

INNOVATION: AN ESSENTIAL INGREDIENT TO FEEDING 9 BILLION

Speaker: James C. Borel

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Introduction:

Ambassador Kenneth M. Quinn

President - World Food Prize Foundation

So I want to tell Eric Pohlman, if he's still here, that tomorrow morning there's a good chance Howard Buffett, who's speaking at 9:00 a.m., will run up and hug you – I don't know if he'll kiss you. But when you said Coca-Cola was the most effective disseminator of information in Africa, he's on the board of Coke. He's there meeting now; he's flying here tonight from the board meeting. And I just want to say – when I worked in villages in Southeast Asia, it wasn't Coca-Cola that was most effective, it was cigarette companies. And if you wanted to know what farmers wanted and how to motivate them, I would tell all my workers from USAID, "Go and talk to the cigarette companies, because they understand the minds of people in rural Southeast Asia." I'm so pleased to say that it's not cigarette companies anymore anywhere who are doing that.

I also want to mention one thing. You heard Her Excellency President Banda talk about what happens when economic issues take away land from farmers. You come to Iowa, you have to understand one thing – 1933, there was an insurrection in this state by farmers because land was being taken away from them and sold at auction. And the governor had to send the state militia to enforce the law. So this works in both places. And what solved it here was two things, three things, really – building the road infrastructure so that Henry Wallace's hybrid corn that he developed at Pioneer Hybrid could get out to people, down those roads, and the Iowa State University extension works with the newest science. And it transformed this state, and there's probably stories like that everywhere.

You also heard about the farmers having an acre of land. Last year Emma Naluyima from Uganda was here, explaining how she, as a business person in Uganda, grows on just one acre – like Eric Pohlman's One Acre Fund, she's on one acre – amazing success. Just have to transfer that.

So with that in mind, I want to introduce our next speaker, who is a personal friend, Jim Borel, the Executive Vice President of DuPont. I told folks yesterday I was at Expo Milano. And, you know, you go there and all these fancy national pavilions, and they're wonderful to see. But the most important thing, aside from my conversation with the pope, of course, was to go to the session that Jim Borel and DuPont organized with the economists and talked there and laid out... The Economist Intelligence Unit laid out this picture of the future between now and 2050 and what everybody's going to be talking about in Milan tomorrow. And the economist analysis and Jim's commentary was the big question – Are we going to be able to sustainably,

nutritiously produce food to feed 9.6, 9.7 billion people by 2050? And the answer was – No, we’re not on course, and we won’t be able to do it without innovation. And I’d say without the roads and without a lot of the things that were just talked about.

Jim and Marsha, who were so gracious to me before, are also Iowans. Jim and Marsha have a wonderful relationship with Iowa State University, and they’re patrons of the arts. And they commissioned a wonderful Iowa artist named Rose Frantzen from Maquoketa, which is Marsha’s home town; and she has done this magnificent painting. I think you can find it online. It’s at the Brunneir on the campus of Iowa State, of Henry Wallace, George Washington Carver and their legacy.

So Jim has been, as I said, Executive Vice President. He has responsibilities across the company, including with Pioneer, DuPont Pioneer. Their president and CEO, Paul Schickler, is here – great friend of the World Food Prize. And I’ve been working with Jim since I came back to take over the World Food Prize. He was named to his current position in 2009. Please join me in welcoming my friend, Jim Borel.

James C. Borel

Executive Vice President, DuPont

Thank you, Ken. It’s always a pleasure and an honor to be here. And thanks for the maybe overly generous introduction.

But as I look back, I’ve been fortunate to spend over 35 years in the agriculture and food and related science industries. And one thing that’s become remarkably clear is that global food security is a complex issue that’s going to require one common element for every solution, and that is innovation.

We need innovation on a lot of fronts, certainly science and technology, but we also need it in government, in finance, in health and farming and economic development, in order to really tackle this challenge successfully. And we need food manufacturers and specialty food ingredients companies that can help with the nutrition side, play their critical role in being able to provide nutritious and high-quality food.

Recently, I had the opportunity to spend some time with Mrs. Millicent Wanja Mworira, a smallholder farmer from Meru County, Kenya. She likes to be called Wanja – it pays a tribute to her mother, and it always makes her smile. And her transparent interpretation of life in Kenya as a widowed farmer was inspiring, and her efforts to manage her nine-hectare farm while raising six children remain in my mind. After her husband died, Wanja, like many Kenyan women, was nearly disinherited from the land; and she had to fight in court for many years for the right to keep it. After she was denied the thousand shillings of financial assistance to be able to reestablish the farm, Wanja swore that she would never beg or borrow again. Instead, she dedicated her effort to caring for her six children (all, by the way, who graduated from college) and putting her work ethic and her agricultural knowledge to work and to test every day by transforming her land by hand.

Three things that Wanja is extremely passionate about – family, education and sustainable farming. She’s a leader within her community. Millicent, or Wanja, is sought after by area farmers for the tremendous insights that she’s gained through several decades of farming in Kenya. And today, as we celebrate the International Day of Rural Women, I can clearly hear Wanja’s voice telling me, “It will be crucial for us as a society to help unlock the potential of women to do better farming, to generate income for their family.” This, she believes will provide continual impact.

And I want to take a moment to let you hear directly from Wanja as she shares her perspectives on being a female farmer in Kenya.

VIDEO

When we think about how to confront global food security, we need to remember farmers like Wanja and particularly the local challenges that they face. And at DuPont we’ve immersed in food security and nutrition challenges for some time, and we’ve come to realize an important but simple concept – you can’t solve a problem until you can measure it.

And so in 2012 we teamed up with the Economist Intelligence Unit to develop the Global Food Security Index to measure a complex set of issues and vulnerabilities in 109 countries around the world, across 28 indicators that together define food security. This index is the first to comprehensively measure across three dimensions that are globally accepted around food security – availability, affordability, and quality and safety.

And since the launch of the Food Security Index in 2012, we’ve continued our collaboration with the EIU to facilitate discussions in countries around the world, all focused on – how can we collectively pool our resources and make better decisions and take better action? And armed with a common language to discuss the root causes of hunger, governments and public and private sector entities can work together to make better-informed decisions that we think will be able to drive more sustainable results again at a local level.

Governments have reached out to learn more about country-level data to better understand food security in their situation to help them prioritize their efforts. NGOs, like the Aspen Institute, are using the index to determine which countries to focus their efforts on to advocate for food security policy improvements. And they’ve started also to explore the relationship between women’s reproductive health and food security, by using the index framework, along with other information that they’ve gathered. And private sector companies are using the index as a launching pad to explore food consumption.

At DuPont, we’re using the interactive tool to guide where and how we innovate in new technologies and processes and approaches that are all going to be needed to pave the way for sustainable food security solutions. This summer the Economist Intelligence Unit released the 2015 Global Food Security Index that showed that food security had actually increased across most of the major regions of the world over the past year, but clearly challenges still persist. And the index points out that innovation is a key component to the solutions that are radically going to improve food security. Without it, we will not be able to sustainably feed the nine or nine to ten billion people we expect. And from investing in the advancement of biotechnology or confronting malnutrition through biofortification, we’re investing in small family farm

productivity or digital soil maps or portable soil testing kits or post-harvest grain storage. Agricultural innovation is actually ramping up on every front to help address this global challenge.

But we need to remember that we need to produce more food in the next 40 years than we have produced in the last 10,000 years. Right now we're already living beyond our means. We currently consume about 50% more natural resources than the earth's ecosystems can replenish. This infographic from the World Wildlife Fund depicts graphically the demand placed on our planet in recent years and the demand that's projected for the future.

Between 1961 and 2003, the impact of human activity on the planet's ecosystems increased by 150%. If the current trend continues, by 2050 we'll need a second planet, a second planet in order to be able to meet our demands for energy and water and food and shelter, as well as to absorb our waste.

And burgeoning population is often – gets the bulk of the attention when we talk about food security discussion, but there are really five trends that I think we need to keep in the front of our minds as we think about improving access to safe, affordable, nutritious food within the confines of the one planet that we have. Those are: rapid urbanization, rising incomes and changing diets, low agricultural and food productivity and particularly among smallholder farmers, environmental changes and food waste.

And in the interest of time, I'm going to focus primarily on three items that I think, if we keep them prioritized in our agendas, we will be able to turn the tide on global food security; and those are: rapid urbanization, agricultural productivity of smallholder farmers, and food waste.

So first rapid urbanization – we're living in the midst of the largest wave of urban growth in history. In the middle of 2009, the number of people living in urban areas surpassed the number living in rural areas; and for the first time in history that occurred. And since 2009, that trend of urbanization has continued. The roughly 3½ billion people living in cities today will, by 2030, the next 15 years, that 3½ billion will swell to about 5 billion, and by 2050 it'll be over 7 billion. And I should point out that 90% of this urbanization is happening in Africa and Asia, bringing huge social, economic and environmental transformations; and it's going to further pressure water supplies and land availability. It'll require longer shelf lives for food that needs to travel farther and last longer than it did before. And it's also going to mean that more people will be leaving the farm, going to urban areas, with the perception of better career opportunities.

And while population shifts toward urban centers, we can't turn our backs on farming and rural agriculture. We can't forget about the Wanjas of the world who are working tirelessly every day to produce enough yields, enough for her family, and enough perhaps to take some to the market.

We'll need to explore a range of solutions from food transportation infrastructure to urban agriculture to cultivating the next generation of leaders inside and outside of food and agriculture who will advance food security in urban and rural environments. And I propose a core focus needs to be on the next generation of leaders who will take on the mantle of responsibility for ensuring we have a sustainable food supply.

We'll need farmers and scientists and researchers and agribusiness leaders, as well as careers that many times people don't associate with food security. We'll need teachers and lawyers and policy experts, marketers and engineers, just to name a few.

The key is – we need to assure that we have the best minds and the brightest thinkers of the next generation fully engaged in addressing food security locally – from science to technology to transportation and logistics to government and regulatory policy. We need innovators, like many of you in the room, working together to be able to address local challenges that result in hunger.

One of our 2020 food security goals at DuPont centers around this tremendous need to cultivate the next generation of leaders. We set out in 2012 to facilitate at least two million engagements with young people around science, around agriculture, around food, as well as the impact that that can have on a growing population. I'm happy to say that since 2012 we've already exceeded our goal, and that's six years early, but clearly we won't stop there.

Second, low food and agricultural productivity of smallholder farmers is clearly a prime opportunity for advancing food and nutrition security. Farmers like Wanja from Kenya are hungry for improved plant genetics, for agronomic practices, for mechanization that's scaled for their operations. And farmers are the backbone of our food and agricultural systems. Therefore, delivering innovations that can help them is the key to really realizing a food-secure future.

Technology will be critical as we consider increase in yields and food production worldwide under the constraints of limited arable land and shrinking natural resources and changing climatic patterns. In developing countries, smallholder farmers provide up to 80% of the food supply, but they need to experience a productivity revolution to break out of the cycle of poverty and subsistence that is so prevalent. And what alarms many people is that, of the 805 million chronically malnourished people in the world, about half are farmers and their families. Farmers feeding themselves is going to critical farmers feeding the world.

As part of our food security goals, we committed to helping improve the livelihoods of at least three million smallholder farmers in their rural communities around the world, and so far we've engaged about three-quarters of a million farmers. We've targeted collaborations and investments, not doing the normal business but special things that we're trying to do to make a difference, all aimed at trying to strengthen agricultural systems and make food more available, more nutritious, and obviously culturally appropriate.

I often hear the saying, "Farmers feed the world" –but we should not expect farmers to do that alone. Governments, NGOs and private sector can work together, and we can achieve much more if we find ways to collaborate as we work to strengthen smallholder farmers in developing countries as a key prerequisite to effectively advancing food and nutrition security.

Farmers need access to improved agronomic practices, extension services, post-harvest storage and quality inputs – many of the things that you heard Wanja outline a few minutes ago that help their operations be more productive and profitable in the midst of some pretty significant and escalating challenges that they face.

In the U.S., growers have the infrastructure and the support to use high-tech precision data tools that can give them whole farm solutions. But in other places, like Ethiopia, smallholder maize farmers are challenged by traditionally low-yielding varieties of seed that substantially impact their productivity opportunity. And agriculture innovation needs to be applied based on the local context to help farmers wherever they are move forward from where they are today and to address the specific and local challenges that they face.

Climate change is clearly an issue affecting farmers around the world in a variety of ways. It's impacting growing conditions and weather patterns globally, and that also can fundamentally alter food production systems in a local context. And if climate change trajectories continue, farmers will continue to face even more drought, excessive heat, flooding, soil quality issues, etc., that have challenged them to produce enough food for a growing and changing population.

During my time with Wanja, she shared her sustainability practices, including a crop rotation specifically geared to restore the nutrients that maize takes out of her soil. And she's rearing cattle to be able to apply the manure back to the farm as a fertilizer. She also spoke of her deliberate choice of hybrids that could help withstand drought and water stress conditions. Many of us have read the research publications with a report on a high value of high-quality seeds to farmers, but there's nothing that compares to having a conversation with somebody who has directly experienced the significant impact that something as small as a single seed can have.

As part of our food security goal focused on product innovation, we're continuing to develop new seed varieties that help farmers overcome challenges like drought and infertile soils, as well as to provide needed micronutrients. And our commitment from 2012 to 2020 is to invest at least \$10 billion in research and development and to develop and launch at least 4,000 products that center on developing innovations that produce more food, that help enhance nutritional value, that help to improve agricultural sustainability, that boost yields that extend shelf lives; and all of that is aimed collectively to have some positive impact toward this big challenge that we face. So far we've invested over \$3 billion toward that effort. We have launched over 2,300 products, so we're a little more than halfway toward our goal so far, and we're certainly not stopping.

My third point is that, while we promote agricultural productivity, we really must reduce waste. Each year more than a third of the food that's produced for human consumption is thrown away. Along with that, the labor and the inputs that went into producing it is also wasted. And food that's produced and never eaten would be enough to feed two billion people. This food wasted represents a significant missed opportunity to improve food security.

In a developing world, envision piles of grain following the harvest where there aren't modern silos to be able to store it and where transport systems are often slow and somewhat inefficient, somewhat mismanaged from time to time. In the developed world, waste occurs not primarily from the farm to the market but from the market to final consumption. It's the portion of a restaurant that we don't consume and is thrown away, or it's the packaged food that goes past its sell by date and needs to be thrown away. Or it's the food in the back of our refrigerators that we finally come to and realize we never managed to consume. And we'll probably never be able

to completely eliminate food waste, but if we can find ways to reduce it significantly, we can go a long ways toward making a real difference to sustainable food security.

We need increased investment and infrastructure around getting food stored and then from the storage to the market and to the table. It's essential we bring together individuals and organizations that have the expertise and the resources and the passion to protect food and increase its safety and extend its shelf life. And these collaborations will transform scientific innovation in new ways to protect food and reduce waste.

One area for continued focus is packaging. Packaging offers tremendous opportunities to mitigate food loss, by protecting food and extending its perishable shelf life. But sometimes consumer protections to that packaging keep those innovations at bay. So focusing on the positive contributions that packaging can make will go a long ways toward making a dent in this global issue.

In closing, overcoming the threats to our global food security requires taking scientific innovation well beyond the lab, and it means taking innovation to the field and to the local communities, especially in developing economies, such as Sub-Saharan Africa and Southeast Asia where the majority of chronically malnourished people live. And while innovation needs to be scaled and customized for local context, I am convinced that it must be part of any proposed solution to the global food security challenge.

And to generate the greatest impact, innovative approaches need to be local, bringing information and technology to the people and places who need it most, built in collaboration with local communities and sustainable in the truest sense of the word – economically and socially, as well as environmentally. And we need to be committed to new ways of thinking, being collaborative and focusing on what's important.

You know, global hunger is bigger than our politics. It's more important than proving who has the best production method. Lives are at stake, our children's and our children's children's futures are at stake. So I challenge you to ask yourself some tough questions today:

How is your expertise going to help ensure that everybody in the world has enough food to eat? If you're in government, what policies are you implementing that will support the tie between agricultural development and economic vitality? If you're a scientist or an engineer or a developer, what innovation will you create that can make a positive difference in the food security challenge, and particularly the smallholder farmer? And how can we all work together collectively and invite others to join us?

After asking ourselves some of those questions at DuPont, we decided to establish some tangible food security goals that could help us hold ourselves accountable and that we could track progress. And as many of you might gather, I was strongly impacted by my time with Wanja and the many other smallholder farmers I've had the chance to meet. So I'm going to leave you with something that I heard Wanja say.

In so many words, she said, "It's always the same people attending the same meetings, having the same conversations. There's a lot of talking, but none of the discussions result in tangible solutions that make it into the hands of farmers like me."

I don't think that's the case here today, and based on this week's discussion, I'm optimistic that each of us will leave motivated and mobilized to deliver the needed innovations in food and nutrition security that will reach farmers like Wanja in Meru County, Kenya, or the future scientist in India, or the little boy suffering from malnutrition in Vietnam. But it's up to each of us to make sure that it happens.

It's been a pleasure to speak with you today. Thank you for everything that you're doing to help the world achieve food and nutrition security. It's important work. Thank you.