

*Transcribed from Extemporaneous Remarks  
during the 2016 Agricultural Outlook Forum*

Chief Economist Johansson and good friends. Secretary Vilsack in absentia, my good friend. Since he is not here I can tell you that my first of many fond memories of then Governor Vilsack was him attempting to fire a 50-caliber machine gun out the side pod of a Black Hawk helicopter over vacant desert in Iraq. He might have been trying to hit a camel, but I assure you no one, either human or animal, was injured. But I have been looking forward to this evening. I, too, am glad that the weather cooperated and I just want to say how much Purdue, not to mention me personally, values this opportunity to be with this particular crowd.

I got the question here at the table, it comes up all the time, people say, “Well, you lived all these different lives, you know, elected office and university president, what is the difference?” I say, “Well, in elected office it was dog eat dog, but now it is just the opposite.” And there are people here from academia, maybe you know what I am talking about.

I know you enjoyed your meal, that was quite excellent. But did you stop to consider how astounding an event that was? Because aside from the youngest in the room, you should all remember that two or three decades ago we were all told that we would have starved by now. That the world was going to run out of food, there wasn't anything anyone could do about it. People standing in the not-so-proud tradition of Thomas Malthus and the Club of Rome wrote pompous books, gave goodness knows how many speeches for goodness knows what honoraria, to tell us all that disaster was dead ahead. You know, Jeremy Rifkin, Paul Ehrlich--Ehrlich who wrote, “The battle to feed humanity is over.” That hundreds of millions of people will die, nothing can prevent an enormous increase in the human death rate. For this, somebody — we will leave the foundation unnamed — declared him a genius. If that is genius what would foolishness look like?

Everyone in this room knows that instead the intervening decades have seen the greatest upward surge for the good of humanity in the history of the planet Earth. That the combination of greater freedom in important countries and technology, instead of worldwide famine and this certain disaster that was so confidently predicted, has brought down, even as population grew by billions, has brought down the number of undernourished--our undernourished brothers and sisters--by hundreds of millions. Life expectancy worldwide has grown by 15 years in a quarter

of a century. There has never been anything remotely like it in the history of the species we call Homo sapiens.

A lot of fabulous people contributed to this. Oh, Deng Xiaoping should get a lot of credit, but to a large extent this is the triumph of people in this room, or by extension the organizations you represent, the companies you represent, the academies you represent. If you don't feel proud, at least by association, with those entities and endeavors, you really should. It is a spectacular--it has been a spectacular, spectacular accomplishment and refutation of what so many believed was coming.

And now, of course, we, having climbed a mountain that people said was insurmountable, we all face the next one. Nine billion people, in an historical blink from now, maybe three decades. I don't know how you feel about it, but I believe there is every reason for optimism. That once again this "grand challenge," that's a phrase people like to use these days, if there ever was a grand challenge, this one is, this one deserves the term. I think we know what to do.

We can start by disseminating the technology we already have. In many, many places the lessons that have been learned have yet to be applied even in their most elementary form. I know you had Mr. Howard Buffett here with you this morning. I asked him to come to Purdue as our guest, oh, a few months ago, and it was terrific to hear his passion for spreading technology and self-sufficiency through Africa and the developing world. I was thrilled to hear him think about the places where the Land-Grant model, of which, of course, Purdue is one example, might be planted and might lead not only to the preparation of new leaders for agriculture and related fields, but to the more rapid distribution of much of what we already know how to do.

We all know that if we could simply, and we can do this, use the food we already produce, that one-third of the food grown on the planet that doesn't make it to someone's table. [There are] enormous upside opportunities. At Purdue University some of our most successful scholarly endeavors have involved not the production of more food, but its more effective storage and preservation against insects and against spoilage of other kinds.

But then the essential item, of course, the sine qua non, will be the continued progress of agricultural research, scientific research, the advance of new technologies that have so much incredible promise, not only for increasing supplies, as essential as that will be, but to do so in

ways far friendlier than today--far friendlier to Mother Nature. Moderation of the use of pesticides and herbicides, more effective use of water, more effective conservation of the land, the use of less land, most importantly, to produce the food we need.

Even, we are now learning, the reduction of CO<sub>2</sub>. So I happened on one of my Purdue colleagues, Professor Wally Tyner, I just stumbled across last week--I asked him what he was working on. He and his colleagues have a paper coming out, you can be reading here very soon. They have calculated, and this is really where I am headed in these brief comments, that a ban on genetically modified organisms in the United States, in addition to many other catastrophic consequences, would produce, yes, an enormous increase in food costs. But the more interesting finding was a 7 to 17 percent increase in Ag CO<sub>2</sub> emissions, which equates to a 1 to 2 percent increase in global CO<sub>2</sub> emissions.

You know, that is, to me, the urgent issue that we face. Of course there are huge threats, impediments, to our climbing the billion of feeding a world of 9 billion fellow humans, but they are not the ones we've known in the past. It won't be that we have too many people. By the way, my personal prediction is with the emancipation of women in countries yet to experience that important phenomenon, with the advance of education, very probably the population estimates will be high as they have often been. But let's just say they are right. The threat is not that we will have too many people. The threat is not that we can't produce enough food and new forms of food, higher protein content, and so forth, for that many people.

The threat this time is internal. It will be a self-inflicted wound. And, of course, what is troubling me, and I hope troubles you, is that there is a shockingly broad, and so far shockingly successful movement that threatens this important ascent of human kind out of the condition that has plagued us since we first walked upright, of enough food to meet the most basic, the most elementary need of any living species. That threatens our ascent by choking off the very technologies that could make that next great triumph possible. And the sort of practice that leads to a 20-year delay in the availability of salmon--you know, I enjoyed the beef tonight, I'm still a meat eater, you know, but like everybody I've learned salmon is awfully good for you and I eat it every chance I get. And the idea that for no good reason we have taken 20 years to make salmon more affordable and plentiful is one example among so many that I hope we will stop repeating.

Now, I guarantee you I am the least expert person in this room to discuss the technical aspects of the subject I am dealing with here. Anything I can tell you, you already know. What I want to submit to this audience is that too many of you are keeping what you know to yourselves, with the consequence that too many people outside this room and rooms like it don't know what you know, and have been actively misled in a way that is very dangerous. Maybe not to them but to the poor people of this world and to the hungry people of this world. It is attributed to Twain, probably he wasn't its author or at least the first, but you know the saying, "It ain't what you don't know that gets you in trouble, it is what you know for sure that ain't true." And there are a lot of people who have been told something, a lot of things, about modern agricultural technology that ain't true. And if this were almost any other subject I would say that's too bad, do your best, maybe the facts will eventually come out. But the stakes are too high here. We are talking about not merely the happiness and fulfillment of potential, but the survival of millions of people.

And so when I get a chance to talk to an audience this influential and this knowledgeable I just cannot resist suggesting to them, as I suggest to you, that you have a positive duty to do things that probably do not come naturally, to contest and refute junk science and false claims against the technologies that offer so much promise to the world. And not solely on the polite objective grounds that come most naturally to folks in the pursuits represented here, to people who work in the regulation of agriculture and its products, to those who study academically these subjects and work on the new technologies and the policies around them, or to the businesses that produce these products as the technologies become available. We are used to and only comfortable with polite and civil, you know, Power Points, facts, data at meetings where people have agreed, at least tacitly, to abide by, you know, follow the facts where they lead. That is not this argument. We are dealing here, yes, with the most blatant anti-science of the age. But it is worse than that. It is inhumane and it must be countered on that basis. Those who would deny with zero scientific validity the fruits of modern agricultural research to starving or undernourished people or those who will be absent great progress need to be addressed for what they are which is callous, which is heartless, which is cruel.

You know, Marie Antoinette, I didn't know her personally, but she may have at least had the excuse of naiveté and ignorance. That excuse cannot be made for the people who are attacking GMOs and other technologies like that today. You know, when starvation was

imposed knowingly, in cases and instances we can all think of from the past, we knew what to call it. And I can't for the life of me see a moral distinction between those instances and these.

Now, I know as I thought about tonight I realized I have had some experiences that have taught me--I know that the rough and tumble of public debates like the one I am discussing here, does not come naturally to good people like you. Scientists, God bless them, operate in a world where one assumes that the facts will prevail and that good science will win out. Regulators are naturally cautious. That's a good thing to be. And to be very, very careful, lest they make a mistake with serious consequences. And folks in business aren't in business to have arguments and to deal in controversy, and certainly not to argue with their customers. And so they very naturally shy away, I know that.

I didn't think of this until literally last weekend as I was mulling about what to talk to you about tonight, but I want to tell you a little story. In 1990 I entered the pharmaceutical business, something I had not anticipated doing, one of those surprises that comes along in life, and the timing was extraordinarily memorable to me.

At the company I was working for, a fantastic scientist there, a team of three actually, had come up with a molecule called fluoxetine that offered enormous promise. This was a technological innovation like the ones that many of you work on that literally could change lives and save the lives of millions. Because this molecule addressed depression in a very effective way, in fact, so effectively and so safely that the treatment of depression could spread beyond that small subset of psychiatrists into the broader medical population and thereby reach many, many more people. You could take a bottle of them and it wouldn't hurt you. That is not true of the predecessor molecules. This is the drug the world came to know as Prozac.

Early after its launch it was attacked violently, viciously, anti-scientifically with a vengeance by an organization with its own agenda and its own motives, and that organization calls itself Scientology. Like many of today's anti-GMO zealots, with that organization, there were many parallels. The longer I thought about it, the closer the fit. They had no regard for scientific facts, that was just a given. They were well-funded and they were accorded generous attention by a very credulous media. And they were aggressive and ruthless in their tactics. I am talking full-page ads and cooked-up news conferences with alleged victims and so forth.

Well, I will never ever forget, it happened to be my first day on the job and they said, "Come along to this meeting, we think we've got a little problem," because the first news

conference and bogus lawsuit, whatever, had just happened. And being good scientists, the very first--the first half-hour--was a review of what we thought we knew about the contention that this drug, which actually treats depression, might be inducing suicide or self-harming behavior. And so there is a presentation, we can't find that in there anywhere. But they say, "We know what to do about this. We will run some further studies. We think we can do a meta-analysis of all the stuff that's out there now. We will publish this. And, you know, it will all take about 18 months but, it will be in the New England Journal and it will be in the-- and that will take care of it."

So I thought--I kept my mouth shut because, what do I know? I was thinking then and I really thought later, I don't know how to spell fluoxetine yet, but I know one thing, if you let people lie about your product relentlessly without direct contradiction, people are going to believe it. It was very contrary to the culture of that company, the whole industry, really business in general, as I said. But at the end of the day we did decide that we did not have an option and it touched off, some of you may actually remember this, a hand-to-hand, dollar-for-dollar, tong war until ultimately the situation was resolved.

Now, I want to say, Purdue and I know our sister universities, our colleagues everywhere, will do our part in this effort. Maybe one of the best things, I think, schools like ours do is train young people. I love on our--we have an Ag Day in the spring and we invite people--people come from great distances, especially young school children and so forth. We are trying to interest them in agriculture and in related fields, and I love to wander in and listen to our undergrads explain to young people the wonders of the technologies that they are seeing and working on in company with our faculty. And why, first of all, there is nothing new about this. We've been doing it since the Egyptians or before. The only thing that is new is the techniques of today are so much more precise, so much more narrow, so much safer than the hit and miss, broad swath genetics--genetic manipulations of the past. So that is contribution number one.

And, of course, secondly, to continue producing our share of the new research. Our latest World Food Prize winner got it for new strains of drought resistant sorghum which have saved countless people in his native Ethiopia and other places. If you go to Ethiopia with Dr. Gebisa Ejeta you are not going to find anybody carrying an anti-GMO placard. You are going to run into people who know him as a celebrity. Someone has told them or they have seen his picture, I mean, it is astonishing. Our Dean Jay Akridge has done this and has been here-- people know him [Gebisa Ejeta] there in the way the world knows Norman Borlaug.

So we are making our own deep investments under Jay Akridge's leadership. This spring the world's most advanced automated phenotyping lab will open on hundreds of acres near our campus, and our people and any of you who want to come and use it will be able to study in real time the exact phenotypical expression of genetic variations in the real soil, in the real environment.

We know how much good can come from all this. The last time I checked with my poultry friends, some--you folks have got this down to, I don't know, 1.2 pounds in for 1 pound out. I mean, this is magic. What a boon to a world that not only wants to eat enough to survive, but wants to eat protein, wants to eat the way we all just did.

I see some hopeful signs. Maybe I am just bred to try to be optimistic, but I do. We have, I'm told, legislation people are talking about seriously right now, that would try to stop the pernicious tactic of state by state by state by state, death by a thousand cuts, regulation in this area. And I will just say I think we've come a little ways from Cheerios to Chipotle's. In fairness to General Mills, or maybe in tribute to the 98% that their shareholders who voted against an anti-GMO proposal, that company now seems a little bolder.

On this Chipotle incident I am struggling. My preacher would remind me not to engage in, you know, that four-syllable German word that is hard to pronounce, where you take satisfaction at the misery of others. I am struggling not to engage in it. That's not really the point anyway.

The point is we've seen here an object lesson for those who had been misled. You know, it turns out e-coli is all-natural. But any of this activity, any of these object lessons that might come along, are likely to be inadequate unless they are accompanied by a vigorous and unapologetic calling to account. Not merely reacting, not merely defending these breakthroughs and these essential steps forward. But calling to account those who would, for reasons I cannot fathom, deny the world these essential advances. I am prepared to believe, I choose to believe, that this is a problem of cognitive dissonance on the part of those who surely know the falsity of what they are saying. There have been some recantations, right? There have been some high-profile people who have stepped forward and said, "I was wrong, there is nothing wrong with these technologies, in fact, we need them badly." Those are Chipotle moments that will happen here and there, but it won't be enough.

No, folks who have taken that point of view have got to be called to account. How can you say to the hungry of this earth--how can you say to those who don't enjoy the luxury that we all do and that the developed world in general does, how can you tell those folks, "Sorry about your luck." You know this is an indulgence of the rich and it is, as I said before, it is not just scientifically indefensible, it is morally indefensible. And as much as we would like not to have to engage in arguments like that, somebody better, and no one is more credible than the people in this room, people like you, the folks you know, the folks you influence, the folks you work with every day.

Paul Harvey, if anybody still remembers him, used to end his radio show, you know, with "the rest of the story." So the rest of the Prozac story is, in the end the innovation survived. In the end, anti-science was countered. Not just the falsity of the charges, but the unacceptable motives of those making the charges were exposed sufficiently that the molecule survived, was eventually joined by others like it, and there are countless people--suicide rates are down, depression is no longer stigmatized, it is widely treated and understood, not as a fault in your soul, but as a chemical imbalance in almost every case, and we are in a better world.

We are going to have to have some sort of a victory like that in this area. And I take your time tonight on this because I just don't know a more important quest that any of us could pick up, if you are willing. The GMO debate is even bigger and even more imperative than the one I described about depression. We will need all the voices in this room, apparently, to prevail. But what a great, great assignment. If we can do that then we can get on with the thrilling humanitarian assignment of saving lives and feeding 9 billion people on a planet cleaner and safer than the one we inhabit today. Thank you so very much.