest and the moral and ethical issues of what we're trying to do and present a reasonably close alternative for somebody. And if you do, more companies are adopting the desire to feed people. But if it's a black and white answer, they've got to do what they've got to do, and they have shareholders. So it's complex and evolving.

Sonka Thank you for using the word “competitive.” That concept had never sort of come into my mind that in the world of the food banks and recovery of food that there is a competition, because it is about resources and best use of the resources.

So now we're going to turn to the food supply chain and move away from food waste in the consumer level to supply chain. And I'm going to turn to Betty first, and she did a good job of promoting another program at Purdue. So talk a little bit more about, give a specific or two of what, and you're reducing food waste, but you're

also helping to create entrepreneurs and economic activity, and those are important as well. So give us a couple instances of the work you've done, your center is doing, your colleagues are doing in developing value-added products that do reduce waste but also create economic value.

Bugusu So one thing I'd like to say upfront is that there's no silver bullet in this supply chain of a point where you can say it is processing or it is storing that you are going to focus on so that you can cut losses. I think that this is an area that calls for the food supply chain approach, as I said earlier on. And we have to add on the other aspect of a demand driven supply chain approach in the sense that you are looking at - what are the demands in the market and how can you address those.

And in the examples that I give, in particular the area of processing, we are looking at - what are the foods? We know that there is urbanization going on in many of these developing countries. We are looking at what are the initiatives we can put in place so that we can have smallholders feed these urban populations.

And so putting in place - research is one area, looking at developing different products that then would meet the market demands. And you don't just stop at research. You have to run extra step to bring these technologies to the various stakeholders.

So just like we bring the seed and the inputs to the production side, so then we need to bring these technologies to the processors. And a lot of them are out there struggling. They have one piece of equipment, or they have just an inefficient way of producing quality products. And so putting mechanisms in place to help them adopt a lot of these technologies.

In my work around, I've come across a lot of research institutions that have very good, appropriate technologies that could be used in some of these rural settings. And so taking those technologies to the specific consumers, in this case processors, or even traders, so that they can utilize them to be able to create the pull factor in the supply chain so that you can increase productivity. So in our examples I feel like that's one of the approaches we can take.

And in so doing, we have to engage the supply side. For us to be able to process good quality products, we need good raw ingredients - and so the need to work with the production side, and maybe even through farmer cooperatives.

I didn't finish my story with my parents, and it turns out that, so when they realized they couldn't get the market for their maize, they decided to kind of scale down the production. They knew they could use the same high-quality technologies that they had received and get high produce. But then they decided to scale down their production so that they cut down the size, and they planted tea and coffee.

And so at that time there were tea and coffee cooperatives that were really working hard to put the farmers together and to get their crops in to the market. So at times they were making a lot of money out of this because they began very high value crops.

I believe we can do the same for food crops. If we can bring the market close to the farmers so that they're not struggling just within the limited existing markets of raw commodities and trying to make value-added products, so that they can be able to expand into the regional markets, into the urban markets, this is one way that we can go to pool the production and also to enhance the farmer incomes.

I know a lot of us think that these farmers are in it just for the food. I tell you, they don't look at farming as a business, but at the end of the day, they want to make some money out of it. And they don't have any scheme or any plan on how that is going to happen. So at the end of the day when they have this surplus and they're not able to make an income out of it, it's really a demotivation for them to continue to increase the production.

So I think those are some of the techniques we can use. But above all looking at the food supply chain and also looking at engaging partners, you know, private partners. We need investment, we need financing. Some of these processing technologies are those that need higher loans than the microloan we are used to in some of these settings like in Africa. So we need to investors to put in more money so that they can really enable this process as to purchase the \$10,000 equipment, the \$50,000 equipment, so that they can have good quality and create outlets for farmers.

Sonka Rajesh. We've - you and I - have kind of proven that context is important. And what is a small town? The words are the same, but the worlds are very different. Help us get the context of an Indian farmer and you're growing vegetables and they need to get to the market. What are the challenges? Give us a little flavor of how your product get s to the market. Where is the market and where losses occur and where you're working to reduce losses in that specific context.

Kumar As a farmer view - say, example, we produce a product, tomatoes or something, and the prices keep changing every day. There's no one constant price. Once you start, once the produce comes for the harvest, then you have people, a kind of intermediate coming around with a small truck and taking the product from us. And what he does is he consolidates in a different farm level, and he takes it to a bigger place, a bigger storage facility or bigger market. There it's being auctioned in the morning, early in the morning - four o'clock, five o'clock in the morning the auction it. And from there it's taken to another distributor to a different place, consolidated there from a small truckload to a bigger truckload. And from there it goes to different parts of the state or the country too.

And once it goes there, again, it goes by six o'clock it goes to the market, so five o'clock or six o'clock goes to another market in each smaller towns. And there again you auction it, and different small traders come there who have a petty shop in different parts of the town. They come there and they buy it, and then it'd be just the consumer. So we have a different level of intermediate in between, a different level of transportation, and the losses happen in every place. That damages, especially the main problem is about the damages. And since we don't know much of creating and those kinds of things, again the price, what you get in the market also is less.

Sonka That's a very important point, and we tend, in the state I showed earlier, we tend to talk in terms of quantity, but I believe in many instances, and certainly in the fresh, perishables, quality and quality loss is huge. I'm imaging in what you described that these tomatoes are getting handled three or four times. And is there a way, what do you see as potentially ways to reduce loss or declines in quality and whether we use tomatoes or another crop you want to use?

Kumar ...the most important thing is about supplying it directly to the retailers. That's the most important thing, because the problem there in India is we don't have a retail chain, a proper kind of retail chain. It's been happening in the past ten years, but it's not to that level, and whoever started the retail chain are not making profit. And they, in fact, most retail chain were started are downsizing their operation because it's not becoming profitable to them. And initially they had a big plan of procuring it directly from the farmers. But nothing much is happening in those areas because they themselves... and now they can't come to the market or come to the farm level to buy it.

Probably what we hope for is a foreign direct investment from opening of the foreign direct investment in retail, because India is one of the few countries where you don't have an investment in retail direction investment in retailing. But now the talks are going on. In fact, the law is going to be passed. Hopefully, it has to pass through the parliament to get the majority to be passed. And that happens throughout the world big retailers can put their stores in India. That's going to make a lot of difference in farming in India, because they're bringing technology. They invest a lot in cold storage chain, put up a store where you have again cold chain and help the farmers to produce a good product.

We've got one example which I can tell you about is Metro, a German "b to b" retail company which came to India probably some ten years ago, still there, but they couldn't expand the store because again the policy, because of the APMC Act, different kind of acts are there in India, which restricts the movement of produce from one state to another state. And those, when all those big retailers come into India, these kind of acts, these kind of acts are like very old acts, like 40 or 50 years, because the policy have not been changed for a long time. And these have to be changed in fact. In the first place, the policy level and changes have to happen for them to facilitate setting up a store. When that happens, you can talk about the chain or example of Metro, because they were able to do because of some, not to the consumer, it's to the business, "b to b". They were able to set the store in India in two or three places and they took a lot of farmers to facilities Vietnam, Thailand where this kind of similar farming happens. And those farmers are still doing, sticking on with them, and they are doing a good profit, and they directly come to the farm level, and they bring the trucks, directly to the farm gate, give a good price and payment is not a problem. When you sell to these kind of retailers, then you are not sure when you get your payment back. Those kind of things are avoided.

So hopefully the solution should be either Indian companies, Indian retailers upgrading to that level or bringing in foreign investment in like Walmart and whatever company to India to start their retail business.

Sonka You're interested in this topic. Did you want to expand on that a bit, about the foreign direct investment in India?

Klein. It's critical. I mean, we do, as you can imagine, a lot with Walmart around the world in Carrefour and increasingly with Metro. And India suffers, the numbers seem to be 40 to 50%, and I don't think anybody really knows the real reason. And it's because there's just a lot of built-in efficiency in the supply chain as was mentioned here.

So whenever a big market opportunity like that presents itself, you know that there's going to be sophisticated people getting involved with real capital, taking real risks. And so I think that's a good thing. There will probably be some employment loss initially, you would think because of people being disintermediated. But I think the thought is at the government level that more jobs will be created.

The cold chain opportunity is enormous there. The cold chain companies are lining up and can't wait. So real capital will be introduced into the supply chain. And think about this: If you could move from 40 to 50% weights to 20 or 30%, the kind of scale we're talking about in a country that's got between 200 and 250 million hungry people – you know, almost a quarter of the world's hungry live in India – that could be a real game-changer.

We're excited about it because we have a food bank in Delhi, the first food bank in India, and we think that there could be 400 food banks, because the need is that substantial in India. And so just being able to get food from here to there and not experiencing this loss – good, nutritious product is what we're talking about from the farm – could be a real game-changer here.

Sonka So we're about ten minutes left, and I want to accomplish a couple things. One, we'd talked about infrastructure, and we mentioned cold chains. Yesterday we had a really good breakfast meeting, a side-event session, and people pointed out that, well, without electricity, cold change may be a problem, and we talked about solar. What are some of the infrastructure – and if I can encourage you to give us just one or two kind of brief things about infrastructure that you see as particular problems in your world of reducing food waste and food loss, and whether those are government responses or some partnerships, help us understand a bit about the need for infrastructure. Betty.

Bugusu I think one of the things we need to look at is looking at commodity specifications and even standards and quality control in many of these countries. We've heard about HACCP, we've heard about GAPs. And I think this is in part the responsibility of the public sector, the governments setting up some of these laws and regulations and even going ahead and enforcing them and potentially the private sector coming in and helping to implement them in terms of training, certification, offering premium prices and those kind of things.

And also we want to look at some of the issues with financing. Much more, as I said these places we are operating, we need higher finances beyond microfinance. So looking at more of those private/public or whatever that can actually bring some mechanisms to finance some of these high-end technologies.

Sonka Jeff.

Klein I'm going to take a twist and throw you a curveball on this one, because I've talked a lot about cold chain. The single biggest issue that we have to deal with if people want to get serious about recovering food around the world, is to expand the regulatory protections and some of the tax regimes that we have in the United States.

There is a law in the United States that became specifically adopted in 1996, the Bill Emerson Good Samaritan Act, and really it allows any donor of food across the possibilities of the donation chain, as long as they believe that the food is fit for human consumption and they know that it's not in any way been compromised, they can donate that food, and if something unfortunate happens to the ultimate consumer of that food, there's a layer of legal installation that gives them the incentive to be a good Samaritan.

That exists almost nowhere in the world, and it's a huge issue for branded food companies who really, and especially in highly litigious countries where there's a lot of front-page risk, they just won't participate in certain countries. And it expands to the food rescue, which is the recovery of restaurant and hospitality food too.

The issue is - we take for granted in the United States, if you donate food or you donate money, you get some tax relief. That's very, very inefficiently applied and not always robustly applied, if at all. So I think if people get serious, policymakers really have to put some energy behind this, and there's a real cost to doing it - right? - through the tax subsidy. But that would be a real way to get people off the sidelines and into the game.

Sonka Rajesh.

Kumar My opinion that two things that should happen in India is processing facilities have to be improved in the farm level. Because what I feel is the production cost of this produce is it's very cheap in India. We can produce at very less cost. But since the processing facilities are not there, we are not able to take advantage of that. So if only we have a lot of procedures facilities around in the village level or town level, then we've got a lot of opportunities to export this produce also. In fact maintain standards, understand if we can do that, a lot of opportunities in exporting and internal consumption.

Again if you talk about internal consumption, then you have to let in the retailers to set up the stores, and then that's where the demand comes from. So this kind of process, produce can go to the retail store as well as the processing plant and from the processing plant it can go to export or to the retail store.

Again, the most critical point is, the two things that should happen is about setting up, coming out with more retail stores for the country, which again setting up a retail store is only one part. But the kind of investment they do, the whole kind of holistic approach they take makes a lot of difference in every area. So these are two important things that should happen.

Sonka Infrastructure is something that's just out there; we take it for granted. Visiting with a colleague yesterday, actually one of the people on our panel, Marcelo Montario from Brazil. He's the managing director of the Soybean Farmers. And Marcela is here and participating in the World Food event. And he commented at the breakfast meeting that he had driven out 150 miles to see a friend out I think south of Des Moines here. And he went on big roads, interstates, he went on the two-lane highways, he went on gravel roads, and he drove 150 miles back. And what he was impressed with - I could ask you, what do you think he was impressed with in that experience driving through the Iowa harvest-time fields? And his comment to us was, he didn't see any grain laying on the ground on the side of the road. But if you've been in Brazil in Mato Grosso at harvest time, if you're following a truck, the beans are dropping on your car.

And so lack of infrastructure and roads is significant and is something both public and private sector can work on. And I'm going to again change the rules just a bit. We talked about opportunities and opportunities in very different context. And so let's think about impediments. And if you have to choose in your context, what's the biggest general impediment? Is it regulations, policies? Is it knowledge? Is it knowledge about what technologies to use, how to apply them? Or is it capital and access to capital. Which of those three? You can only do one. You can't be an economist, you can't choose and do all of them. But which is the biggest...

Kumar The priority should be the government policy first and second would be the, the third would be the capital and second will be infrastructure facilities.

Sonka Rank 'em - that's even better, a better way to respond. Jeff, what do you think?

Klein Well, I touched on these a couple times, so I think the real policy commitment at the supernational level or the national level. And we've seen unbelievable... you should have seen the hockey stick when the Emerson law came into play, what it meant for food donations - it just went up exponentially. So I would say that kind of support from a good Samaritan perspective and tax perspective would be kind of one-two.

And then the undeniable lack of capital in the system, the cold chain - the rates of return. If I can put a refrigerated truck out on a route, I can show you an unbelievable impact on a per-truck basis. And if I have a whole fleet, the numbers start to get substantial.

Bugusu In our world I think it's technology and in particular innovative mechanisms to get these technologies to the stakeholders. And then finance comes in and the standards and the regulations that we talked about.

Sonka So we've spent the last hour trying to paint a mosaic. And a mosaic in my mind is about opportunity and challenges. And as kind of I hope has been illustrated, there's no silver bullet, as Betty said, particularly as we look around the world. And if we think about the responses to the last question, there's need at this general policy level. And it's not just in developing countries but with the good Samaritan law. And again the conference I was at in Europe, I think it's Italy doesn't have one and how that is impeding food recovery efforts even in Italy and other EU countries.

But it's also about folks on the ground and how we harness that energy and that opportunity on the ground.

I've greatly enjoyed the opportunity to learn from our panel. I've enjoyed the comments. They will be here, and I'm sure there are many questions and many more than we could even begin to address here in this format. But the panelists will be here and are certainly available. I will be here as well to respond to individual questions you may have as we go forward.

But with that, I'd like to ask you to help me in showing our appreciation for their contribution.