

CONVERSATION: PRODUCING MORE FOOD AND BETTER FOOD

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Philip Nelson – Professor Emeritus, Purdue University

While our panel is assembling here, we want you to know that this is a little unique presentation from the World Food Prize dialogue. We’re going to take a little different look at food security, we’re going to look at different angles — post-harvest losses as well as micronutrient content of our food supply. As we all know, filling one’s stomach doesn’t necessarily mean that you have a good life. And so it’s very important, as we move ahead in this discussion, that we look at it as a team. We’ve had tremendous advances in agriculture, but of course there’s much more to be done that involves the total food chain, not just producing more. So today we’re going to focus on reducing food losses and developing value-added markets for small farmers, and we’re going to have a great discussion on, how do we deliver micronutrient and prevent malnutrition?

You know, post-harvest losses are big numbers. No one, I don’t think, really knows how much food is lost after harvest. It could be severe, and in certain parts of the world it is very severe. And of course we realize that things are different in the communities; we don’t have regional storage facilities for many parts of our hungry population. It’s easy to forget that – here’s an example, Cambodia had a bumper crop of rice, but half of it was lost because there was no way to store it or distribute it. We’ve planted fruit trees in Afghanistan in an area where, once harvest, came they lost half of it; there was no way to get it to the marketplace before it spoiled. I always liked the Chinese saying, *Give a man a fish and he lives today. Teach a man to fish and he eats forever.* But I’m saying, “Teach a man to preserve his fish, and he feeds not only himself but his village, he creates jobs, and he makes money.

So with that background I’d like to begin our discussion today, and we have a really passionate panel, so I’m hoping I can crack the whip enough to keep this conversation going. But we’re honored to begin with the minister of agriculture of Liberia, Florence Chenoweth. There is no one in this room – I’m serious – no one in this room that has a more difficult job than Minister Chenoweth. Hopefully, she’ll give us some of her experiences. She’s trying to rebuild the ag sector and strengthen the rural economy in a nation that has really had years of conflict. Minister Chenoweth has served in numerous capacities — at the FAO in New York, the Gambia, South Africa — and I’m proud to know that she’s part of the Big Ten, a Badger from University of Wisconsin-Madison, where she still holds a professorship. Minister Chenoweth, please.

H.E. Florence Chenoweth – Minister of Agriculture, Republic of Liberia

Thank you very much. I’m so happy to be here today to talk about Liberia, because we are rebuilding. Some years ago it was completely broken. You talked about my past, Phil, with the United Nations and others. But my past started from Liberia, and it started when, at age 17, I heard of hunger in a way that I understood for the first time – when this man from our civil service came around to our high school and talked about career choices. At that time I wanted to be all kinds of things, including a pilot. But he talked about career choices, and he started with agriculture, and somewhere there he mentioned why some of us should study agriculture and become top agricultural scientists: because we could work to provide food for our country and keep our people from being among those that die from hunger in the world.

That day, I decided that I would study agriculture. I had to fight to go to our national university because the school of agriculture was out of town, and there had never been, as they call it, a girl, but way down, my lawyer father had made us read the Constitution and I knew that it was wrong to do this to me, and so I

decided to challenge my government. And I had to wait for nine days to be 18 to do that. But I became 18, and they bused me to college every day, for four years, as the only woman.

So my interest in hunger started a long time ago. It was heightened when I was recruited as a young professional during the world food crisis in 1973-74. And I saw that, yes, there are hungry people, so I would work for the rest of my life to make sure that we overcome this. It irks me that we are increasing in numbers, but I still have some good years, and I will continue to fight with others to overcome this.

So I am back in Liberia as minister of agriculture, something I started when I was, 32 years ago, in that position. At that time it was different. We had qualified people, and we pushed to get even more. We had a viable, world-class research institute. All of that was broken over the 25 years. We simply lost it all. But, you know, we are back, and we are determined that we're going to rebuild. And it's that determination that drives us every day, that drives me to head an agency or a sector that runs 17.4% under capacity. So I'm a teacher, every day, teaching from the legislature members, down to my staff, down to the farmers, that we can rebuild.

Recently in Rome, we celebrated the fact that Liberia and El Salvador were chosen as the two examples by WFP and the other food agencies that have increased their production and have worked with the [Purchase for Progress program] in such a way that 100% of the food that goes into our school-feeding program is locally produced. We've been back only four years. We went from one scientist borrowed from the UN system, the CGIAR system, a Liberian scientist, to six. Last night I just gave the authorization to hire two more, so we're gaining; we will get there.

But there are two things about our rebuilding that really, really we find difficult. We lost, more than anything else, the capacity; and the second thing is that we have, oh, so many challenges in the sector. We came back to a livestock sector completely decimated. Over 25 years, anything that walked became dinner. We came back also to a sector where our germplasm [was] completely decimated. Now how do you rebuild? But we are. We are planting seeds every day, building up our seed banks again. You heard yesterday we even have two commercial seed stores. We are getting one animal after the other. I don't have single vet in the country, but thank God for people like Vets Without Borders USA and Vets Without Borders Germany, now they have joined — you help us. Thanks to FAO for giving me five vets for eight months who could do some training. Thanks to all of those African countries that are taking our people for training. I now have four vets in the making and many more animal husbandmen who are getting there.

But what do I see beyond Liberia when it comes to hunger? I see that we are still approaching it not holistically. So we talk about market improvements, we talk about access, we talk about new seeds. But we're paying so little attention to nutrition. [We are] silent. Why? Is it because nutrition, lack of it, malnutrition, affects the very, very poor? I ask, why isn't it on top of our agenda, a priority? I fight. I fight to put it on top of mine. But then nutrition is one of those things that is neither in agriculture, it's neither in health — it kind of floats. So I'm quietly trying to push it into a direction where we can make it a priority and give it a home.

I'm also concerned about the fact that the emphasis, in terms of malnutrition, seems to be on food fortification, on supplements. Vitamin A — hey, we can get it from food. We can get it from food we grow. Why do we have to depend on supplements, I ask? Why don't we just make it, use the brains of the world, the 21st century? It affects more people than the 1 billion who are hungry, micronutrient deficiency. Let's use the brains of the scientists of the 21st century to develop, to breed those seeds, that we can grow rice that will provide the nutrients; that we can grow other crops, that we can give these seeds to small farmers, let them grow these seeds, and let them get the nutrition. It's a challenge. It's one of those things that I would like for all of us to say — just do it.

Philip Nelson

Thank you very much, Minister Chenoweth. I'm going to introduce the rest of our panel here very, very

briefly and very quickly. They all have stories to tell, and I don't want to take time going through their long resumés – these are people that are really at the forefront.

The first individual I'll introduce — and raise your hand — is Howarth Bouis. There's Howarth. He's director of HarvestPlus, a global program dedicated to developing and disseminating biofortified staple crops with improved micronutrient content internationally. We're glad to have you here, Howarth.

Also speaking from the perspective of higher-nutrition crops is Dyno Keatinge. Dyno is the director general of the World Vegetable Center that's located in Taiwan. I had opportunity to visit your campus, very impressive, and I know that as a crop agronomist by training he's worked on six continents and is an expert in tropical agriculture.

We also have with us Joseph Taets. Joseph is vice president of ADM, who oversees the company's domestic and export grain business and transportation. And I'm sure we'll have some good information from Joseph.

Derek Yach is senior vice president for Global Health at PepsiCo. At last year's Borlaug Dialogue, we heard from your president, and we know that PepsiCo is committed to helping the nutrition and the health of people around the world. He was the former executive and head of the cabinet at WHO, and he is key in addressing numerous health and diet issues.

And finally, by good luck, I guess, just got her visa the day before yesterday and arrived last night – this morning, not last night; even better – is Jacqueline Morette. She is president of the United Women's Organization of Poultry in Haiti. She's going to address us from a president's perspective on both of these issues and discuss how they can be related at the producer level. She will speak through an interpreter, but how many can understand French in here? So we have both. Some understand the French, but I think we need the interpreter.

I'm going to ask each of our panel members to briefly describe their passion — what is it that they can contribute to world hunger and world poverty? And I think we'll just go down the line here and start with you, Derek. We'll give you a few minutes. Hopefully we'll have time at the end for questions, so please continue.

Derek Yach – Senior Vice President for Global Health, PepsiCo

Well, thank you, and it's a real privilege to be here. I'd like to start with my own roots in medicine and remind ourselves some of the words of Hippocrates from 400 B.C. where he said, "Everyone has a doctor in him or her; we just have to help it do its work. The natural healing force is the greatest force in health." And then the line that I think many of you know, "Our food should be our medicine." That really is a line that for so long has been understood and is deeply structured in the wisdom of all cultures around the world, yet we don't actually structure the way we approach either agriculture or nutrition accordingly.

And we've seen over the last few years and the last decades that the focus on addressing health issues, for the middle class particularly, has been through medications, devoid of thinking about food excess or food quality. And food for the poor tends to focus on food for fuel rather than addressing the quality issues. I would hope that we can start making a significant change to how we think about the links between food quality, food quantity, agriculture, and the environmental roots that are going to be required for sustainability. I don't need to go into details on many of the technical aspects since I have colleagues here who are going to be far better qualified to go into it.

But let me just stress that I think what we've seen, even in the last week, has been an extraordinary convergence in approaching the fact that we won't be able to address the problems of hunger without critically looking at one unified food supply that is, at the same time, driving the reality that we have – rising levels of cardiovascular disease, chronic diseases, and diabetes – off the same land that is unable to provide the food required for hunger.

Unless we unify the agricultural thinking, and the nutrition thinking of those addressing undernutrition and the drivers of chronic diseases, I fear that we will only be slicing off part of the opportunity to address world hunger and do so in a way which will be profoundly unsustainable from an environmental point of view. And I would hope in discussion we can go into depth around some of the emerging conflicts that we have between the growth of our consumption trends fueling cardiovascular disease in India, China, and Africa that are going to have very serious consequences for the long-term access for the food needed for the poor.

You might say, “Well, what on Earth has PepsiCo got to say about this, given the portfolio that many of you, hopefully, have been enjoying during the tea breaks?” All I can say is that if you’d watched carefully, you would have noticed that our CEO last week made a major announcement around the creation of a global nutrition company within PepsiCo with a separate CEO, Mehmood Khan, who is also our chief scientific officer – which has a very clear goal, and that is to build a portfolio of products based on fruits, vegetables, nuts, whole grains, [grains] that are going to be closer to whole. And to do so we will not succeed without greater and stronger interactions with the diversity of agricultural interests represented in this room. The focus of the company will not just be on high-end markets but trying to make sure that we work with smallholders where the possibility exists to do so, to address their needs, and to diversify the kind of supplies that we’re going to need.

I think that what I heard from Raj Shah earlier today was extraordinarily promising, to think about how we might access the potential incentives that are being created in government for us to release the talent that companies have in addressing post-harvest losses – something that we have to do throughout our supply chain anyway, and have enormous expertise in limited crops’ areas, particularly led by potatoes, oranges, oats and, increasingly, chickpea. How can that knowledge be released for the public good in the very places where you’re seeing the kind of losses that you so well illustrated? How can the capabilities that we have in distribution excellence and metric-focused approaches be released for the public sector?

To date we haven’t had a vehicle to actually look at how this might feed into the public system in a way in which we’d both benefit. We have explored, and already have a number of, working relationships with the World Food Program where our retirees are working to improve the distribution effectiveness of the World Food Program’s efforts. But that is not enough. That’s a retiree-based program. We want to look at how we can embed many of our knowledge and capabilities we have into the pressing needs, particularly of some of the most underserved communities around the world. And, yes, we will benefit from that knowledge as well, as we apply some of the enormous capabilities and knowledge that farmers have on the ground about what works and what doesn’t work.

So in summary, I would hope that by next year, at the 25th anniversary, we will actually take the Hippocrates phrase around, “Our food should be our medicine,” further along and particularly think about how we might draw far more people with health and nutrition into debates, asking these tough questions around the direction that we’re taking that, on the one hand, runs the risk of drawing a schism greater between addressing hunger on the one hand, and overconsumption and excess on the other hand – all of which occurring at a time when the environmental threats are rising in front of us. Thank you.

Dyno Keatinge – Director General, The World Vegetable Center

Thanks very much indeed, and thanks to the first two speakers, because I have bad news for you. We had the elephants in the room yesterday, but we now have two much more dangerous species. We have two *Tyrannosaurus rex* currently with us. We have an older female, one which we all know, whose name is hunger, that ugly word, but not only called “hunger,” but poverty, ill health, and death. That’s one of those things that we’ve been discussing all week.

But Derek has released the second, and more dangerous, male *Tyrannosaurus* into the community, and his name is malnutrition, obesity, Type 2 diabetes, and metabolic syndrome. This is a bigger, more dangerous

creature. It's certainly more camouflaged, and that's one of the problems. But I can tell you that this particular killer is lethal and is pretty well everywhere in the world currently. We know that it is here in North America and also in Europe, but as Derek has indicated, that it's a severe problem in India, and we have at least a fifth of all diabetics in the world now are Indian; 10%, perhaps, of the Chinese population as a whole is prediabetic or diabetic. That's a huge number of people, and we have a problem on our hands. What are we going to do about it? I'm a person that likes to solve problems, not raise them, but I've raised this one.

Can I have the first slide, please? This shows you where Type II diabetes and malnourishment is particularly severe worldwide. And if you look at that particular list, what you can see is that (a) it's clear that Type II diabetes is not a genetically induced disease but a dietary-induced disease, and it occurs in small, vulnerable states, it occurs in rich states and occurs all over the world. But interestingly, if you look at numbers 10, 11 and 12 and 13, that's where China and India and places will be coming. But this is where we now have to start to tackle this second dinosaur, and we are certainly in the process of trying to do that.

Next slide, please. Now, it may come as a shock to many people, but if we're going to challenge this scourge of malnutrition, we have to get people to change their diets. And we have to get them eating balanced diets which are appropriate for their health. And this means consuming more nutrient-dense fruits and vegetables and reducing excess carbohydrate ingestion. Now, for this to happen, products need to be available, accessible, and affordable. And that, in turn, means that the agricultural research community, the health and nutrition community, the food and beverage industry must work together in coalition to find solutions to current production, post-harvest, and domestic science issues, which can promote availability, lower prices, and reduce post-harvest losses of agricultural commodities.

And this research and development effort has to be done in parallel to the drive to increase the size of the pile of rice or maize or wheat – and I say amen to my colleague, Bob Zeigler, the DG of the [International] Rice Research Institute, because he's doing a fantastic job. But we also have to do these other things in parallel as well. And it's very clear that most of these additional research tasks are not being funded properly. And I believe that to be appropriate, because my *cri de coeur* is this — It's not good enough to be able to feed the world in 2050, if at the same time we fail to nourish it. And therefore I apologize to David Beckmann, who I believe may now need to change the name of his NGO from Bread for the World.

So vegetables, I believe, are the key products that can serve to close these nutrient gaps in both minerals, vitamins, and folates. However, it's today vital that we recess our current strategy of breeding primarily for yield and appearance and consuming vegetables with very low nutrient density. It comes as a surprise to me to discover that not all vegetables are created equally. If we look at the blue columns, you can see that standard tomatoes that you might get in a hamburger, and the coleslaw that goes with it, essentially have almost no nutrition whatsoever — little vitamin A, tiny bits of vitamin C, and not much else. And yet if you look at the other green leafy vegetables which are being put forward in this particular slide, you can see that they are in fact highly nutrient dense: full of vitamins, full of minerals, and full of important issues like folate.

And yet it's a surprise to me, and a shock, really, perhaps for the rest of you, to discover that virtually no attention is being paid in terms of research and development to the green leafy vegetables named there. Aibika, for example, *Abelmoschus manihot*, is the nearest relative of the okra. I can tell you that no research dollar has been spent on this species in the last decade. The germplasm is not collected, and it is not bred in any way.

Could I have my next slide, please. So I believe in summary that the issue of malnutrition can be dealt with in several ways, and they're illustrated here, and my colleague, Howie, will be dealing with biofortification. But my contention is very simple – that the best way of dealing with malnutrition is to eat a varied and balanced diet, and fruit and vegetables have to be a major component of those diets.

So thank you. Maybe it should be “Biofortified Bread for the World.”

Okay. I have three points that I'd like to make, and I have three slides, one for each one of the points. The first point I want to make is that the Green Revolution initially led to better dietary quality. So let me develop that a little bit and with the help of this slide. When I look at diet, I like to divide them into three groups: First of all, the food staples, which are the brown in that slide. Second of all, the non-staple plant foods, which are the green in the slide. And finally, the fish and animal products, which are the red in the slide.

The staples, of course, are the cheapest way to get energy to keep from going hungry, but you need essential minerals and vitamins for a healthy life, for a productive life; and those are mainly provided by the green and the red in the pie charts. Now, the non-staple plant foods are more expensive than the staples, but not as expensive as the fish and the animal products, so if you want a high-quality diet, you want to avoid mineral and vitamin deficiencies, you have to eat a lot of those foods in the green and the red.

Okay, let's get back to the Green Revolution. What happened? From 1970, roughly, 'til 2000, populations in developing countries doubled. But the great feat of the Green Revolution was that cereal production more than doubled, increased by 150%. So what happened to cereal prices? Well, these data are for Bangladesh; they were collected in 1995-96. Cereal prices, rice prices, in Bangladesh fell during that period by 40%. But when you look at the other parts of the diet, what happened to production? Production increased, but it only increased by 25-30%. You didn't have the technological change for those crops that you did for rice, for wheat, for maize.

Fish prices in Bangladesh doubled over that period. The prices of the non-staple plant foods, they also doubled during that period. So the good news is that rice was cheaper for the rural poor, but the foods that provided the quality, the minerals and the vitamins, became more expensive. So what these pie charts show is that rice provides 80% of the calories for these rural poor. Fish and animal products, only 3%. But the pie chart at the right shows where they're spending their money. You can see that it's something like 20% of their food budget is going for animal and fish products, which is something like 15% of their total income. This is where the poor want to spend their money; these are the kinds of foods that they desire, but they're constrained by income. And you can see that the rising food prices for the green areas and for the red areas make it more and more difficult for the poor to purchase those foods. And this is why we see so much mineral and vitamin deficiency in developing countries.

But the lower rice price at least was able to free up some food budget for the poor, so at least they had some more money that they could spend on the green and the red areas. So that's why the Green Revolution contributed, helped to mitigate the rising prices of the non-staple plant foods and the fish and animal products.

Okay, now if we go to the second slide, now, what I've done, I want to ask, what happened? You saw food prices in general rise a couple of years ago, and I want to discuss the consequences of that for dietary quality. Now, what you have on the left is how their food expenditures were distributed in that original, in that first slide; so, about a third of their income went for spending for food staples for rice, and then, between the green and the red, about a third of their income went to buying dietary quality, and about a third of their income went for non-food items, for education and all the other things that they need.

Now, what we've done here is we've simulated a 50% increase in food prices across the board. What happens? The poor defend their food-staple consumption — that's what they need to eat to keep from going hungry. So when all food prices go up, they spend what they have to, to keep eating as much rice as they did before. And so what happens is, you can see the after on the right-hand side: people have to reduce their expenditures for everything else. So there are severe consequences for dietary quality when food prices go up. So in this simulation their energy intakes went down by 15%, but, for example, their iron intakes went down

by 30%. And these are people that are already suffering from severe iron deficiency, and their iron intakes decline by 30%. So food prices strongly drive the ability of the poor to have a good quality diet.

Okay, now the third slide and the third point that I want to make is that those food staples traditionally – the varieties that we currently consume – they're not dense in minerals and vitamins. But through plant breeding we can increase the levels of vitamin A, of iron, of zinc in the food staples and thereby do something to help reduce the micronutrient malnutrition, which is becoming worse because of the increases in the food prices.

Now, these are some data from Mozambique and Uganda where we introduced orange sweet potato into the diet. This was a population that eats white sweet potato, which has no vitamin A. So the orange sweet potatoes are just as high-yielding, just as profitable, but by getting these households to switch to the orange sweet potato, we were able to double their vitamin A intakes. So whereas the food staples before did not provide any vitamin A, now they're providing 50% of the vitamin A in the diets, and they're adequate in vitamin A consumption. Now, our Project HarvestPlus is working on high-iron and high-zinc rice and wheat and pearl millet for South Asia. We're developing high pro-vitamin A maizes, high pro-vitamin cassavas, in addition to the sweet potato for Africa, and also high-iron beans for Africa. And within the next two or three years we'll be introducing these varieties. So thank you.

Joseph Taets – Vice President, ADM Grain Group

I'll make my comments, my opening comments, rather brief. Thank you, Dr. Nelson and the organizers of this event. We as ADM see this as a great opportunity to present what ADM is doing, what agribusiness and agroprocessors are doing to make better food, to make more food. I'll really focus my opening comments on four areas: investment in agriculture, promoting sustainable agriculture, partnering with industry experts, and leveraging our assets, our expertise, and our resources to make a difference.

In investment in agriculture: my division, the Agricultural Services, is a grain division of ADM. We are that key supply-chain point to transfer from farmers, both small and large. Through that transformation we have invested a lot of money in infrastructure. The infrastructure we see as being a key, critical point in eliminating or reducing post-harvest losses.

In the promotion of sustainable agriculture: we have numerous programs globally where we're working with farmers – again, both big and small – to promote sustainable agriculture. I'll give you an example of one program. In Brazil we're working with small farmers in a program called, "Doing it Right." We're in alliance with a group called Aliança da Terra and there we're educating and working with farmers and helping them produce more food, better food, in a sustainable, responsible way. It's been a very successful program, and it's helped farmers really increase their productivity and getting the right results in the right way.

We're also partnering with industry experts, both in the public and private sector. I'll give you one example. We're working with the University of Illinois and the University of California-Davis on a post-harvest project where we're trying to work to help solve and eliminate post-harvest losses, both in cereals, oil seeds, grains – but also in the area of fruits and vegetables and other, more perishable products.

And lastly, leveraging ADM's expertise, our assets, our resources, you know, our industry expertise. We have numerous examples. I'll give you one, and I think it leads in well to the next speaker. When we had the natural catastrophe in Haiti this past January, we suddenly found ADM, because of its vast assets and resources, in a unique position. We had 700 metric tons of rice in Haiti in an area of the country that was not damaged by the natural catastrophe. We made a donation. We worked with the World Food Program, and we made that rice immediately available to Haiti. And I think it was a key, critical example of how agribusiness can and should work to leverage its assets, its expertise, particularly to react in a time of critical need. Thank you.

Phil Nelson And now let us hear from the grassroots level. Jacqueline.

Jacqueline Morette – Farmer, Pouly, Haiti

Thank you very much. It's a pleasure to be with you today. Despite all the difficulty we faced, we finally arrived this morning. We thank everyone who contributed to make my presence this morning possible. I am from Haiti. I'm from the Centre Department in Lascahobas. My community's name is Pouly; it's a rural section of the country where we have – most of us are small farmers. I am from the Association of United Women in Lascahobas. Our concern is on women.

In brief I am going to talk about our work in the agricultural sector since 2002. And we began to do this because we saw the condition in which the women were living in the area – because as small farmers, we noticed it was very difficult; the irrigation system was deteriorating, and we figured we must come together to do something. And as a result of that, we began to see how we can augment our production. Because of that we began to see how the women small farmers could increase their income. As you might know, in Haiti we have a big gender gap. And that was the way we saw to narrow the gap – so, to increase women's level of income. And then, since then, the men join us to work together to improve the agricultural sector. Now, since the level of education [and] sensibility between men and women [rose], that also led to the issue of nutrition that several speakers have mentioned. We educate the population about not only cash crops but also [crops] to consume.

As you know, in Haiti the government is very negligent toward the agricultural sector. And that has marginalized the infrastructure in the rural areas such ours; in many parts they are in bad shape or they are nonexistent. Much of the country is mountainous [and] we are heavily dependent on rainfall; [at] times [of] too much rain you would lose [soil], or too little rain you would lose. So much of our agriculture is very subsistence-level. And all of this condition affects our capability to produce, our capability to market, as well as our well-being as rural Haitians. And despite all of our effort, the majority of Haitians are facing food insecurity. Thus, we have a lot of our kids are malnourished. For those who live in high areas who are heavily dependent on rainfall, if they have a good season, it's good, and if not they are in serious difficulties.

One of the biggest problems we have is the country is heavily centered in Port-au-Prince, the capital. And all of the assistance we could get, like extension services – those who provide the services live in Port-au-Prince. And thus we in the rural areas are essentially by ourselves. As a result of that, we are using very primitive ways to cultivate. We do not have access to mechanized ways like tractor or other tools for production. And there is no other way for income, and there is no other way to work efficiently. One of the ways we do this in Haiti is what we call “*konbit*,” which is working together. Because of everything we have said – that has a huge influence on leading many of our small farmers to get discouraged and stop, in many cases, cultivating.

And one thing in this process that I would like to mention here is, we have a lot of our supporters in the United States and abroad, in the international donor community; I suggest when they help us – much of the help stays in Port-au-Prince, I would say close to 90% of it is Port-au-Prince. We in the rural areas have not seen much. Thus, I want to stress how important it is to have a level of decentralization in this process. That's why we are stressing local cooperatives in order to facilitate those small farmers' ability to produce.

For example [of] some difficulties that we face — if you have a small piece of land, you don't have seeds or even fertilizers, what can you do? And as I mentioned, the issue of infrastructure, and some of the colleagues have mentioned, we have high rate of post-harvest loss. Our effort, as I mentioned, our effort at the moment is to increase production and educate the population how to use whatever small, meager transportation system we have to reduce as much post-harvest loss as possible. And we are now trying to create the programs that are outside of agriculture to provide employment so that people can improve their income.

To finish, I want to emphasize that any assistance we receive from the U.S. and any other organization, they need to concentrate on the work of women small farmers. And as I mentioned, they need to be decentralized. And we hope that the decentralization is in place to make sure that the assistance arrives to the rural areas to help folks increase their level of income. Thank you very much.

Philip Nelson

The line has already started for asking questions, so I think we'll go immediately there. Please, please, please, speakers — ask a question, so that we can get through our group there. Don't give us a statement, please.

Question

My name is Stephen Lauer. My question for Madame Morette is, how do you see opportunities for other organizations, NGOs, other groups to really put you in the driver's seat to be making real decisions about the development process? And other panelists, if you have programs that do such, I'd be curious to have you share.

Philip Nelson

Can we answer that, anyone, please? Yes.

Jacqueline Morette

As I mentioned, the issue of centralization is huge. And since the earthquake on January 12, things have gotten worse in terms of centralization — everything is in Port-au-Prince. The very first thing — the fact that I'm here is already a big help, because the organization that has brought me here is one that is in the local areas, and it understands and it sees what is happening in the rural areas, and it is one of the reason that it put me here. And this is a big step, as I said, and any other organization that would like to do this, this is the way to do it, is go directly to the rural areas.

Philip Nelson

Okay. I think we'll move on to the next question, please.

Question

Dr. Alan Koslow, and I first want to thank Mr. Taets. Having been in Haiti within two weeks of the earthquake, I saw the effect of your company's aid. To Mr. Taets and Dr. Yach, back in 1968, I did a term paper on how irradiation would decrease wastage in the food chain and would decrease the cost of the food chain. And that was in 1968 when I was in high school — and there still is no large-scale irradiation being done to decrease this wastage, and now I would add, decrease global warming. What are your two companies doing in this regard?

Philip Nelson

Yes or no?

Joseph Taets

When you have a diverse panel like we have, I actually wonder if our moderator might actually know more than myself on the subject. It's outside my area of expertise within ADM, to be completely honest. So I don't know the answer.

Philip Nelson

In a response, it's very limited, as you know. Unfortunately, the consuming public, those that can afford it, fear the glow in the dark if they eat some irradiated food, which is untrue. So public interest and concerns have prevented irradiation from finding its role. Now, there are some companies that are beginning to make breakthroughs for ground meats and others, but it's not widely used. Next question.

Question

Thank you. David Lambert. You've touched on this, but I just want to tease it a little more. When you examine the eight or ten causes of the food price hike in 2008, what relative weight do you give to increased demand for animal source protein in East Asia? To what extent is that expected to intensify? And what are the implications for food prices and for nutrition in the next 2-3 years?

Philip Nelson

Boy, that is a great question. Who wants to tackle that?

Derek Yach

I recently served on the Institute of Medicine Report on the future of cardiovascular disease worldwide, and certainly the feeling of that committee was that this is a significant contributor not just to food prices but to the rise of cardiovascular disease and saturated fats entering the markets of populations where, previously, this has not been important. Long term, of course, because of the ratio of grain use by livestock in that part of the world and what it'll do, we believe that it'll have inevitable consequences if we continue down that path – inevitable negative consequences.

Philip Nelson

Dr. Bouis, do you have any comments on that?

Howarth Bouis

Well, I think that in the long run you can expect the same things to happen. The price spikes, I believe, happened because of short-term supply problems. But there's an underlying demand for the cereal grains because of the livestock consumption. So that's there, and when the world economy comes back, you're going to see the pressures on the prices to increase again, I'm pretty sure.

Philip Nelson

Our next question.

Question

Yeah, my name is Dr. Tom Herlehy; I'm with Land O' Lakes. I really appreciate this panel. I wish it had come at the beginning of the conference instead of the end. I especially liked Dyno's first slide where he talked about the countries that have the highest rate of diabetes. I first went to Egypt in 1999, and the first time somebody in my office asked me if I wanted a cup of tea or coffee, I noticed that it was actually a cup of sugar in which they dipped a teabag. And so my question is: Why aren't we hearing about "white death"? And who's going to do something about the fact that government subsidies and government quotas just continue to encourage poor people to consume calories, like bread, in Egypt, and sugar? And I couldn't get

over the fact that of those countries on the slide, most of them are sugarcane producers, or they have this entrenched social custom, subsidized industrial interest — which is pushing sugar.

Philip Nelson

And your question is?

Question

Who's going to do something about getting people off sugar?

Derek Yach

I don't want to take too many answers, but we obviously have a large batch of sugar in our portfolio, and so it's tough when — last year, I don't think we could have expected that, by this year, I [would] tell you that we have made a commitment to lower the sugar content in our portfolio by 25% over the next decade, and have accelerated dramatically our search for natural sweeteners and other approaches. And second of all, we've also made a commitment that by the end of next year all full-calorie beverages will be out of all schools, worldwide, that we directly supply. Other beverage companies are joining us in that second commitment in the junior school category.

But I think it raises a deeper issue, and that is: How do we lower the propensity for sweetness as populations start increasing their higher-end products? And that's not an issue that is on the agenda of many of the researchers on a worldwide basis. The key, I think, lies in some of Dyno's comments — diversification of the food supply, and letting people, children particularly, much earlier in their life, be challenged with a diversity of flavors and tastes that fruits and vegetables and herbs and spices bring, rather than give sugar so early that they are put on a curve for sugar love, which is wired into our system — our body.

Philip Nelson

Pedro.

Question

[Pedro Sanchez] I'm going to break your rule, Phil, and make a comment.

Philip Nelson

Oh, don't do that to us.

Question

I think you'll like it.

Philip Nelson

Can we cut off the mic here?

Question

My comment is this. These two issues in this panel are probably the two most important issues in terms of new areas of research and development.

Philip Nelson

You can keep talking.

Question

I thought you were gonna like it. And I'm a soil scientist, and you know I'm trying to increase yields and all this, but I feel with the experience in our Millennium Villages, that harvest losses and pre- and post-harvest losses – aflatoxin, infections in peanuts and so on, and harvest losses – is a real low-hanging fruit in terms of increasing effective food production. I don't think we're paying sufficient attention to that at all. Most of the numbers are anecdotal, and I am making a call here: Let's get serious about research in pre- and post-harvest losses.

Philip Nelson

Thank you, Pedro.

Question

I'm not through.

Philip Nelson

Oh, you're not through.

Question

I'm not through.

Philip Nelson

You've got someone behind you there, so you must hurry.

Question

The second call I'm making is: Let's also get serious in terms of investing [in] the agriculture-nutrition linkages. They're not as simple as we thought, and there is a huge area of investigation there. So that's why I say these two topics put here, I think, should be some of the high-priority topics for the future. Then I'll shut up.

Philip Nelson

Perfect, thank you. Next.

Question

Well, Dr. Sanchez is a good prelude to what my question is. One of the most critical problems with nutrient-dense vegetables is their perishability. And I'm very interested in — particularly I'm asking Minister Chenoweth and also Dr. Keatinge — what are the best, cost-effective techniques for rural cold chains and for local processing for preservation and extended shelf life for these vegetables? And who's leading the work in that area?

Philip Nelson

Dyno?

Dyno Keatinge

Well, first of all, may I say something in response to Pedro, which leads on — we know that only 10% of the research money over the last decade has gone into post-harvest research versus 90% for production. But there is a lot of current technology which is available that can be applied almost immediately — modified atmosphere packaging, solar drying — a whole range of different things which can be applied to these products and can not only increase their shelf life but can improve the seasonality issues which are associated with it as well.

Philip Nelson

Good. Would you like to speak?

Florence Chenoweth

Just to say that especially for those people who are not the urban poor, because they have access to the fortified foods, but the rural poor. As I said before, getting those seeds out there, getting those varieties that will provide the micronutrients. And then we can work on encouraging or training, or whatever, people to eat [what] is available to them, [what] is right at their doorstep. But I agree with you. We are also using some of the solar drying, and that is helping.

Philip Nelson

Very good. Next question.

Question

About Liberia, a friend of mine was there recently, and he thought the food situation was really, really bad. So I would like to hear from you — what strategies do you have as a government to improve the food production there and make sure people have enough food?

Florence Chenoweth

You can look at this, the Liberia situation, as being the cup half-full [or] the cup half-empty. I look at it as being the cup getting there to that half-full. Food production overall is far below what we need to have it. We are a country with 45% of our people food insecure; 19% chronically hungry; over 70, almost 80% unemployed; 43% [of the population between] zero and 15 — huge challenges.

So, yes, it is bad. We cannot describe it as good. But we are trying to diversify food away from just our staple rice, to producing the sweet potatoes, to producing those food products that are higher in food nutrients and not just carbs. Peanuts, for example, are one of those things that we're trying to expand production of. But, you know, there's this thing about customary, and all of those things surrounding customary values. There's this belief in the poorest spots that if you give children peanuts when they're young, it will spoil their skin. We're trying to work on that, because we show them – you give the child a peanut, you see how hungrily the child eats. So I think we're making some advances there. Also with fish production. Most of our country is away from the ocean. We are massively digging fish ponds, pushing aquaculture. The problem is, I cannot keep the fingerlings in those ponds long enough. They get this size, and they become dinner. So we're working on different fronts.

Philip Nelson

You know, there is still quite a line there, and I'm being told that we've got just a few minutes. But if you could just state a question real quickly and we'll keep moving here.

Question

Sure. I promise there'll be no monologue.

Philip Nelson

Unless you're Pedro — I liked Pedro's comments.

Question

Yeah; I haven't won the World Food Prize yet. My name is Mark Kahn. I'm from Omnivore Capital, and this question has to do with post-harvest losses and technology to prevent post-harvest losses. In India, where I live and work, we saw the wheat harvest this year essentially spoil because the government procurement agencies sucked it all up, put it into unexposed warehouses, and watched it rot. Now, there has got to be a better way to do this.

And the question that I have is: What technologies exist right [now] – other than the American-style large silos, which are not practical in the Indian context yet – to allow on-farm storage capacity to increase at the smallholder-farmer level; so that the farmer, instead of selling the grain immediately into the FCI, Food Corporation of India, or whoever it is, on a fire-sale basis, can hold the grain back until they can get a good price or until the government can absorb what they can, sell that, and then take more? What technologies are there that can be scaled down?

Philip Nelson

I'm going to reverse this to Mr. Taets.

Joseph Taets

I see numerous examples of, I would say, not-very-sophisticated storage techniques that actually would work in this instance. One is the use of a – it's almost like a silo bag. I've seen it work in Turkey in the case of sunseed. I've seen it work in South America in oil seeds and in grain crops, and it's simply a, more or less, a plastic sack that is like a long tube. Now, in the case of wheat in India – I've never seen it storing wheat, but I know that that technology is even coming to the United States to a lesser degree. That might be one option.

I would add, in the case of post-harvest losses, it's a lot about the efficiency of the supply chain – not only storage but it's transportation. It's about having a developed processing industry that can receive commodities. It's about partnerships of public and private sectors working together. It's about efficiency of supply chain and transportation, having trucks and rail cars, barges, seagoing vessels. It's really not one issue; it's a combination of dynamic characteristics that really make supply chains inefficient and lead to post-harvest losses.

Philip Nelson

Thank you. I'm going to stop our questioning. I'm sorry. We'll catch you later. But I want to talk to the panel. You're in an elevator. You've got one sentence or less to make your last comment before you get off. Would you want to start with one last comment?

Derek Yach

The roots to better health have always been through agriculture. We need to let that single message be known more widely and bring together the two sectors in a much more intimate discussion.

Florence Chenoweth

We cannot get away from feeding people. 1 billion hungry today — let that number not go up. We need to grow more food, but grow more healthy food and cut down on the losses.

Dyno Keatinge

I can deliver enhanced nutrition to large numbers of people, but not with both hands tied behind my back by lack of money.

Howarth Bouis

Minerals and vitamins are not a luxury – they're essential. Vitamin A supplementation trials reduced child mortality by 23% across developing countries. Iron deficiency lowers cognition. Agriculture is the main source of minerals and vitamins. When we talk about – agriculture needs to increase incomes, it needs to reduce poverty, all these things are great, and that's what we always talk about. But an essential role of agriculture is to provide minerals and vitamins for a healthy, productive life. And we have to talk about that role much more.

Joseph Taets

In preparing for this presentation, I came across a quote from Mother Theresa. She said, "If you can't feed a hundred people, feed just one." And what I took away from that was, whether you're a large corporation or an NGO or a personal individual, we all collectively have a part to play in more food, better food and solving world hunger.

Philip Nelson

And the last sentence from our farmer.

Jacqueline Morette

We say thank you for all the help you have already given to us. As you know, agriculture is a motor that would permit a country to develop. We hope that you will continue to provide us assistance, especially with machinery, so that the peasant will be able to get some relief. Thank you very much.

Philip Nelson

Well, we are at the end. I'd like to spend at least two more hours, but unfortunately that's not going to happen. Let's thank our panel members again.