

2007 Norman E. Borlaug/World Food Prize International Symposium
Biofuels and Biofoods: The Global Challenges of Emerging Technologies
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SESSION I. GLOBAL PERSPECTIVES

October 18, 2007 – 8:45 – 11:50 a.m.

Moderator: Nina Fedoroff

Speaker: Roberto Rodrigues

Nina Fedoroff

Science and Technology Adviser to U.S. Secretary of State Condoleezza Rice
Professor, Penn State University

Next is Minister Rodrigues. Roberto Rodrigues served Brazil as Minister of Agriculture and Supply from 2003 to 2006, during which time he was deeply involved in supporting Brazil's already-strong biofuels sector and positioning it for the future. Since stepping down from that position, he has maintained his leadership in biorenewable energy both within Brazil and internationally.

Along with former Florida Governor Jeb Bush and Inter-America Development Bank President Luis Moreno, Minister Rodrigues co-chairs the Interamerican Ethanol Commission, and he was involved in officially receiving President Bush during his trip to Brazil in March of this year.

An agricultural engineer by training and a well-regarded agribusiness leader, Minister Rodrigues currently coordinates the Agrobusiness Center at the prestigious Getulio Vargas Foundation in São Paulo. He has also worked on several government advisory groups including the Agricultural Policy Council, the Foreign Trade Council, and the Brazilian Rural Society.

Mr. Rodrigues.

H. E. Roberto Rodrigues

Coordinator, Getulio Vargas Foundation Agrobusiness Center
Former Minister of Agriculture and Supply, Brazil
Co-Chair, Interamerican Ethanol Coalition

Well, thank you very much for this kind presentation. I just have to tell you that I'm just an old farmer, but sexy, a sexy-generian – that's the only compensation for being "old one."

Well, let me ask you, first of all, forgive me for my English. I used to say I speak English like Tarzan used to do. So there will be a lot of mistakes in my presentation, but please forgive me for that.

Secondly, I am very much proud to participate in this Borlaug Dialogue. Dr. Norman Borlaug has been always my most important light in life as an agronomist. I am very proud to participate in this. And I am very pleased also to be here in Iowa. I'm a farmer – professionally, I'm a farmer – and I have farmed in São Paulo State, in the region of Ribeirão Preto, which is the most developed agribusiness region in my country. And to be here in Iowa, indeed, I feel at home because here also it's very important developed agricultural area, and the farmers here are very efficient and competitive.

So Ambassador Quinn asked me to talk a little bit about what is the role of Brazil in this new paradigm of agriculture in the world that is biofuels. I call it agroenergy. I resist calling it bioenergy. I prefer to call it agroenergy, because it's to prove worldwide that this is agriculture. You cannot put the hole in the land and there will be ethanol all by itself. You must plant something to get biofuels.

So biofuels, okay, but agroenergy, because it's agriculture. We have to defend the origin of agriculture. And I am very much happy to listen from Gloria Visconti the issue of working together. She said we have to work together. It is fantastic, because this is energy through synergy. We must work together to get synergy between our countries to get everything working in a good way.

So let me begin to discuss with you what is our agroenergy paradigm and what we can do. I would try to very quickly draw some scenarios about world agriculture, Brazil's ethanol experience, and what is fundamental is the same issue that the GDP is looking for to take to market and some conclusions on that.

What I try to prove to you is that we are in front of an enormous challenge. Our generation should be proud to receive from the history this responsibility to change civilization. This is what we are facing now: changing civilization. How could we build a complete civilization over something like oil that is going to finish someday? It's a fossil fuel and it's not well-distributed to the world. We have to change civilization to enable energy activity. This is what we have to discuss now.

And for me it's very important to tell you that Mr. Alan MacDiarmid from New Zealand – a chemistry leader, he received the chemistry Nobel Prize some years ago – said that from the ten bigger problems of humankind has to face in the next 50 years, five will depend on agriculture: energy, water, food, environment and poverty. And it's true what we heard today here from Mr. Grant and Ms. Visconti – we have to do together all the things to take advantage on all these problems and from them opportunities instead of problems.

Wherever I go – every week I am traveling, traveling, traveling – to discuss in different countries in the world the issue of agroenergy or biofuels as a bridge from the oil civilization to another civilization, that will come through research that we are discussing all over the world.

So wherever I go, everybody is in favor of biofuels and agroenergy. Everybody. But everybody says, "But if..., but if..., but if..." Well, do you remember Rudyard Kipling with his poem, "If"? "If we don't go, we never build a civilization." So we have to go. And this is what Mr. Grant said today. The population in the world will increase more than two billion people in

thirty years – two billion people more! And not only two billion people more, two billion people that will grow – but 85 percent of this new two billion people will be born in Asia and in Africa. 85 percent. And in these countries the income per capita will grow almost double than it will grow in developed countries. That means more people with more money.

So this is fantastic, a fantastic challenge for us at this moment, because we want, we need to prepare ourselves to give answers to the demand of these new people, not only in food but also in energy. In the 20th century the big challenge for agriculture has been food security, mainly because of the hunger that Europe had suffered during the Second World War.

Then the CAP, the Common Agriculture Policy, had been developed with a very extraordinary strategic vision to double up the agriculture. And agriculture has answered the demands brought by hunger during the Second World War. We have answered it. The production of food has doubled in the recent years, and there is no lack of food in the world. There's just lack of income for poor people to access food. Agriculture is answering the questions of income production.

And the same will be for energy security. That is the big question for the 21st century. We must have in energy more activities in agriculture. The demand of fuels in the next 30 years will increase 55 percent – 55 percent more fuels in the next 30 years. As well as – we will need more, 41 percent of cereals and 42 percent of meat in the next 25 years. That's what agriculture has to answer. We need more – 55 percent of fuels and more than 40 percent of food in the next 20-30 years.

This is the challenge for agriculture. And I'm very happy to be here to tell you that in this region, here in Iowa, you get the answers. Mr. Grant said we can get the answers for both challenges. And in the issue of energy, of agroenergy, what's happened before the 20th century? Before the 20th century biomass has been the most important source for energy. Then in some cases in the 20th century oil and gas became the first source for energy.

But we are coming back to the future through a new, modern kind of biomass to replace the empire of oil – this is the reality. We are in front of ending one empire, and we have to think about the next one in order to guarantee to our grandchildren a new civilization and a better way of life.

I will not discuss with you “Why biofuels?” as an environmental question. Ms. Visconti has already said a lot of things about that, about renewability, about economic aspects. But I want to discuss with you one question, which is a political aspect of biofuels. I am absolutely convinced, traveling all over the world. I've been for some years the president of the International Cooperative Alliance. Since the middle '80s until the beginning of 2001, I've been traveling all over the world because of this position as chairman of the International Cooperative Alliance. And I've been in 81 countries during 12 years, at least two times each, at least.

And I can guarantee you this agroenergy, this biofuels, represents not only a new paradigm for agriculture, it will change the geo-economy in agriculture. And it will change also geopolitics. This is what we are facing now. Geopolitics can change because of biofuels and agriculture. I will try to prove this to you later on in this presentation.

But let me go to what I have to do here, to tell you something about Brazilian experience in ethanol as biofuels. Well, sugar cane was introduced in Brazil in the 16th century, but in 1925 we had the first ethanol-powered vehicle tested in Brazil. But in the '70s the PROALCOOL was really introduced in my country, and then was created the car moved by ethanol, hundred percent of hybrid ethanol.

This figure is to tell you that we need, as Ms. Visconti said, we need strategies. We need public policies to get that. In the beginning there was a strong support of Brazilian government to double up the ethanol production through the PROALCOOL plan in the seventies. But after some years, everybody, all the population, began to buy cars of ethanol engine, hundred percent ethanol, hybrid ethanol, everybody.

Then the prices of ethanol began to fall because of a lot of production, and everybody had this car. All of a sudden the demand became more and more important, and also the prices of sugar went up. And then the producers of ethanol that were at the same time producers of sugar had preferred to produce more sugar and less ethanol. And then what happened? The consumers, the customers, were very frustrated because of lack of ethanol for their cars, and abandoned the cars, the ethanol cars. And the program almost disappeared because of lack of strategy, lack of policies by the private sector side.

And then government decided to retire all kinds of subsidies, all kinds of incentives for cars and buyers of cars, and the program went down very quickly. This is a very important experience I want to share with you.

If there is not a strategy, as Miss Visconti said, if there is not a program, a governmental state policy, then the production of ethanol can disappear because of lack of ethanol in the pumps. So if the owners of the cars don't have ethanol, they will desist of the cars. And we have just retaken the program after 2003 when we had the flex-fuel cars working in Brazil. And this year, 87 percent of all the cars sold in Brazil are flex-fuel cars.

So our experience has been fantastic. In the beginning, as you can see here, the productivity of sugar cane and of course the productivity of ethanol and sugar was not competitive against oil prices. But the new technologies have been developed strongly in the country, and now our productivity has almost doubled related to the beginning of the PROALCOOL plan, and we are very much competitive on that. That's why our vehicles today, you can see in the last three columns the green color is the flex-fuel cars; you can see that the increasing of production of ethanol and increasing of biofuel cars represents the synergy.

The automotive industry has believed in the ethanol as a good activity, and now everybody in Brazil is buying flex-fuel cars because there is national policy and there is a program, a long-term program, guaranteeing consumers the supply of ethanol all over the country. We have pumps all over the country distributing ethanol. There is confidence in the people, in the consumers, about the production of cars and ethanol.

That's why we have today, in Brazil, what our government proudly says is self-sufficiency in oil. We are really self-sufficient in oil. Are we? Yes, because 40 percent of our

fuels are renewable fuels, ethanol and biodiesel. That's why we are self-sufficient in oil, because we have 40 percent of our metrics in fuels given by ethanol.

So let me tell you something about Brazil in order to try to answer the question that Ambassador Quinn put to me – What is our role in the future in agroenergy or in biofuels in the world?

There are a lot of myths about ethanol in the world, a lot of them. Wherever I go, people say, "Oh, you're going to destroy Amazon to produce ethanol." "Oh, you are going to destroy the food production to produce ethanol." That's not true. That's not true. I will try to prove that these myths are not important immediately.

First of all, currently we have in Brazil cultivated area of 62 million hectares; 62 million hectares are cultivated with all crops in Brazil. 3.2 million hectares are cultivated with sugar cane to produce ethanol. That means 5 percent of our current area is cultivated with sugar cane to produce ethanol, 5 percent. We are producing today close to 20 billion liters per year. Our consumption is close to 15 billion liters per year. There is an annual stock of 5 billion liters; we can export at least half of that. So just 5 percent of our total cultivated area is used with sugar cane to produce ethanol.

More than that. We have 220 million hectares of pasture in Brazil, 220 million hectares of pasture in Brazil. Of this, 220 million hectares of pastures, 90 million hectares are available for different crops, 90 million hectares of pastures – this is not rain forest, it's pastures. There are cows eating grass in there. It is not a forest – it's pasture.

Of this 220 million hectares, 90 million hectares are able to produce agriculturally. Of this 90 million, just 22 million hectares are good for sugar cane, because of climates, quality of land issues – just 22 million hectares are good for sugar cane. So we will still have, just in Brazil, 68 million hectares currently used as pastures that are able to produce food. More than one and half times that currently we have cultivated for food.

So why should we have lack of food if you produce ethanol? It's not true, it's not true. More than that, I have here – and I will give this document, this CD, to Ambassador Quinn – work done by IICA is the International Cooperation for Agriculture, is the FAO for the Americas region. I asked of them because of this role in the Agroenergy Hemispheric Commission to study how much land there is in Latin America that can produce sugar cane to get ethanol. It's amazing. There is a lot of land to produce ethanol by sugar cane, and there is a lot of land to produce food also.

More than that. Sugar cane in Brazil and in Latin American countries is advancing over pastures area, not over food production area. And what happens in pastures? There isn't the production of grains – they just produce beef. But sugar cane has a six-year cycle. After six years you have to renew the sugar cane plantation.

In this renewable area, that means 15 percent of the total area of sugar cane, you can produce legumes like soybeans, like peanuts, like beans in general; and we are doing that. So where sugar cane arrive instead of pastures, we produce more food than before; because before

there were no grains in that area. So it's not true – it's a lie to say that sugar cane will replace food. That's a lie. I cannot accept it. Excuse me.

You know, there are some lies that are repeated, repeated, repeated, and they become true. I use one of these issues to try to progress myself. I am 65 years old, and I always, every day, I say to my grandchildren that I will die one hundred years old, killed by a young jealous man, *in flagrante delicto*. I know it's a lie, but who knows? Repeating, repeating, repeating – maybe this can become true also.

So this is one very important point. The other question that is always repeated to me is that – Okay, you are going to destroy the Amazon region to produce ethanol. No, we are not. This Brazilian map tells you where are the good regions to produce sugar cane in Brazil, and the Amazon region is completely white – why? Because it's not good for sugar cane. Why not?

Let me try. I am an agronomist. My father was an agronomist. He had a brother agronomist and a sister married to an agronomist. My mother was daughter of an Italian agronomist. She was not an agronomist, but she had just three brothers; two of them were agronomists. I had just one sister. She is married to an agronomist. They have two boys; both are agronomists. I have had just one wife, just one, and she was an agronomist, also. We have four children, two boys and two girls. The two boys are agronomists. One girl, one daughter is a lawyer, the other one is a psychologist to take care of our background. And I have one daughter-in-law who is an agronomist also. We don't have son-in-law agronomist. You know, son-in-law is evil; it's just a necessity. But I don't like to have my son-in-law as a colleague in my profession.

So why am I telling you that? Because I'm offended when people say they're going to produce sugar cane in Amazon. Why not? Because sugar cane is a straw, full of sweet water, so you need to have water in the soil to grow the sugar cane. But it's necessary to have a dry period in order to transform the sugars, the glucose and the fructose, into sucrose to produce ethanol or sugar. Well, then we need four dry months in, especially, some – not cold region, but not too hot region. In the rain forest, mainly in the rain forest, there is rain every day.

In Belem, Para, the capital of Para, people agree to meet "after the rain." So there is rain every day. How can we get sugar cane on that? So it's not true that they're going to destroy Amazon region, the forest, to produce sugar cane.

People ask me, "But aren't you going to plant some sugar in the Amazon region?" Yes, we are, but we are not going to destroy the Amazon forest – that's another lie. Then people say, "Well, you are going to produce sugar cane in the pasture areas, and pastures are going to the Amazon region." That's not true also. Why not? Because the technology in pasture in Brazil, in cattle, is increasing so much that, ten years ago, the cow went to the slaughterhouse at four years old; now it goes at 18 months old. We produce much more beef per hectare than before. So we need less and less land to produce beef, less and less land. This land, degraded pastures, we will replace by food production or sugar production. That's the real truth.

Well, I'm trying to... Now I'm going to the best part of my presentation. I'm so sorry to lose some time with this. What do we need? We need a market. That's what has been said before

by Ms. Visconti, and it's very difficult for me to speak after such an intelligent, competent, efficient and beautiful young Italian leader. But I'm trying to do that.

So what we need? We need to create a market. What is that? We need to create a market, working together, working together, all countries working together. How do we organize a market?

First of all, we need legislation inside the countries with compulsory mixing. The ethanol program in Brazil just has been a victory because – just 5 minutes; thank you very much. I'll do my best. No chance for permission? OK – I'll do my best. We need mixing legislation obligation. In Brazil it's obliged to get 25 percent of ethanol and a hundred percent of gasoline. Then we have a market and a huge production. Without that there would be never a market for consumers.

Second, we need more countries producing. There will never be a market if just Brazil and the United States are important producers of ethanol. We need much more countries producing ethanol, and that is important to say. Sugar cane is the best raw material for the moment for ethanol. We have other raw materials – we have corn, we have sorghum, we have celluloses – a lot of other materials are coming. And we hope there'll be many alternatives in the future. But currently sugar cane is the best one.

Where is sugar cane good to be produced? Exactly – in the tropical countries. Where? In the poor countries – in Latin America, in Africa, in Asia countries. So, this is the revolution. Agroenergy will give a chance to poor countries and poor people to get more jobs, more wealth, with a revolution of energy in the world. This is what we have to do – we have to produce more biofuels. [Please let's go away because I have no time to say everything I would like.]

Next, so we need more countries producing. We need commoditization and certification, as Ms. Visconti said. We need partnerships, synergy among the countries. We need to talk about protectionism, because we cannot get the same protection that we had before the WTO for food production for agroenergy.

Agroenergy is changing civilization. We cannot contaminate this with protectionism, and Mr. Dean Kleckner wrote a fantastic article last Sunday in *The New York Times*, talking about today's harvest of shame, given to high protectionism in agriculture in the world. The potential of market is absolutely enormous. Heaven is the limit if you have legislation obliging the plan of ethanol.

So what we have to do is take decisions of that, make decisions and eliminate subsidies – this is the turning point. The turning point is oil – \$40 a barrel is enough to be competitive in biofuels. But prices are \$85 per barrel, so we can mix 50 percent of biofuels in the oil.

In conclusion, we are in front of a fantastic chance to change humankind. We have to make decisions. I've been, some weeks ago, in a conference of ministers of agriculture in Guatemala. Ministers of agriculture from all over the Americas were there. And I made a one and a half hour speech about ethanol, and everybody applauded me strongly – "Yes, yes, we like

it! That's good, biofuels – let's change humankind! Let's have a new civilization! Good. What are we now to do?"

Without a strategy there is no future. We have to prepare our strategy together, as Ms. Visconti said, looking for new technologies. What Malthus said, there will be lack of food in some years. Why? Because he was looking to the future through the mirror of the car, looking behind, looking here, behind. What has happened in Brazil? Now sugar cane production is increasing. Grains – in the last 15 years, we have increased 25 percent the area of cereals in Brazil. But the production increased 127 percent. New technologies. When there are new technologies, when there are good prices, when we invest in technologies we can get more production. We can give the answers. We cannot say, "But if..., but if..." No if. Let's build a bridge for the future together.

Some days ago I was in an important conference in biofuels in New York for lawyers on environmental issues. Wonderful lawyers – a little bit against the issue, but I gave a very interesting speech with technical explanations, and they became convinced it's a chance to change the world. Then after all, a very beautiful young lady asked me, "Well, but I have a friend in Brazil, and she tells me that there is corrosion of the motors, of the engines of cars with ethanol."

I said, "Oh, no, no. It was in the beginning, in the beginning of the program, yes, there were. But now the auto industry has corrected everything and there is no more corrosion of motors."

"But my friend in Brazil says to me that early in the morning, in the very cold mornings, the motors don't work."

I said, "No, it was in the beginning, but now has been corrected. There is no more problem of that. It's all right."

"But my friend in Brazil said to me..."

I said, "Please, lady, let me put you two proposals: First, you should change your friend in Brazil. She's looking back. Let's find something more progressive. And second, let me put to you a good proposal. I am 65 years old. In the last fifty years, every Sunday, every Sunday, I drink two or three small cups of ethanol, mix it with sugar and lemon; its name is caipirinha in Brazil. You look at me; of course, you are going to see an old model, an old model out of modernization. But the motor is perfect, working perfectly. The engine is excellent. I propose you to drink every Sunday during six months a glass of gasoline. If your motor works in good shape, then I can discuss corrosion with you." Then please – and I repeat now to you – please drink the best, but burn the rest – for a new civilization.

Thank you very much.