

Mr. Chairman, Senator Harkin, Members of the Committee:

At the outset let me emphasize that it was our hope that Dr. Norman E. Borlaug, the founder of the World Food Prize and one of America's leading proponents of biotechnology, would be able to be here to testify as part of this panel. However, Dr. Borlaug is today undergoing minor surgery and was thus unable to appear. At age 91, he is still going strong traversing the globe in an effort to bring the benefits of the "Green Revolution" to Africa, to inspire the next generation of young scientists and to convey the importance he attaches to the role of science in providing the additional food required to feed the burgeoning world population in the 21st century.

There is probably always some cause for trepidation when a former diplomat with a degree in political science appears to testify before the Senate Agriculture Committee, especially when the topic is biotechnology, and even more so when he is standing in for Dr. Borlaug the man of whom it is said, "He has saved more lives than any other person who has ever lived, in all human history." On second thought, however, it may not be so surprising to have someone with a Foreign Service background here today. Last Friday, June 10, a ceremony was held in the marvelous Benjamin Franklin Diplomatic Reception Room at the State Department presided over by AID administrator Andrew Natsios. At that time it was my privilege to announce that the \$250,000 World Food Prize for 2005 will be presented to a scientist from India, Dr. Modadugu Gupta, for his accomplishment in bringing the benefits of small scale fish farming to over a million of the most poor people in South and Southeastern Asia and expanding that capability in Africa through pioneering efforts in genetic transfer. The room was filled to overflowing with an array of diplomats, government officials, representatives of development agencies such as the World Bank, people representing food companies, producer groups and others deeply involved in biotechnology. They were there because of the increasingly central role food production is playing in international relations, and because the World Food Prize is increasingly seen as the foremost national and international award recognizing exceptional breakthrough achievements in increasing the quality, quantity and availability of food. And after all, that is exactly what biotechnology is all about.

As you no doubt are aware, Dr. Borlaug has been directly involved in the task forces and special committees the US Government has established to have exchanges with Europe and other parts of the world regarding the acceptance of genetically modified foods. In this capacity, and in his individual speaking and writing, Dr. Borlaug has emphasized several points which I feel sure he would be pleased if I repeat for you here.

First and foremost, Dr. Borlaug is a passionate advocate for the primacy of science. In his long life, he has seen firsthand the impact of the application of science to increases in productivity and nutrition. Dr. Borlaug still recounts the stories of his encounters, as a young man, with Henry A. Wallace and how Wallace helped change the face of American agriculture through the application of science he learned at Iowa State University and from the brilliant African-American pioneer Dr. George Washington Carver. Although Dr. Borlaug usually adds that then Vice President Wallace was chagrined to find Borlaug working on wheat in Mexico and said to him "Why isn't a good Iowa boy like you working on corn?" It is Dr. Borlaug's fear that political and other considerations are coloring the debate and dialogue over biotechnology and

that the world risks losing the power of this new science to help feed an increasing hungry world.

Dr. Borlaug also sees the potential power of genetic modification in dealing with plant diseases that have plagued our country and others such as rust. As we watch the current spread of rust affecting soybeans in the United States, it may be well to recall what Dr. Borlaug, who has spent his entire career of 60 years as a plant pathologist, sites as one of his fondest dreams. He notes that the one cereal that has an apparent immunity against rust diseases is rice. "Imagine the benefits," Dr. Borlaug wrote, "if the genes that provide immunity against rust in rice could be transferred into wheat, barley, oats, millet, maize and sorghum," and I am sure he would add soybeans. "The world could finally be free from the scourge of the rusts which have led to so many famines over the course human history."

Dr. Borlaug has also emphasized the power of genetic engineering to improve the nutritional quality. For example, had genetic engineering techniques been available, the 40 year period it took to develop a means to increase the levels of lycene and tryptophane in maize could have been cut in half or even more.

Another crucial point to Dr. Borlaug, if biotechnology is to flourish, is the importance of maintaining funding for research at our US and international public research centers. Our Land Grant Colleges and Universities, and the CGIAR centers of the World Bank are essential elements, along with the research done by commercial agribusiness firms, in maintaining America's leading role in agricultural innovation.

Finally, Dr. Borlaug consistently points out the crucial importance of biotechnology to preserving our environment and biodiversity on our planet. When all other arguments are put aside, the bottom line question Dr. Borlaug poses is this: In the next 50 years there will be an addition three billion people to feed on our planet. The additional food necessary to accomplish this task will be found in one of two ways. Either we will develop techniques which permit us to achieve increased yields on the land currently in production; or we will be forced to cut down significant parts of the remaining rainforests and animal habitats to make more land available to grow this additional food. This will be the most important issue to be addressed as we move from the "Green Revolution" to the "Gene Revolution," he concludes.

In this regard, it is important to recall that Dr. Borlaug's break-through achievements in the 20th Century are credited with saving a billion people from famine, and keeping an estimated one billion hectares of forest and rainforest from being cleared for agricultural production.

Perhaps Dr. Borlaug's most important and longest-lasting contribution to the effort to address food production and hunger in the 21st century will be his creation of the World Food Prize. The origins of the World Food Prize can be traced back to the mid 1960's when Dr. Borlaug was asked by the United Nations Food and Agriculture Organization to go to India and Pakistan as those two countries faced the prospect of severe food shortage. Working on the basis of equality and mutual respect, Dr. Borlaug partnered with senior officials and young scientists in both countries to introduce a new rust resistant wheat variety he had developed during two decades of research in Mexico which tripled the yield. This new approach to agriculture staved off a pandemic famine and led to both countries becoming self-sufficient in

wheat in very few years.

For this achievement, in 1970 Dr. Borlaug was presented the Nobel Peace Prize as the "Father of the Green Revolution." But it bothered Dr. Borlaug that so many others, who were equally deserving of recognition, were not honored in the same way. So when the Nobel Committee advised him that it could not accede to his proposal that they establish a new Nobel Prize for food or agriculture, Dr. Borlaug, in 1986, created the World Food Prize. And with the financial support of the Ruan family this award has been presented annually each October over the last 19 years to individuals who have made exceptional Nobel-like breakthrough achievements in increasing the quality, quantity and availability of food in the world.

In conjunction with the presentation of this award in the magnificent Iowa State Capitol building on or around World Food Day, Dr. Borlaug believed that there needed to be a place where officials and experts can come together to address the crucial issues facing world agriculture, recognize and inspire individual achievements in developing new technologies and inculcate in our young people their importance in being involved in agricultural and biological science.

For the past 19 years the World Food Prize has been this vehicle. The creation of the World Food Prize is an inspiring story of how two men both born in small towns in Iowa in 1914 came together in the belief that they could create something that might change the world. Norman Borlaug and John Ruan are those two men. I was greatly pleased when in 1999 they invited me to join with them in this endeavor. When Dr. Borlaug and I first met in 1999 we talked about our experiences of working in very poor villages, we discovered that we had a common perception about how to bring dramatic change to poorer societies. I had grown up in eastern Iowa not far from the "Field of Dreams" and had ended my diplomatic career as Ambassador to Cambodia, the site of the Killing Fields. But the connection between these two is not as distant as it may seem. Like many young officers entering the State Department, my first thought was of an assignment to some European Capital where I might attend diplomatic receptions in chandeliered ballrooms. Instead, I found myself assigned in the Mekong Delta at the height of the Vietnam War. I ended up staying for six years. And it was there that I learned one of the most important lessons of my life about the power of agricultural technology and rural roads in transforming societies and defeating terrorism.

In 1968, new "miracle rice" had just been developed in the Philippines and was being introduced into the villages where I served as the district senior advisor as part of the Military Assistance Command. The rice had been developed following Dr. Borlaug's model of improved wheat, using new, high yielding seeds and an integrated set of support mechanisms such as fertilizer and irrigation. The payoff was enormous. Whereas families had at best been able to produce one crop of traditional rice, barely enough to sustain their family, with the new seeds they could get two or three crops a year, each with much higher yields. In the area where this new rice was planted, family incomes increased dramatically. A drive through those villages showed children with better clothes and better nutrition living in homes that were bigger and stronger. And those families now had extra income with which they could buy a motor bike or some other desired item. The most instructive aspect of this process was that the new seeds and this new approach to agriculture were adopted only in villages reached by the

improved road. So when we drove through the first four villages with the upgraded road and new bridges, life seemed transformed with children easily able to get to schools in nearby hamlets and thus able to remain in school longer. At the same time, security in these villages improved exponentially. Terrorist cells, which had been in regular operation, seemed to evaporate with the improved economic prospects in the villages. However, when you came to the end of the improved road and crossed the canal by sampan, life in the other four villages seemed unchanged from what it had been 100 years ago. Houses looked rundown; children seemed poorly dressed, thinner and poorly nourished; families were forced to subsist on only one rice crop; and security remained elusive. It was necessary to have an armed escort during the day and one did not venture in the villages at night because of the ongoing presence of the Vietcong. The lesson I learned from this experience was the lesson that Dr. Borlaug and everyone in his generation had seen growing up. The way America transformed its rural society, whether in Iowa or any another state, was by building rural roads and by spreading new agricultural technologies being developed at our land-grant colleges and by its graduates. I carried this lesson with me through the rest of my diplomatic career and finally to Cambodia as Deputy Assistant Secretary and then Ambassador. In 1990 there were still approximately 25,000 Khmer Rouge in control of large parts of that devastated country, whom even 200,000 Vietnamese troops could not dislodge and destroy. With the coming of the UN brokered peace agreement and democratic elections I worked with the new Cambodian government to put in place a program to de-mine and upgrade rural roads into Khmer Rouge areas and to bring new agriculture technology with it. This accomplished what all the air strikes and artillery barrages could not. Wherever the roads were built and new technology introduced, it destroyed the Khmer Rouge by undermining support for them in the most remote areas, bombarding them with economic progress, human rights, more access to health care, and educational opportunities. Nine years later, just as I was about to depart Phnom Penh, the last Khmer Rouge general surrendered, thus totally eliminating that terrorist organization.

It should be instructive as we confront terrorist organizations in many other places in the world, that biotechnology (the current equivalent of that Miracle Rice) and rural roads may be among our most valuable and potent weapons in the struggle between freedom and terrorism.

The assignment I was given by Dr. Borlaug when I arrived in Iowa in 1999 was to build the World Food Prize into the Nobel Prize for Food and Agriculture. For the past six years we have been endeavoring to achieve that objective through a three-fold approach. Each October, on or near October 16, World food Day, we hold a ceremony in our magnificent Iowa State Capitol building that will rival, if not exceed, those in Oslo and Stockholm at which the Nobel Prize is presented.

In October 2004 we had representatives of 62 different countries in the chamber of the House of Representatives as Dr. Borlaug presented our \$250,000 Prize. Also assembled there was more life-saving achievement in terms of the work of our laureates than is assembled any other place around the globe.

It is Dr. Borlaug's goal to have the most significant observance of World Food Day, anywhere around the globe, take place in Des Moines each October. And so, in addition to this ceremony, with Dr. Borlaug's lead, we hold a two day symposium on a cutting edge topic in the food and

development. We emphasize two points: First that addressing issues of hunger and human suffering can be a way to transcend the most divisive political issues, just as Dr. Borlaug did in the 1960's when he led the effort to bring about change in Pakistan and India. Secondly, more than ever before, issues of food production are directly tied to national security.

In 2000, when the debate about biotechnology was largely confined to environmental concerns being stressed by Europe, the World Food Prize Symposium addressed the critical role biotechnology could play in feeding developing countries.

In 2001, we put Agroterrorism on our conference agenda six months before the tragic events of 9/11. As a result, we had seven of the world's leading experts on bioterrorism speaking in Des Moines, at the first meeting anywhere to highlight the vulnerability of our food supply in the post 9/11 era.

A year later, global water insecurity was the topic addressed, with special emphasis on Israel and the Middle East. Iowa proved to be an exceptionally good place to bring together Israelis and Palestinians along with experts from Egypt, Syria and the UAE. Again, biotechnology was front and center, as the research being done to adapt crops to extreme arid conditions as well as to salt water intrusion was featured. We were particularly pleased that Dr. Saul Arlosoroff, Chairman of the Israeli Water Engineers Association, said of this symposium:

"During the past 45 years, I have never participated in a symposium, conference, or seminar that could match your organization and the quality of the presentations."

This October the World Food Prize will have another first. Our symposium will address the twin challenges of confronting malnutrition and hunger in the developing world and overnutrition and obesity in our country and other parts of the developed world. Senior officers at HHS tell us no one has put these two groups of experts together in the same room. And again, biotechnology will be in the forefront.

The leaders and senior officials of four of America's foremost agribusinesses are all on the program, as are the leading researchers in the area of biofortification and enhancing nutrition. We will also be stressing the potential for agriculture to play a leading role in countering HIV/AIDS. There could be, perhaps, no greater use of biotechnology than if it could impact those with compromised immune systems.

Dr. Borlaug's and my goal is to build the World Food Prize International Symposium into the DAVOS of food and agriculture, a conference once a year that draws the top officials, scientists, business leaders, researchers from across America and around the world together for a dialog on the most crucial issues facing the world of food and agriculture.

Dr. Borlaug's presence each year at this event has drawn such policy officials and experts from all over the globe to participate. With strong support from Senator Harkin, the World Food Prize is undertaking the restoration of a magnificent 100 year old building which will be known as the Norman E. Borlaug Hall of Laureates. Not only will it be a stunning tribute to Dr. Borlaug, but it will also recognize the great agricultural innovations and humanitarian achievements of persons like Herbert Hoover, Henry Wallace, George Washington Carver and

Jessie Field Shambaugh (the woman who founded 4-H). But most importantly it will be a building that will inspire those meeting in it to reach for the type of achievements that Dr. Borlaug made. It will be the place in which the great discussions about biotechnology can take place and which will draw leading proponents and experts to an annual summit in Dr. Borlaug's honor, and to witness the presentation of "The Nobel Prize for Food and Agriculture."

This process is already beginning. This year, for the third year in a row, the US Grains Council and the American and Iowa Corn Promotion Boards will bring one hundred foreign officials, with responsibility for biotechnology in their countries, to the World Food Prize celebration and symposium and to see biotechnology at work on U.S. farms.

The World Food Prize events have also received special legislative endorsement. Both Iowa and Minnesota claim Dr. Borlaug as a favorite son, and both have made October 16th a statewide day of recognition for the World Food Prize in his honor. Last year, the U.S. Senate also approved a resolution making October 16th, World Food Prize Day in America in honor of Dr. Borlaug.

Dr. Borlaug would probably resist the dichotomy that your committee has imposed on these hearings by dividing them into domestic and international. To him, the research and dialogue reaches across that divide. During the past 40 years, arguably the most prolific period in agricultural research in all history, there was a thread that ran from America's colleges and universities, to the World Bank and its network of CGIAR Centers, to large research foundations to ministries of agriculture. It is no accident that more than half of the foreign recipients of the World Food Prize either studied or taught at US Land Grant colleges. It is crucial that we strengthen that thread and maintain that research connection that Norman Borlaug and others spent so many decades putting in place.

Mr. Chairman, in 2006 we will celebrate the 20th anniversary of Dr. Borlaug's founding of the World Food Prize. There could no greater anniversary present for Dr. Borlaug than for us to work together to fulfill his dreams. Together, I believe we could gather several hundred of the leading figures in the world for a special dialogue on biotechnology with Dr. Borlaug. Perhaps you and Senator Harkin could bring the entire Senate Agricultural Committee. To that we would add 100 high school students and 100 teachers, who are part of our World Food Prize Youth Institute.

It would be, without doubt, "The most significant observance of World Food Day anywhere around the Globe."

And through this World Food Prize Symposium and our Laureate Award Ceremony, together we can help inspire these next break-through achievements that will be so crucial to the future of American agriculture and reducing world hunger, poverty and malnutrition.