

KEYNOTE ADDRESS

James C. Collins

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Introduction

Paul Schickler

Member, World Food Prize Council of Advisors

Good day. My name is Paul Schickler. I retired from DuPont Pioneer in 2017, and during that career at DuPont Pioneer I had the pleasure to work alongside Jim Collins for 18 years. Jim received an undergraduate degree in chemical engineering and then also a graduate degree, an MBA that focused upon international business and marketing. He then embarked on a 34-year career with DuPont, and that career has been remarkable – it's been extraordinary, the experience and efforts that Jim led throughout that career. Let me name a few of them.

He was involved with the DuPont Crop Protection business with pioneer. He lived in Asia for a number of years and then was also part of the integration of protein technologies into DuPont that really was our first effort into the food and nutrition business. Later, he led the Acquisition & Integration of Danisco, another step into the food and nutrition area. And then lastly was the leader in negotiating the DuPont-Dow merger, the regulatory process, the integration planning, and then the business structure implementation that will ultimately lead to the spinoff of Corteva Agriscience in June 2019. Quite a career spanning all aspects of production agriculture, food and nutrition, and even environmental issues.

So as I think about the future, there is really no better person to lead the birth of Corteva Agriscience and to play a meaningful and leadership role in the industry and the world as we deal with those critical challenges that we're all facing and the reason that we're all here for this week – those issues around agriculture, food and nutrition, and the environment.

Please welcome the Chief Operating Officer and Chief Executive Officer-Elect, Jim Collins.

James C. Collins

Chief Operating Officer for Corteva Agriscience, Agriculture Division of DowDuPont

Great, so good morning, everyone, and thank you, Paul, for that introduction. As Paul said, we've worked together for nearly 20 years as friends, as colleagues but as collaborators. And as I think about the steps that I take next as we launch this new company of Corteva, Paul was intimately involved in the design of that as we built it. So I acknowledge today that many of us, we stand on the shoulders of those who came before us. So, Paul, thank you for your contributions to Corteva and to this business.

And also a big thanks to Ambassador Quinn. This is my fourth consecutive opportunity to address the World Food Prize and Borlaug Dialogue. And you know every year I come here to get energized, to get enthused, and this year is similar. And so I think for all of us who work hard every day in this industry, it's a great opportunity to recharge. So to Ambassador Quinn and the committee, thank you so much for all the hard work you do every year.

And then, finally, congratulations to this year's two recipients. I've known Dr. Nabarro for years, interacted with him many times, and his passion, as you could just see here, is infectious. And so we appreciate what he has done. And I look forward to getting to know Dr. Haddad much better as a result of this.

So it's certainly a privilege again this year to be with you at this important gathering of our industry, certainly with all of you who represent so many people who serve this industry of agriculture. I always enjoy seeing so many friends and colleagues. Over the years, the Borlaug Dialogue has had a material impact on agriculture, certainly on farmers and farming communities and the nourishment of billions of people around the world. And this last panel, I think, was a great example of that.

What I admire most about the forum is that it is truly more than just discussion or dialogue. It's a call to action. It's usually a directive for change, and many years it's been a catalyst for results, hence the very appropriate theme that we have this year of *Rising to the Challenge*. You know, I can't think of a more fitting tribute to the life and legacy of Norman Borlaug, a man who dedicated his life to feeding the world by advancing the most noble of human endeavors that we all know as ag.

When I think of Dr. Borlaug, I can't help but think about some other great leaders who have come before us as part of our extended family of businesses — people like Henry Wallace, the founder of our Pioneer seed business. And if you were to just travel just 20 minutes northwest of here, you would come across our research center in Johnston, Iowa. The expansive rows of corn and soybeans and other crops that you would see there are grown on the same soil that Mr. Wallace conducted many of his very first groundbreaking plant and soil experiments nearly a century ago. And it's a body of work that to this day continues to be refined as we look for solutions to help farmers grow, to help communities thrive, and to help people live healthier lives. And it's with that same guiding compass that was reflected in the work of Norman Borlaug, who once said, and I quote, *The first essential component of social justice is adequate food for all mankind*. And it couldn't have been better echoed by Dr. Nabarro's words a moment ago — which brings us back to the lesson and the reason for why we're convening this week.

Over the course of history, we've witnessed life-changing revolutions in industry, in technology, in science, in medicine, in education, and in social justice. And all have brought about some permanent changes in the way we work and live, build our communities, even raise our families. So I would argue that today we are in the midst of an ag revolution, every bit as influential and pervasive and every bit as groundbreaking as the Green Revolution that Dr. Borlaug launched and earned a Nobel Prize for back in 1970. Indeed, what we are witnessing today and tomorrow in ag will be the next defining force in many of our lifetimes. It will shape the way we live, the way we work, eat, trade, nurture the earth, plan our communities, educate our children, and invest in innovation and entrepreneurship.

So this morning I'd like to paint a picture of how this revolution is actually coming to life, what it could mean for all of us over the course of our lifetimes, and what we need to be doing

collectively today to get us to a place where those who work in the soil and those who benefit from that work and the planet itself can be in sustainable harmony.

Now, we see a world where agriculture will not only feed a growing planet but actually will help to create stronger economies and communities, a world where millions of farming families garner a more sustainable livelihood and way of life, where our planet is cleaner, healthier and free of conflict, a world where a vibrant and innovative ag industry attracts the best and brightest of our youth. It's why we're making the targeted R&D, innovation and human capital investment. It's why we're disrupting our own business models to create Corteva, and it's why we have defined our mission as a company going forward, putting the farmer and the consumer at the heart of everything we do.

But change of course doesn't really ever happen in a vacuum, and certainly no single company or organization has the power to shape any of this positive change by ourselves. So by working together, we can do this. But it's going to take hard work and a bias for action and results. Indeed, the decisions we're making today will impact lives of billions for not only the next 10 to 20 years but for the next century. So in keeping with this theme of *Rising to the Challenge* and with a bias for action, allow me today to suggest four areas where we can start to collaborate today to impact this positive change.

The first is what we at Corteva call "bringing the outside in." It's the spirit of outside innovation that lies in the notion that we need to bring farmers and consumers closer to the heart of our innovation model, talk to them, engage them, work directly with them, build solutions that meet their needs and address their concerns in the fields but also in their homes. "Outside in" is also about acknowledging the simple fact that we don't have all the answers, so let's not be afraid to import some of the best and brightest ideas from outside, from farmers, consumers, business partners, others both inside and outside our industry and at the same time be very open about sharing our ideas with others for the advancement of all.

Now, one of those tangible manifestations of this approach is the Open Innovation Portal that we've built to do just that. We're identifying problems and challenges that we don't currently have solutions for, and we're inviting startups and other innovators around the world to bring their ideas forward. I encourage you – visit the portal. Should you see some ideas, you see something that could help, things that might help be more viable, we would invest in it and support it in order to give these new, emerging businesses and ideas a head start.

One "outside-in" innovation that we're very excited about, of course, is CRISPR, which could have a profound impact on our industry, as many of you have said. Targeted breeding through CRISPR technology has the potential to improve crop performance, satisfying the world demand for fresh, wholesome and nutritional food that could be produced in an even more environmentally sound and friendly way. Imagine healthier oils, avocados that last longer, tomatoes that are good for your heart and taste good year around, seeds that are more resistant to pathogens and minor use, and otherwise-forgotten crops that find new uses to actually expand our biodiversity.

So by taking a more outside-in approach to innovation, there's no limit to the kinds of breakthroughs that we can accomplish by working together. Now, we're going to need more open innovations around things like digital and big data solutions to help farmers optimize their operations down to that sub-acre level. Now, this will include better weather, soil, nutrient, land use, and crop protection data. Precision and predictive ag are already having a

transformative impact on agriculture, and you can see this in so many of the actions on our farms around the world: Drones in rural Africa that allow a farmer to virtually use a micro-dosing capability to together crop protection tools on their crops, reducing waste and dramatically reducing overspraying; RFID chips that dispense the right amount of food, water and nutrients to livestock in Brazil and in Argentina; infrared diagrams that show the water drainage patterns in the Nile River Delta and allow us to adjust our cropping patterns appropriately. The list goes on. There are so many innovations out there that are also yet to be imagined.

Now, a second area where our collaboration is greatly needed is promoting and advancing science-based policies and decision-making. Now, today we have a fragmented regulatory system around the world, one that not only slows down the pace of innovation but also hampers our collective ability to effectively share best practices from markets to market. Many of the policies in place are based on more political rationales than scientific. As an industry we have the responsibility to promote and advocate better science-based policymaking so that growers can have timely access to innovation that we've already developed to help solve the challenges of today and tomorrow. It's something that I believe we all need to step up to.

But let's recognize that science-based regulations, while important, can only go so far. At the same time, we have to be relentless in engaging consumers in a very transparent manner from our very early ideas about science and innovation all the way to the finished products that we're launching and all the way in between. So building trust with regulators and policymakers and consumers has never been more important as we begin this new agriculture revolution.

Now, the third area where we can make immediate change is by collaborating on education and engagement initiatives that will better prepare future generations of farmers and business leaders and consumers. To feed the world that demands more and better quality food, we're going to have to dramatically improve conditions on smallholder farms, which account for most of our farms worldwide. In fact, today in Africa, India, China, South Asia and Latin America, smallholder farms generate 80% of all the food production. Unfortunately, they are also the home to the majority of people in the world living in poverty and half of the world's undernourished people.

Now, most of these farms are also more susceptible to adverse effects of weather and climate change, water stress, crop pests and diseases, and just the basic lack of adequate infrastructure and transportation. So we in the ag industry have the responsibility to move these smallholder farmers into more sustainable and prosperous farmers. So I want to take a moment to call your attention to an effort that we led and we kicked off this week.

This past Monday was the United Nations International Day of Rural Women, a day to celebrate and honor the role of all women who enhance ag and rural development worldwide. I encourage you to go to our Corteva website to see how we're highlighting rural women as active agents of transformation in economies, societies and environmental protection. They play a vital role in ensuring food and nutrition while improving the wellbeing of their families, yet they continue to face challenges that do not allow them equitable access to resources, opportunities, technologies, assets and services. So we're using the collective power to bring resources to these and underserved smallholder farms.

Currently, we're advancing some critical work with USAID, the Bill & Melinda Gates Foundation, and the African Development Bank and others to strengthen smallholder farms'

market systems. Programs like productivity initiatives that we have in Tanzania have helped generate 300% output gains on a smallholder farm, and this is similar to what we were able to accomplish in Ethiopia a few years ago. Programs like credit and financing and silage support for farmers in Kenya are underway, and other programs throughout the region are providing farmers with innovative crop protection chemical solutions.

In addition, we're providing small farmers with better access to high-performing seeds and fertilizer. We play a role in providing better consumer insights and access to real-time agricultural data. Additionally, we know there's more we can do on the ground with training and modern farming methods. From soil conservation to crop rotation to optimizing water and nutrient use, smallholder farming can benefit from the best practices that we've developed for large farms. At the same time, there are new innovations and teachings that we can learn from small farms and who look through a much different lens than we do in larger production agriculture, and we can transfer those learnings as well.

So a fourth area that I believe we can begin to collaborate immediately on and applying our collective intellectual capital is solving what I actually believe will be the world's most challenging issue going forward. And that's water and climate change. The world's water crisis is real, and it's growing more so every day. And ag has an important contribution to make in addressing water quality and quantity issues across the globe.

So to put this in perspective, India, the world's second-largest food producer, has about half of the water that it will need for agriculture by 2030. China and Brazil, which rank #1 and #4 respectively in terms of ag outputs are facing a similar dilemma. All told, in less than 12 years, our current water supplies will only satisfy 60% of the world's demand. So solving this water crisis will take a collective approach across all industries, governments, and civil societies. And we in the ag industry, working with other stakeholders, must take ownership for addressing water issues. And it starts with changing our perspectives.

Yes, the challenges are real, but with them I would also argue there's a great business opportunity. On this front, we just this week watched our new herbicide in Corteva, a product called Rinskor. It was awarded the US EPA's green chemistry award. It allows farmers to control grass and broadleaf weeds on their farms, and it's reflective of our commitment to deliver science that meets a higher standard that we've set forth as an industry and our company. The economic and environmental benefits for rice farmers could be significant by generating higher yields and less water waste. Everyone can benefit. We have products today that fix nitrogen in the soil, that make that nitrogen more available for plants, to reduce runoff as well; and sadly today, a very small percent of hectares around the world use this technology.

Now, this water challenge is connected to an even larger issue of climate change. While our industry has certainly been cited as part of the problem, climate change has also had a significant impact on farmers and agriculture. As farmers and others in the agriculture industry work tirelessly to double production of food to feed the 9 billion people by 2050, so too we must work smarter and more efficiency with a smaller carbon footprint. The good news is we have the talent and the innovation acumen to rise to this challenge. In fact, an integral part of the mission of Corteva is to use our convening power within our industry and across the food value chain to help bring about a more sustainable and collaborative solutions.

So today I'd like to announce that we have begun an initiative to bring forth a working group of businesses, governments, academic, and NGO partners that will convene with an aim to make

our industry more climate positive. Yes, that's right – agriculture working together across other sectors to become climate positive. Impossible? I don't think so, not with the best minds and organizations in the world working on this challenge.

So currently we're in the process of signing multiple Memorandums of Understanding with a number of organizations that are focusing on partnering with us to bring about lasting and positive change. We will engage in three significant partnerships by 2020 to create industry leadership, and you'll be hearing much more about our work streams, our goals and our metrics in months to come.

Now, this approach is also very in line with the open innovation efforts I talked about earlier. It's about using our convening power to bring about actions and innovations that improve lives and certainly can make the world a better place.

So with all that said, let me close by adding one final thought. While we've talked a lot about the future state of our industry and some of the future outcomes that we can start working on now together – and I've shared with you some very specific things that we at Corteva intend to do – I can also say without question, that future that I'm describing is here today. It's right now. It's here on our largest farms and on so many of our smaller and remote farms, like the small farm I visited in a remote region of China a few months ago. They're hundreds of miles away from the nearest urban center. I was surprised to see a farmer using one of the most modern, latest drones and drone technology to improve his operation. I thought to myself right then – the future is here, and it's going to have an extraordinary and very positive impact on so many places like this rural farm in China.

These stories give me great optimism. They inspire me and the 22,000 employees of Corteva around the world who bring our best to work each and every day, folks like a young procurement manager in our Accounting Department, who I ran into recently after a pretty late night at the office. And as we were walking out of the building, he said, "How are you doing?" And I told him, you know, it had been a long day, and I was pretty exhausted to be honest with you, so I reciprocally asked him, "So what are you working on?" And he gave me a quick summary of all things that he'd been doing. He said, "Jim, I'm busy," but he said, "But you know, what? I'm loving it. I'm doing my part to help feed the world."

So my experience tells me that amazing things happen when people like that guy in our accounting group are committed to a common cause. And I know all of you have people in your organizations who have that same spark and spirit, people who embody those values that drove folks like Norman Borlaug to work to change the world. So I look forward to our continued growth together. I invite all of you – work with us to create that better world of agriculture for our children and for generations of children to come. The world needs our leadership, and we can do it together. Thank you.

Ambassador Quinn

That was terrific. Can you stay one second? Jim, that was incredible. Thank you so very, very much. I was explaining earlier how sessions get created of people I meet. So I was talking to Jim at the USDA Outlook Conference in February, and I said to him, "I hope you might be able to come in October. Does your schedule permit?" He said, "I already have it in my book all

blocked.” So I don't want to wait ‘til February. I'm so taken with your new initiative on climate. You have a session next year here on this stage. We're so proud that you're launching it here today, and if you want to bring people back and let everyone know where you're at on that, we would be thrilled.

Collins – Will do.

Ambassador Quinn

So you have a standing... All right. He said we'll do it, so quickly, [inaudible], put it down. And thank you. One more thing if I may. When John Ruan moved the World Food Prize, rescued it, moved it here to Des Moines, there were four sponsors, and the biggest, and from day one was always Pioneer, then DuPont Pioneer, and now Corteva. Thank you so much for what you did.