

BREAKFAST KEYNOTE ADDRESS

Speaker: Liam Condon
October 14, 2016 - 7:30 a.m.

Introduction

Ambassador Kenneth M. Quinn

President - World Food Prize Foundation

So I hope everyone has enjoyed your breakfast, and take a look at the menu that's there. You see that we've had Melinda sweet potato biscuit benedict, named in honor of Melinda Gates. And may we have a round of applause for the Marriott staff? Thank you so much.

I also want to let everyone know that this is just the beginning of Friday. We've still got a full half day, and if you're signed up for the farm tours, you come back for lunch and with your comfortable shoes on, get ready to go out and visit the farm.

But this morning after breakfast, run down to the symposium room, and we're going to start with the Challenge of Change and Engaging Public Universities to Feed the World. Then Women Leaders Driving Science and Innovation for Agricultural Transformation in Africa. And President Ameenah Gurib-Fakim is on that panel, so don't miss that. And then a presentation involving our laureates, so you absolutely can't miss that. And Roger Voorhies from the Gates Foundation is going to start, and then Jeff Raikes, who was the former CEO of Microsoft and then of the Gates Foundation is going to be there to lead the conversation. So, you know, your laureates, but you still better be on your game for this. Jeff's pretty tough with his questioning.

And then we'll have at lunch a special presentation to the laureates and then a respective looking back 30 years to two things that were going on then when Norm started the World Food Prize but then when he went to Africa and the Sasakawa Africa Association was born. So there's going to be a lot of interesting history and insight there. And Dr. Swaminathan, Al Clausi, Ruth Oniang'o, Jean Freymond, is going to be on this, so I'm really looking forward to that.

Now I want to introduce to you our breakfast keynote speaker. This is always one of the prize places for a presentation in our symposium. We've had the chairman and CEO of Cargill has been here to do this, the chairman and CEO from DuPont has been here. We've had the head of AGRA has been here for this morning, and today we're going to hear from Liam Condon.

So getting to know Liam sitting here, one of the really most interesting things about him is the interesting array of languages that he speaks. So he's had service in Asia, in Japan, speaks Japanese, in China, speaks Chinese, also French, as you might expect, and German working at Bayer headquarters, and English as you'll find out, but also Gaelic, being Irish and growing up in Ireland, went to the university in Gaelic. So wow!

And, of course, if you haven't seen *The Des Moines Register*, run down and get a copy. There's a great picture of the laureates getting their prize last night but also a terrific article and interview with Liam Condon and Rob Fraley, our 2013 laureate from Monsanto and talking about a story that's in the news about the merger of Bayer and Monsanto.

But our symposium theme is, *Let Food be thy Medicine*. And Liam Condon has now in his position as a member of the Board of Management and the head of the Crop Science Division, you know, right away that he brings the food side to us. But he's had positions as vice president of Bayer Health Care in China and Managing Director of Bayer Health Care, and General Manager of Bayer Pharma in China. And so his experience comes on both sides of that *Let Food be thy Medicine* equation.

So it's my pleasure and honor to welcome to the podium for his keynote address, Liam Condon.

Liam Condon

Member of the Board of Management of Bayer AG / President, Crop Science, Bayer AG

Well, thanks a lot, Ambassador Quinn, and thank you for arranging everything for the very kind invitation here. And I'd like to thank you again and the whole team that organized the laureates' prize-getting winners last night. I think we're fortunate enough to have here four laureate winners. And I think it was an absolute phenomenal evening, and I think you four winners here got the recognition you deserve. So thanks again for organizing that, and thanks to our four winners here. I think they deserve another round of applause.

So I was born and raised in Dublin in Ireland, and at the time Ireland was still a relatively poor economy, still heavily driven by agriculture. And I actually had to immigrate at the end of the '80s. It was my own choice to immigrate and not because there was a lack of food or because of famine, but basically it was no jobs in Ireland. That was the actual situation, end of the '80s, and there was a big wave of immigration. A lot of young people actually left the country. And this has happened again and again throughout Irish history.

Less than 200 years ago there was an event in Ireland that really marked the history and development of the country and up until this day has had a tremendous impact, I'd say, on the makeup of the Irish personality – and that was the potato blight that occurred around 1845. Ireland at that time was heavily dependent on potatoes; it was the staple crop. And there had been some bad harvests. So then 1845, this was the worst ever.

And what ultimately happened then over the following years, a million people starved to death, one million people in a population of eight million. One million people starved to death and two million people immigrated. And if you think back about 200 years ago, immigrating was pretty difficult to do then. I mean, I could jump on a plane, but these people had to somehow get on a boat and go somewhere. And so this had a huge impact, and at the end of the day three million people left Ireland, and up until this day, 2016, the population of Ireland has never recovered to the level that it was almost 200 years ago because of that famine, which was caused by potato blight, which is something that literally couldn't happen today because of the technology that many companies and universities have brought to the world.

Now, I know you're all eating breakfast and getting a little bit somber if you're talking about the million people dying, starving to death and two million people immigrating, so I do want to

highlight... There's always a positive side to the story, so the positive side to this story was the Americans did pretty well out of this. You got the Kennedys, Ronald Reagan. I'm not sure about this one, but Barack Obama has claimed that he does have relations and roots also in Ireland. And I think you can see where this is going. A lot of scientists in the room, you might be able to see a pattern here. But I have some communications PR folks on my team who begged me not to mention anything about the ongoing presidential election, so I'll leave it at that. And really the take-home line is, rather, technology, innovation and technology has really helped ensure food security.

Now, while we're here, I mean, we've all been talking in various sessions about the various challenges that are facing global food supply in 2050, and there are many different topics that we're facing. When I was in China, you kind of get a different sense for what's going on. When I first went to China, this numbered ten billion, whether it's nine and a half or ten billion additional people that need to be fed by 2050. It's kind of abstract, and I think particularly ever since the financial crisis, people talk easily about billions and don't realize what this actually means.

When I first went to China, around Beijing there were three ring roads, so you had the city and then you had a ring road and a ring road and a ring road. And now in a relatively short space of time, they're on the seventh ring road. It's just phenomenal. And what's happening is you have a huge migration from rural population into the big cities. And people are then changing their dietary patterns; they're eating more processed food for sure, eating more meat. So the demand for food and for feed is rapidly increasing. And in the rural areas there's a lack of young people. It's the young people who are moving to the city; it's the older people who are usually left on the land. So you've got a dual problem. And this is happening literally all over the developing world at the same time.

And at the same time, we've got climate change, which is making the climate hotter, dustier and harder to farm. So with this growing population and the per capital amount of arable land declining, climate change and increasing pest/weed pressure, this is a tremendous challenge which is often underestimated. I don't think it's underestimated in the circles here, but where I come from, Europe, this isn't seen as a challenge – this is seen as something that we've always managed in the past, so we're going to manage it in the future and we probably don't need much innovation to do that. And this is completely wrong, and something that we all need to stand up for, fight for, is the importance of science and the innovation in agriculture if we want to deal with this challenge.

I would, however, like to make the point – it's not just about... It cannot ever only be about innovation, technology. At the end of the day, we're talking about an intensification of agriculture making more of the available land. But there's another element, and we have all this wonderful technology and innovation available, but not everybody is benefiting – and this has been a recurrent theme here as well. And there are around 800 million people who go to bed hungry every night, and most of them are smallholder farmers. They're the ones who are actually growing the food; they're the ones who are actually feeding large parts of the developing world. So this is a group that really needs more special attention.

And the third point is really an intensification of agriculture can also have negative consequences unless it's done in the right way. And the whole topic of environmental sustainability and looking at the biodiversity is hugely important as we March towards 2050 and try and solve the challenges that we're facing. And here it's always a balancing game, and

I'm going to come back to this, but this is something we've got to get right. It's not only about innovation, it's also about our responsibility to smallholders and of course it's about our responsibility to the planet, to Earth.

So if I look at what's happening now and look at the size of the challenge, what kind of excites me and makes me optimistic for the future is really what's going on with what's called now the fourth industrial revolution. And there's been three big industrial revolutions in the past, and each one has taken about a hundred years, up until the most recent one, the fourth industrial revolution, which has taken only around about 40 years. And so the pace of revolution or technological development has been rapidly scaling up.

And of course there's a lot of discussion about the Internet, but this is basically the coming together of big data and digital with the physical, biological world and the new opportunities that this are opening up. And this is something that we are extremely excited about as an organization, because this opens up completely new possibilities to deal with challenges that I just outlined.

And again if you would move forward one more... So on this one is a kind of summary or synopsis of what we talk about if we're talking about the fourth industrial revolution and how this impacts what we do. And we're looking at this from an innovation point of view. And real innovation has usually always come across disciplinary approach; it usually comes from the intersection of different disciplines.

And where tremendous advances have been made in the past couple of decades, it's really in the biological space. And I remember going to university that the chemists used to joke about the biologists not being real scientists, and biology is very clearly today a real science. If you think of what's going on in the biological world, chemistry has always continued to evolve and now is with big data and the ability with data science to basically model what's happening in the environment. What's happening with product environment interaction to develop predictive algorithms brings things to a new level.

But if you combine the three all together, you can really start hitting a sweet spot about entirely new solutions. And I'm going to talk very briefly about that, what that could look like. But this is something that really, really excites us, because this is what opens up entirely new possibilities if you have the platforms to be able to allow you to do this type of research and development.

So at Bayer, very briefly, Ambassador Quinn put it nicely. I guess we're the only food and medicine company in the world, I think. I don't know of another one. And so we do what we call crop sciences, our agricultural arm, together with animal health; we're also looking at the farm animals. And then we've got the pharmaceutical and human health side. And I've worked on both sides of the equation. And what we have as a purpose, company purpose, we talk a lot about *Science for a better life*. And this is really important for us, science innovation and using that for a better life, to create a better life.

And this is something that everybody in our organization buys into, and it's interesting. Even, I'd say, in our financial department, people get this. And nobody gets excited by getting up in the morning and somehow having to make numbers, be it sales or profitability or market share. And that's not the main motivation of anybody in the company. What is the motivation is really to make a difference through science. And if we do that well, the numbers follow. And I think

it's really important to have that sequence and not the other sequence. There are companies who chase the money first, but inevitably your success is not going to be sustainable because you can't motivate your people over time, over longer periods. So this is really important for us, this *Science for a better life*.

And it was mentioned, and we've been talking a lot, or been a lot to St. Louis recently where Monsanto is, and the reason behind this whole thing, the whole discussion about industry consolidation – we actually have a very, very similar, I'd say, almost identical vision and strategy about how we want to take innovation to the next level and help growers solve challenges that they're facing every day in their fields. And this was really the big motivation for us, was to take again innovation. That's why I've been doing a lot together with Rob Fraley, chief technology officer of Monsanto and one of the biggest proponents of this cross-disciplinary approach to research and development and of a much stronger focus on digitization and bringing digital sciences to benefit agriculture.

And you can see basically here, once we put the two companies together, which is planned for around the end of next year, we have about 10,000 world-class scientists working on the biggest challenges we're facing in ag. And we have a massive technology platform that cuts across all core technologies that we actually require. And this gives us simply an ability to generate more innovation faster. This for us was the big motivator to come together with Monsanto.

And to give you a concrete example of that and what this looks like, you can cut it different ways. You can look at it from the challenge point of view, and that plays into challenges we're trying to solve, be it yield enhancement or stress-resistant... And you can look at it from the technologies point of view – breeding traits, chemistry, biologics, and having digital science a platform, a computation of life science platform as the connector.

And again if you take something like pest control, multiple options to actually deal with every challenge we're facing. And this is really important, because we all know that diversity is crucial in agriculture. If you've only got one option to deal with something, eventually nature is going to find a way around it. So it's really important for us to have multiple options to deal with every solution, even with every challenge that we're facing.

An example here, again, if you look at pest management, for example, soybean cyst nematodes, we're dealing with this with different options, be they chemical, biological, but also traits and breeding new traits, and looking very, very promising to deal with this challenge.

Weed control – and I said we want to create more innovation faster. You know, there hasn't been..., at least there's not enough options today for weed control. Weed control is never just about active ingredients, it's never just about herbicides, it's always about rotating crops, of course, also about rotating methods of agriculture and also rotating active ingredients. But there is a lack of new active ingredients.

And what's happened traditionally is, a company like ours would develop a new chemistry, and this would take seven, eight, nine, maybe today probably ten years, across a couple of hundred million euros or dollars along the way. And then a company like Monsanto or Pioneer would develop an according trait, and that would take another seven or eight years. And then it takes at least 15, 16, 17 years before you've actually got the combined product then in the market. And in that time nature has developed on, and the solution is no longer the perfect solution that you had in mind when you started out 16 years ago.

So what we have now is of course the ability to do this in parallel. And this is a fantastic thing that will allow us to bring more innovation to the field faster, simply because, instead of going sequentially, we can do a lot more in parallel. Just to give some concrete examples about what we're talking about here.

And one of the areas that we're most excited about is the whole topic of digitization and the possibility that this opens up. And digitization is on the one side, we use it of course extensively in research and development, computation of life sciences. We can do more experiments without having to do more experiments just by looking at the data that's been generated throughout the company and tabulating that and assessing that in different ways to come to conclusions that we wouldn't have come to if we didn't have that computing ability. So the whole approach of computational life sciences and research and development simply allows us to do more with what we currently have.

And where it gets really interesting is, of course, then when you bring it to the field. And here we've got multiple examples of how this can help on the one side increase yield but on the other also optimize the input footprint. And if you think about from a sustainability point of view, optimizing the input footprint is absolutely crucial.

And we have some examples that we're testing again, just maybe one example to let you know or to try and make it a little bit more concrete: We are working with a company with using satellite technology. It's actually, one of the companies we're working with is mining asteroids, and they develop satellite technology that they could develop rockets that could go to asteroids and then dig up minerals on those asteroids and bring them back to earth. It is pretty visionary.

But what this company actually figured out was, they don't need the satellites looking all the time at the space, at the asteroids – they could flip them around and look at the earth, and they had a much higher granularity of what they could capture than what had been previously available. So we collaborate with this company now, and we're basically using this technology to detect, for example, disease in the field at an early stage, at a stage where growers can't see there's a problem, you cannot physically see the disease; but through a satellite image you can actually detect that there is disease in a part of the field. And if that image then goes to a high-powered tractor that has the right sensor technology and spray and maybe GPS-driven, the tractor can literally go out by itself and spray just that part of the field that needs to be sprayed and come back, rather than spraying a week later and having to spray the entire field because disease has spread absolutely rapidly.

And this is technology that's currently not being developed, and these are approaches that are in the field as we speak. And where we are refining basically the algorithms so that that image, when it's captured and when it goes basically to the tractor, that the right treatment is applied in the field. So this is an area that we're very excited about, because it will help on the one side increase yields, but it will help optimize the input footprint, and that will be good from a sustainability point of view. So this is a really, I think, exciting development. Many, many other examples that we could talk about, but I just wanted to give one just to try and make it a little bit concrete.

And one last topic before we get all too excited about the innovation potential. And I know with my own folks, with our scientists, we can get excited very, very quickly when we think about the possibilities of what could be and what challenges we're facing and how we can solve them. But there is the element in here also of a social responsibility and a simple fact that we have to

do more also for smallholders. It cannot be that this great technology innovation that's being developed is only available for those who can afford it in more developed countries. And this is an area where we firmly believe we've got to do more. We've got a responsibility as well to do more.

And as we approach this, we try and do this in as responsible a manner as possible. And here is where we have multiple examples, but I think the key thing is you've got to be sensitive towards and know the local culture, the local traditions. And whatever is being offered as a solution has to somehow fit into that local culture and tradition. And if you think of digitization, what I just mentioned, the high-tech options, a lot of that type of approach for sure will not be directly applicable to smallholders in Africa or Asia or Latin America. But digitization will also lead to a significant increase, or can lead to a significant increase, in productivity for smallholders if it's done in the right way.

And here we're working on, I'd say, projects that are tailored for smallholders, particularly in India, and some have started now in Africa. And again it's never just about technology or innovation, it is literally about helping communities on the one side that needs to be a more holistic approach. We need to help growers have access to markets. We need to make sure they have access to finance. And there's a variety of things that are required before you start to ever talk basic, good agricultural training practices. There's a lot of stuff required before we start talking about innovation, but we can use innovation in parallel to improve situations.

And it's not only communities, it's also always about families. And a huge topic for us is the topic of child labor. And still today there's approximately one in six children is working somewhere, usually on a field, sometimes in a factory. And this is something where as well there needs to be a lot more attention towards. And we basically developed a program in India about ten years ago to ensure that there would be no kids on any farm that was contracted to us.

And to do this type of program, you do also need to take a holistic approach, because you've got to be promoting education at the community level as well so that the kids not just don't have to go to the field but they've got a school to go to, so they can get out of the kind of dilemma of having to work on the field, having no time for school, having no ability to get further education, and then having to work as a smallholder like their parents were, without ever having any additional opportunities. So hugely important, just to emphasize it's never only about innovation, technology, and there's got to be an element of social responsibility in here, and we've got to do more for smallholders.

So finally, mentioned what we stand for. And the key message takeaway is our commitment. I mean, we're very excited about using science and innovation to enhance life, and this is something that is in the DNA of our company. It's something we share with Monsanto, which makes the whole marriage process actually much easier than you might think from the outside, simply because we've got very common value here. And I know Monsanto is a deeply scientifically innovation-focused company and is doing a lot of good things and a focus on sustainability and a focus on responsibility. But that's our commitment as well going forward.

And I'd like to maybe finish with one quote, and I've come back to the Hippocrates quote, *Let Food be thy Medicine*. And the part that's sometimes forgotten is the second half, *And Medicine be thy Food*. And what Hippocrates actually meant at that time was, most of the time if you've got great food, that's the best medicine you can have; it will keep you healthy. But sometimes you

probably need some medicine as well, and then you shouldn't hesitate to take it if you need it. But the goal is you want to be healthy, and this is at the end of the day what we're all working for, that people can be healthy.

And I'd finish with a quote from Thomas Carlyle—this was about 300 years ago—when he said, *For he who has health has hope, and he who has hope has everything.* And I think that's the final thought I would like to leave you with. At the end of the day, this is what we're all, everybody in this room, everybody, the whole family of the World Food Prize, we're working so that we can improve the health of the people of the planet and ultimately give everybody a bit more hope.

Thank you very much.

Ambassador Quinn

Wow. That was terrific, that was terrific. Thank you. Liam Condon, that was wonderful.

So I hope you see the messages of the symposium. That first day we had people talking about the crises that are going to come, the challenge that's going to be there, the things that can happen and what's needed in terms of how to deal with it. And now we've had with this presentation, this amazing array of business leaders from all the major companies who are engaged in this. And seeing one after another, the dynamic individuals who are leading these companies, is one of the real reasons to have hope. And when you put it together with the research scientists, such as our laureates but such as others who are here and on panels, this is the challenge. This is what it's all about—more people, issues, external factors like conflict, instability, climate change, other variables—and can the science, the business leadership, the educational and research institutions, all come together fast enough.

So for me personally, Liam, listening to you, I've got more hope than on Wednesday afternoon when the ambassadors were talking, and we've got the best chance of getting there. So let's have another round of applause for Liam Condon.

By the way, I should have mentioned, I take two Bayer aspirin every morning when I get up. I get my medicine, and I feel hope as a result of that. So, students and teachers, as usual, stay where you are while everyone else departs, and you'll be off on your day. And everyone else, head to the symposium room. We're going to get started again. And a fascinating morning. Thank you all for being here.