

An Agronomist's Perspective: How To Feed a Hungry World

Dr. Villalobos studied agronomy at the National School of Agriculture in Chapingo, Mexico, earning Bachelor's and Master's degrees; he received his Ph.D. in plant morphogenesis from the University of Calgary in Canada in 1983. He has twice served as Undersecretary in the Mexican Federal Government, first as Natural Resources Undersecretary for the Secretariat of Environment, Natural Resources, and Fisheries, and later, as Agriculture Undersecretary for the Secretariat of Agriculture, Ranching, Rural Development, Fisheries, and Food.

Robert Hux interviewed him on Sept. 19, 2012 for 21st Century Science & Technology magazine, which gave EIR permission to publish the transcript. The two were attending the 5th Congress of Agronomists and Agrologists in Quebec City, where Villalobos gave a presentation on "The Food Crisis in the World: Can the Americas Offer Solutions?"

Q: Dr. Villalobos, the organization that you are associated with, the Inter-American Institute for Cooperation on Agriculture (IICA) was established in 1942, at the time that Franklin Delano Roosevelt was President of the United States. Can you say something about what your organization represents?

Villalobos: The reason [it was founded] was Mr. Henry Wallace, who was the U.S. Secretary of Agriculture at this time. It was the middle of the Second World War, and it was considered very important to have an institution that would be able to provide natural resources, as well as different products that in those days were imported from Asian countries: tropical crops, particularly those that were related to industry, such as fibers and rubber. Mr. Wallace visited various countries and then decided, along with other members of this group, to create the IICA, in Costa Rica, for this particular reason.

When the organization was inaugurated a year later, Mr. Wallace was Vice President. He came to Costa Rica



World Congress of Agronomists & Agrologists
Dr. Villalobos addresses the Congress on "The Food Crisis in the World: Can the Americas Offer Solutions?"

and they proclaimed the inauguration of that institute. That was in 1943.

Q: One of the things that President Roosevelt expressed was the Four Fundamental Freedoms, one of which was the Freedom from Want. Can you say something about the orientation of your organization at that point?

Villalobos: The general idea was to be able to identify what Mother Nature provides to us: the biodiversity and natural resources of the tropical Americas. But at the same time, they were looking for mechanisms to share knowledge and build national capacities in agriculture. How could poor countries make better use of their resources and enhance the human capacity of those countries? Thus the institution was born with the



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Dr. Villalobos studied with agronomist Dr. Norman Borlaug (1914-2009), the Nobel laureate who is credit with having saved 1 billion people from starvation. This graphic is from Dr. Villalobos's presentation to the conference.

philosophy of sharing knowledge and bringing the experience of the most developed countries to the least developed countries, to raise the standard of living of poor people.

The Green Revolution

Q: I was told that you were a student of Nobel laureate Dr. Norman Borlaug, who is known as the Father of the Green Revolution.

Villalobos: Yes. I was in Chapingo (which is 3-4 kilometers from the International Center for Wheat and Corn (CIMMYT), when Dr. Borlaug was there as a scientist. In 1971, my university signed an agreement with Japan to establish the first laboratory of tissue culture, which in some ways is now part of biotechnology.

To me, it was very important to learn about plant genetics. My idea in those days was: How can I combine the conventional plant breeding that Borlaug practiced (and he made a tremendous impact, particularly in Asian countries) and myself as a young student with a potential to manipulate tissue cultures in test tubes, to accelerate the process of plant breeding. My first contact with him was in those days, and we built very good relations over the years. I accompanied him to different fora, and that was always an honor for me. One of these was when he was awarded a doctoral degree in England. He would always let me know when he would be coming to Mexico, and then I would find the time to talk with him. I shared



with him my views on plant biotechnology and I always learned from him. The last time I talked with him was when he gave me his views about my book on GMOs.¹ I thought, and he considered it a good idea, that we should have something in Spanish.

My experience in that field for many years, which is controversial, was very much stimulated by his words. He wrote the introduction to my book.

I want to share with you what his major concern was. He told me: “Victor, I am worried because there are no plant breeders anymore. We have to do something to stimulate young people to study plant breeding.” He thought that young people were very much interested to get into molecular biology, genetic engineering. But his view was that, whatever mechanism you use, someone has to evaluate the plants in the field. And he said, we don’t have these people anymore.

In the prologue to my book on transgenics, Dr. Borlaug wrote the following conclusion:

“Without an adequate supply of food at accessible prices, we cannot provide the world with health, prosperity, and peace in the 21st Century. Very possibly, in the next 50 years, the world’s farmers and ranchers will have to increase their productivity by 75%, and achieve this despite the formidable challenge of reduced resources. To achieve this, and especially to help the world’s poor and those that do not have food security, we need biotechnology, the responsible use of which cannot be viewed as an enemy to the population, as are hunger and poverty.”

Patenting Seeds

Q: What about the idea that private companies can patent a form of life—companies like Monsanto, which will sue a farmer if the wind blows their seed into his field?

Villalobos: You know, the patent is for a process. You can register a variety, but you cannot patent a live organism. You patent the process. That’s what most countries will agree with. In general terms, I think it is always good for the farmers to have the freedom to choose between different possibilities, or even to use

1. Dr. Victor M. Villalobos, *Los transgenicos/Genetically Modified Organisms: Oportunidades Y Amenazas* (Mundi Presna Mexico, 2008).

their own seed. The thought that you cannot use the same seed, for instance from GMO, for the next crop cycle, is not new. No hybrid, whether we are talking about cereals or about animals, will inherit the same genetic characteristics. That's something that was clear, even before GMOs were commercialized.

The important thing is to understand that we are talking about a variety. It costs money to develop, particularly if we are talking about a GMO, which implies important investment and knowledge. But in the end, if the farmer sees that this variety will raise production, will produce a better grain, will be cleaner, and will not imply more investment in agrochemicals or the manipulation of soil, he will go for that.

There were 160 million hectares being cultivated for genetically modified crops last year, which means that every year since these GMO varieties were commercialized in 1996, there has been an increase in the area cultivated, because farmers prioritize these things. So I think these technologies, which have been adopted very quickly even by very poor farmers, will not be reversed. In the end, if the farmer has the opportunity to choose, he will choose what makes a better crop.

Water Projects

Q: During this period of the Green Revolution associated with Dr. Borlaug, people still had the idea that if you were going to have an increase in the food supply, you would also have to increase inputs that would include water, among other things. For example, President John Kennedy, in the early 1960s, was making speeches all over the United States inaugurating various dams, saying this dam exists because 30 years ago someone thought about what was needed for the future. At that time, the Kennedy Administration was looking very closely at a plan called the North American Water and Power Alliance (NAWAPA).

One of the views put forward at this conference, particularly by the representative of the OECD, is that the amount of fresh water on the planet is not changing, while the demand for it is increasing. However, as the speaker from the FAO noted, the surface of the Earth is more water than land, and the greatest part of the surface water on the continents drains into the oceans, returning later as rain or snow—implying that we can increase the available fresh water by tapping into that cycle.

And 500 million years ago, life on our planet was confined to the oceans, and the continents were dry. It was only the movement of life forms onto land, initially

primitive plants, but later growing grasses and forests, which created the conditions for cloud formation, rainfall, and the development of river systems. So there has been a process of development in the biosphere, where life generates the conditions for its further development, which has included the creation of increasing amounts of the fresh water required not only by plants and animals, but also by man.

Why should someone say that we have to go in the opposite direction, that we have to use less water? It doesn't seem like we will be able to feed 9 billion people if that is our view.

Villalobos: Yes, you are right. You are talking about such an important period of time. I fully agree with you. What we see now, is that, in the short term, we have to raise production. And certainly we have to do it with less water, which is something that we have to take into consideration, and for that we should use all of the scientific and innovation tools that are available.

But what is really important is to look to the middle term or long term, and see how we will be able to guarantee water in the long term. And when you look at what has happened, particularly in less developed countries, they are destroying the forests, they are destroying the jungles, they are destroying the natural resources, apparently with the view of development alternatives, but with very short-term projects and programs. So, there is always pressure to raise [agricultural] productivity. And what we see in Latin American countries, is that the amount of water they are receiving is scarce and decreasing.

So while we are producing food, we have to be more careful about water. We have to look at the long term. We have to restore the forests, reestablish the watersheds. We have to organize the sources from which we got the water and *maintain* them. And for that, the magnitude of investment and development is higher, like the project that you mentioned.

I fully agree that we have to look at the broad perspective. We certainly have to involve different countries. When we are talking about rivers that start in one country and end in another, then there will certainly be a potential conflict, and that is something that we should be concerned about. But management, and establishing the regulations, and looking at these long-term visions are what we need to do.

But, the requests that we receive as an institution that provides the assistance and technology from the member countries is: "What will we grow and what

kind of harvest will we have in the next six months or a year?" That's the problem that we have!

Science and Innovation

Q: While meeting such short-term pressures, the view of the future is very important. Franklin Delano Roosevelt put it in terms of achieving the Four Freedoms. Later, President Eisenhower promoted the Atoms for Peace outlook—that nuclear energy and science should be available to advance all mankind. But after the 1971 end of the Bretton Woods fixed-currency system, and the advent of monetary speculation and globalization, it became increasingly difficult for any nation to engage in long-term development of power, transportation, water, agriculture, and even science.

Among the precious few national leaders to stand up against this decline was Mexico's President José López Portillo.

He fought for the vision of full-scale agro-industrial development in Mexico, including using oil for trade to acquire high-tech capital goods for rapid modernization, with mechanized agriculture, irrigation systems, and heavy industry. In the 1982 debt crisis, he met with Lyndon LaRouche on the latter's "Operation Juárez," to set aside speculative debt, and re-establish a credit-for-development system. López Portillo called for the creation of new towns, ports, and a network of 20 nuclear power plants.

What lessons do you see in these perspectives?

Villalobos: You make a very good point. My view is that when human beings are in trouble and are facing a very critical situation, like what happened in the 19th Century, and what has happened more recently with the Green Revolution, science always comes to rescue human beings. So, I believe in science. I believe in innovation.

To me, at this particular time we are at the end of an era of agriculture that is finished for, of different reasons. And now we are at the frontier of a new agriculture: more responsible, more productive, but at the same time more sustainable in different ways. So if we agree on that, and if we consider that we have a bunch of technologies that will accompany this process, I am optimistic about the future. And I don't think it will be too difficult to overcome the problems, even the ones that are out of our control, like climate change. So we



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"We are at the end of an era of agriculture that is finished for different reasons," Villalobos said. "And now we are at the frontier of a new agriculture: more responsible, more productive, but at the same time more sustainable in different ways."

have to put in place the proper tools to solve specific problems for the specific countries. And I don't eliminate any of the possibilities; perhaps as a result of the pressure, we will eventually create new ones.

Alternate sources of energy are being developed for people. For instance, look at today's hybrid cars. This technology was there for some years already, but now, since we have some problems with the availability or the price of oil, these technologies come out. But it's not because somebody finds them; it's because there is a history of research or accumulation of knowledge, and when it is necessary they put it forward. The innovation in the private sector is far ahead: There are many things that are there, and eventually will be used.

In agriculture practically, you mentioned Mexico and López Portillo. Mexico has a nuclear power plant at Veracruz, which has been there since those times and is working perfectly. Perhaps the particular situation was not right to have more plants, but the one that was built then is still working, and Mexicans never have any complaints about it. I think it's a good demonstration that technology works when you run it properly, when you properly maintain it. Any technology. That's my view.

Biofuels and the Corn Supply

Q: The situation in the United States now, with the drought affecting the corn crop and other crops—the

OECD is projecting that over the next eight years, the use of food stocks for biofuels will increase by 14% from corn, 16% from vegetable oils (soy, palm, canola), 34% from sugar cane. Oxfam has released a report saying that if the land used to produce biofuels had been used to produce wheat and maize instead, it could have fed 127 million people. Presently there are eight governors of U.S. agricultural states that are demanding that the Renewable Fuels Mandate should be rescinded or at least temporarily suspended, because of the impact on the corn crop. Leaders of U.S. livestock and animal feed producers, which include 19 groups covering all the top dairy, cattle, poultry, sheep, and meat- and feed-processing sectors, have filed a petition to the Obama Administration demanding the same thing. And yet, as of this morning, President Obama is calling for a 28% increase in conversion of food to biofuels.

What is your view of biofuels, considering that we have not adequately developed nuclear energy or other sources of energy that would not threaten the food supply?

Villalobos: Well, of course I respect any decision that any country and any authority in each country makes on this. And the private sector of course. I mentioned this morning that biofuels production is a good opportunity for farmers. Look at my country: There are many small producers with 3 or 4 hectares, which produce corn at very low yields. If we provide them an opportunity to move to another crop, perhaps with less investment required, and organize them to produce other crops that are less labor-intensive, and provide opportunity for them to gain more for their crops, that will be a very good alternative. In that respect, there is an opportunity to look at the biodiversity, to identify different crops that are not well developed, but that have potential.

One of the benefits that we have in some countries is biodiversity that is waiting there to have some science applied to it, some technology, to rescue many of these crops. And I know that there are possibilities that certainly will change the standard of living of many poor people, because some practice agriculture in very poor soils. But because of tradition, they still grow crops that they should not grow, because they cannot live on those crops. I see that as another opportunity for many small communities to be engaged, if we provide a set of techniques to rescue those resources. Rather than use crops that are could directly feed the population, like corn, I would rather see the other alternatives. I know that this has happened with castor beans or jatropha, which are plants endemic to tropical countries. Those crops are

waiting to receive some technology inputs, and they certainly present an interesting possibility for biofuels.

Q: One of the speakers at the conference showed a chart of the number of people in the world who are going hungry, which decreased from 900 million people in 1970 to a minimum in 1996, when it began to go up again. That was just about the time that the World Trade Organization was created, and the policy changed. Nations were told, “Don’t try to produce food to feed yourself, just make money to buy food from someone else.”

What do you think of the changes in food policies? For example, would it be important for Mexico to return to producing the food to feed itself, rather than depending upon the market?

Villalobos: Because of the price! Mexico decided that their policy is to promote production and to increase yields, and for that they launched a very important program with CIMMYT, to raise the productivity of the local landraces that the farmers want to work with; they don’t want to give up these varieties.

But I think that during the 1990s, and even earlier, Mexico benefitted from the low price of corn in the United States. It was clear for us that the price of growing corn in Mexico was, I would say, 40% higher than taking advantage of the low price of corn subsidized by the government. Mexico took advantage of that, and in the end, we were able to produce very much cheaper animal protein for the poorest people. I’m talking about chicken. So we transformed this corn into chicken, and we transformed it into eggs, and that was a cheaper source of protein for the poorest people in Mexico. So we took advantage of this lower price of corn in the United States, which was about 40% cheaper than in Mexico.

Q: However, it is important here to mention the effects on nations historically of the policy of free trade. One of the arguments made by the American Founders, people like Alexander Hamilton, and others later, was that what is required is not that the price of food be cheap, but that the purchasing power of the population be raised.

Villalobos: Yes, that’s true.

Q: I believe that one of the things that happened in the 1980s, when cheap corn was coming into Mexico from the United States, was that Mexican farmers were put out of business, and many of them had nowhere to go but to escape to the United States, where they became a source of cheap labor until they lost their jobs later on

and their living became precarious.

Villalobos: You are right; that's the situation; but it certainly goes beyond agriculture, because not all the people who went to the United States were from the rural areas.

That was a critical situation in Mexico. We in Mexico have had financial and social problems, with the inequities and what has happened in the rural areas versus the urban areas. They are so different that people have a tendency to move to the cities, and eventually to move to other places, such as to the United States.

The problem is that when we are looking at very poor rural people, they are so attached to their own culture and traditions that it is very difficult for them to give up cultivating corn. For them, corn is like part of their life. It doesn't matter what the yield is; they want to keep the seeds that they inherited from their grandfathers. It's difficult for the government to provide other alternatives. Even when you demonstrate that they can make a better living with other crops, they will not give up. They will always keep a little plot of corn, but they don't have much land. It's very deep in the culture. It comes from the Revolution in the last century, and it's more cultural than economic. It's hard to understand

perhaps for you, but this is what has happened.

But we are talking about corn for industrial purposes, which never affects the small campesino's cultural way of producing corn. So we are talking about yellow corn that is going to industry, to processing, and to feed chickens, pigs, and cattle. That is the difference.

Q: Do you think it would be desirable for Mexico to return to being food self-sufficient?

Villalobos: Mexico *is* self-sufficient in white corn, which is used to make tortillas. Politically, that is very important: If we start importing white corn for tortillas, then we are in trouble! We require about 20 million tons of corn per year for tortillas. Let me give you a figure: Mexicans consume 1 billion tortillas a day! Eight tortillas per Mexican per day, which is a big figure.

Now, the government, particularly this administration, is working very hard to increase the production of yellow corn for industry, and we import in the order of 7-9 million tons of it. But they have a program to reduce that, in the next five years or so. This is the policy and there are incentives, the most important of which is price. The price is convincing people very quickly to cultivate corn with better technology and access to more efficient production systems.

Released on Thanksgiving 2011, the LPAC-TV documentary "NAWAPA 1964" is the true story of the fight for the North American Water and Power Alliance. Spanning the 1960s and early '70s, it is told through the words of Utah Senator Frank Moss. The 56-minute video, using extensive original film footage and documents, presents the astonishing mobilization for NAWAPA, which came near to being realized, until the assassination of President Kennedy, the Vietnam War, and the 1968 Jacobin reaction, killed it
... until now.

NAWAPA 1964

PUEBLO, COLORADO
AUGUST 16, 1962

<http://larouchepac.com/nawapa1964>