



World Chronicle

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"Biotech and Agriculture in Poor Countries"

Genetically modified crops have been part of a heated international debate that reached a high pitch in 2002 -- when the African nation of Zambia refused modified corn as food aid, despite a famine in the country. But the United Nations Food and Agriculture Organization – FAO – argues that bioengineered crops have great potential for helping the world's poor.

Will that potential become reality? Do considerations about the marketability of bioengineered food in Europe affect the environmental debate? Can biotechnology truly help poor farmers unless there is research and development to increase yield, and reduce pesticide use, for the "the crops of the poor", such as cassava? Is the debate over genetic engineering in agriculture now over, or is it simply shifting to new ground?

These are some of the issues explored in this edition of World Chronicle with guest Charles Riemenschneider, FAO's Director for North America.

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ANNOUNCER: From the United Nations in New York, an unedited interview programme on global issues. This is **World Chronicle**. And here is the host of today's **World Chronicle**.

FOUKARA: Hello, I'm Abderrahim Foukara and this is **World Chronicle**.

If you follow the debates on food and agriculture, then you'll know that it was not long ago that genetically modified crops were a very controversial subject indeed. The African nation of Zambia made headlines in 2002 when it refused to accept genetically modified corn as food aid, despite a famine in the country.

Today the situation looks a bit different. The United Nations Food and Agriculture Organization – known as FAO for short – now states unequivocally that bioengineered crops have great potential for helping the world's poor.

Will that potential become reality? Is the debate over biotech in agriculture finished, or is it simply shifting to new ground?

Our guest today is Charles Riemenschneider, FAO Director of North America.

Dr. Riemenschneider, welcome to **World Chronicle**.

First things first, you are the FAO representative in America. Talk a little bit about to what extent the food security of the rest of the world depends on North America, specifically the United States.

RIEMENSCHNEIDER: Well, the United States is obviously one of the biggest agricultural producers in the world and particularly one of the biggest exporters of many of the important cereal crops that are used for many importing developing countries in particular who can rely on cereal imports.

FOUKARA: If I am a farmer sitting somewhere in Africa, Asia, Latin America and I think about genetically modified food, I'd probably think about chemicals and laboratories and experiments and all that. How safe is the food to eat?

RIEMENSCHNEIDER: Well, I think that we can never say that we live in a risk free world, but all of the studies that have been done to date seem to indicate that the food is safe to eat; and I think we've passed that on, and in our regulatory process through the Codex Alimentarius, the international food code that FAO and the World Health Organization work on together, they've come up with procedures to how the test for this...how to look at the risk of these foods.

FOUKARA: Well, joining us in the studio today are: Edith Lederer of the Associated Press, and Ricardo Alday of Notimex.

LEDERER: Dr. Riemenschneider, you've just said that the studies indicate that food is safe; yet, opponents of genetically modified food say the crops pose unknown health and

environmental risks. The FAO itself has called for more research on the long-term health and environmental impact of these crops. Is there sufficient research that's been done to really make such a recommendation that they can be used now?

RIEMENSCHNEIDER: Well, I think that we...in looking at all the scientific evidence and the preponderance of it shows that it is safe. Obviously there are things that we need to look at, like allergies, potential allergens and toxicity, and looking at foods that are genetically engineered and also the environmental risk where there is probably less agreement among the scientists on the environmental aspects of this. And so we recommend that each country – look at each of these products on a case by case basis because it is going to be different in each case and each kind of climate and each kind of...depending on what kind of agricultural biodiversity might be in a country.

ALDAY: Dr. Riemenschneider, we hear a lot about the good and bad, the pros and cons of engineered crops. From a financial standpoint, can it really be an alternative for countries that are facing trade barriers and other kind of tariffs? Is it a way for them to get food first, and second, is the technology to produce them available to them?

RIEMENSCHNEIDER: Well, I think one of the problems that we do see is that the access to these are fairly limited. Right now, there are basically four crops in the world - corn or maize, and soy beans, canola and cotton that account for 99% of the genetically modified crops, and 6 countries, albeit 4 of them in the developing world being major producers, producing 99% of it; but also only 2 traits – insect resistance and herbicide resistance are really the only things that are used now in 99% of the crops there are on the market. There's a lot of research going on with a lot of potential that would look at things like improving the nutrient content of food. Many people have heard of golden rice, which involves adding vitamin A or beta carotene to rice that may help with overcoming the disease problems and particularly in countries where rice is a significant part of the diet. But there are lots of other potential uses of biotechnology out there. But it is no panacea. We need all kinds of agricultural research that needs to be done that looks at all kinds of crop production whether it's integrated, pest management, nutrient management as well.

FOUKARA: Talk in a little bit more detail about the four crops that you mentioned a little while ago, and the six countries that actually monopolize those four crops. First of all, why is that the case? And what are the ramifications for the rest of the world?

RIEMENSCHNEIDER: Well these countries are all major agriculturally producing countries and they are...and all of them do export as well. South Africa and China, also have significant food security problems themselves in many times...but you look at the export markets is where there are lot of the controversy has come because the European Union has

regulations on imports that cause countries to pause in terms of looking at whether they want to go forward with this technology or not.

FOUKARA: And in terms of individual countries, you mentioned South Africa, you mentioned earlier Brazil; we know that in the case of, specifically in the case of Brazil, Brazil is saying that its getting so much competition from its next door neighbor, Argentina, that it seems to be thinking that is no longer worth pursuing the whole project of genetically modified food. Is the case-by-case, country-by-country situation still valid in your eyes?

RIEMENSCHNEIDER: Well, I think that what we've also, in the report, looked at some of the consumer acceptance issues and what we've found is that of all the studies that have been done that it's not black and white, and consumers are much more nuanced about how they view these products because when you show them benefits from them, if it involves improved nutrition or improved health - they're very interested in it. To date the benefits have been accrued to consumers but mostly in the form of lower prices as a result of higher production and not so much on the other side. But there's also been benefits received by the producers as well, a significant ones in the case of Bt cotton in China and South Africa, estimates of profitability compared to conventional crops of 300% for 4 million small farmers in China.

LEDERER: But the FAO has also complained that the private sector is focusing too much on the technology for these crops that we've just been speaking about, that benefit big commercial interests and not basic food crops for the poor. What crops would you like to see more focus on and what can be done to get more attention on those crops?

RIEMENSCHNEIDER: Well, clearly the food crops for poor people like rice, and wheat and cassava, and many of the...what we call orphan crops like millet and sorghum that are very important in certain countries, and there's very little incentive for the private sector today to undertake research in these areas. And that's why, as part of this report, one of the big findings is that it's going to take a significant public investment in agricultural research, much like was done in the "green revolution" and the big difference this time between the "green revolution" and the so-called "gene revolution", is that the "green revolution" was largely publicly supported research through the Rockefeller Foundation and the International Agricultural Research Centres where the "gene revolution" is largely done by the private sector today. If you look at the budgets of the ten biggest genetic engineering agricultural research companies - it's about 3 billion dollars is the research budget. But the whole budget for the international agricultural research centres is about \$300 million and probably only 10% of that is... their crop improvement budget is about \$300 million, only about a tenth of that is actually what we would call "genetic engineering".

ALDAY: So, how do you engage the public sector in this process? How do you get the countries to put money into this research and all the things that are needed for them to get going?

RIEMENSCHNEIDER: Well, I think it's going to take public-private partnerships, much more so than in the past. There's going to be a need to work in many of these countries with the technology. There are a number of intellectual property rights issues that have to do with who control some of the processes; but I also think that it's important, if we look at the research that needs to be done, it's going to take an investment, it's going to take, much like in the past, an increased focus on agricultural development and an increase in agricultural productivity research in particular.

ALDAY: Isn't there a lot of resistance on ideological grounds or moral grounds, or either safety grounds on those very countries that probably need them most?

RIEMENSCHNEIDER: Well, I think that...as I said, I think the differences of opinion are out there but one of the things that we hope to do with this report is provide an overview of the many different aspects. I think one of the unique things about this report is that we've tried to address all of the different questions. Many of these pieces we've dealt with before through FAO expert committees and we may have one on the environment, we had another one on food safety but putting it all together in one place and looking at some of the economic data and looking at some of the very recent economic research in terms of profitability and how this can be used in developing countries, which show some promise, which is what we have reported on.

FOUKARA: Let me pursue Ricardo's point here a little bit further. The world population is set to... another 2 billion people are supposed to be added to the world population over the next 30 years. I would imagine that because the rate of the population growth seems to be more concentrated in developing countries rather than in developed countries. So, the logical extension is that more people would need food in the developing world and yet most of the research and most of the investments seems to be happening in the developed world. How do you think that situation ought to be addressed?

RIEMENSCHNEIDER: Well, obviously we need to improve the agricultural research capacity of the developing countries, and they will also need improvements in the regulatory processes so that they can deal with these issues, and a lot of that requires capacity building and something that FAO has been working on and will continue to work on but we need the transparency... you know companies aren't going to invest either in a country that doesn't have a transparent, a scientifically based regulatory system because they won't know how their technology will be controlled. So we need to do both the research and improve the regulatory

systems in these countries so that they can potentially use this thing. But it's got to be a decision on a country-by-country basis, and it has to do with what the technology is and how it might be used there.

FOUKARA: You don't sound particularly optimistic about the prospects of food security in the developing world from what you said.

RIEMENSCHNEIDER: Well, I think that it can be done. But it's going to take a change of attitude in many...among donor countries as well as in many of the companies involved in this, which have...there are certainly good examples of public-private partnerships which in Kenya for instance, looking at insect resistance on maize; but again these are very small parts when you look at the total magnitude of the research being done.

LEDERER: Dr. Riemenschneider, following up on this idea, the FAO says the technology for genetically engineered crops hasn't spread fast enough to small farmers who really could reap big benefits. Why not? Is it the fear factor? Is more education needed? Is it just a question of investment as we've just been talking about?

RIEMENSCHNEIDER: Well, I think it's a combination of that. Obviously, in countries that are concerned, that are exporting food, they're concerned about what their potential markets will be and what the consumers might be. Even here in the United States, we've seen a major company just announce that it's going to not do much in terms of genetically modified wheat because they're concerned about the consumer acceptance of it – the exporters here in America.

FOUKARA: This is **World Chronicle**. Our guest is Charles Riemenschneider, FAO Director for North America.

Dr. Riemenschneider, let me go back to that imaginary farmer that I started with at the top of the program. If I am that imaginary farmer in various parts of the developing world, I've probably got a plot of land that from which I eat fresh food, and probably my ancestors had been doing the same thing for hundreds of years. What incentive would I have as that farmer for adopting modern, genetically modified food?

RIEMENSCHNEIDER: Well, if we had a product that was out there that would be more drought-tolerant; obviously there are many places in the world susceptible to drought. Or we have salinity problems in soil, and so if we can use biotechnology, which show potential to be that... but it needs more research -- to address some of these issues -- it could make a very big impact. One of the good things about the technology is that it is often delivered in the seed. So it is fairly size neutral, it helps small producers as well as large producers and particularly where you don't have to add... where if you can put the technology in the seed, it's a lot easier to move seed around than it is to move, for instance even fertilizer, which requires much more

per hectare application. So the potential is there and that's what we see in this, but we also point out that there is a much greater need for research on the crops that are important to poor people in the world.

FOUKARA: But again, if I am that farmer and basically the revenue that I generate from that plot of land and from that traditionally generated food, I basically help not just my family, but my community. And now if I see that these big corporations start dumping hundreds of thousands of tons of genetically modified food on whatever that country I may be in - you mentioned South Africa earlier – that's not exactly an incentive for me to go with the flow.

RIEMENSCHNEIDER: Well, I think that clearly in the case of dumping or the like we need to be careful about how we use these products in terms of...in affecting markets, but in many cases we need to improve the markets as well. We need to make the investments in rural infrastructure. But the prospects of using genetically modified food alone is not the answer. We need a whole range of improvements in agricultural productivity and this is just one of the many tools. It's a tool, and how it is used is important, but what we are saying with our report is – you know, let's not just throw out the tool.

ALDAY: Take a look at numbers and looking at the trends on both poverty and growth population that Abderrahim talked about. Do you see engineered modified crops as a vital tool for food security let's say in the next 50 years?

RIEMENSCHNEIDER: Well, clearly we don't want to... if we have to increase food production significantly because of an increase in population of 2, 3 or 4 billion people over the next 50 years, we don't want to be encroaching on more vulnerable land. And so we're going to have to do it through yield increases; and that involves looking and improving the genetic make up of crops. We've done that through conventional plant breeding in the past, but there are some scientists who see us reaching limits in how far we can take that and we may need these new technologies to help advance that even further and providing disease-free planting material, and providing improved crops through biotechnology. And biotechnology is more than just genetic engineering; in many cases it's a whole range of tools and genomics and the like, and marker-assisted-breeding that could make speed up conventional plant breeding, if you know more about the genome of the crop.

FOUKARA: Translate all those terms that you've used now to somebody like me.

RIEMENSCHNEIDER: Well, it's just in terms of if you know the genetic structure of a crop, you can then be much more precise when you do conventional plant breeding and say, I want to look at these two genes and see how this might be changed if I cross these two plants, just like you would under normal plant breeding. Otherwise, when you...when you do conventional plant breeding, you may have to wait to see how the plant grows, you have to wait

'til it's completely developed then you can...but you can sometimes - if you know better the genetic structure - you can use modern technology tools to really improve what's going on in conventional breeding.

LEDERER: I wanted to bring up another subject slightly related. Do you see any link between the opposition to genetically engineered crops and the opposition to human cloning, which also involves genetic-engineering. And is there...if you do... is there some way that you think the fears about eating genetically modified food can be allayed?

RIEMENSCHNEIDER: Well, I think there's a whole range of issues that as I said when we looked at the consumer attitudes toward these products, obviously just the thought of... there are many people who were concerned about changing mother nature, making this kind of... whether that's human cloning, animal cloning, there are whole range of issues that come up with that. So I think that's part of the...one of the many aspects of it, but again, we've not seen nearly the opposition to genetic engineering when it comes to medicines because people see the immediate benefit and they are much more receptive to that. Food and it's relatively easy if in the wealthy countries of the world if food is a very small percentage of your total spending, you can be picky. But in many parts of the world, they need to look at, weigh the risks and the benefits more directly. And I think that's where we've called for is looking at both the risk and the benefits of these crops and to weigh that in how a country decides whether to go forward, but obviously each country has to make that decision.

FOUKARA: I'd like to talk a little bit about trade policy but before we move on to that I'd like to stay with the point that Edith has just raised. As an FAO do you concern yourself actually with the moral aspect of these things? Is there an arm of the organization that deals with these issues?

RIEMENSCHNEIDER: We've actually had an eminent panel of experts on ethics and agriculture that has talked about biotechnology and raised a number of these issues and obviously these are important issues for our members that we try to inform the member governments on the best we can. We also need to inform them on the science as we see it and that's what we're doing in this report as well.

FOUKARA: Well, let's talk a little bit about trade policy, now. Probably one of the paradoxes – you may agree with me, you may not – but one of the paradoxes that we see today in the world is that farmers in the rich countries are subsidized by their own governments, which basically poses huge problems to farmers in developing countries. Now, in terms of genetically modified crops, these crops, these products are obviously cheaper, especially when you take them across borders to other countries. What do you think an organization like yours ought to do in terms of dealing with governments in rich countries, to address that very issue?

RIEMENSCHNEIDER: Well, we've obviously looked at the issue of subsidies and informed our member governments the best we can in terms of how we see that having an impact on poor people in developing country, obviously how you subsidize makes a difference in terms of the impact but also again, this is when countries have to look at where their markets are....and I think that's one of the reasons that the issue of genetically modified crops was much more of a concern in Africa because they view their traditional markets as more likely in Europe where there is much more consumer resistance to this where perhaps some other countries have not. **FOUKARA:** And at the time when there's increasing talk about Iraq, I just cannot resist asking you this question. Do you see post-conflict countries such as Iraq, which has an abundant water supply; do you see that as fertile ground for growing genetically modified food successfully?

RIEMENSCHNEIDER: Well, obviously, they have an agriculture that is more developed... you know, historically have had an agriculture that is more developed than many of the poorer countries in the world, that is more similar to western type agriculture, so that if they can have the right kind of crops that would make sense for them, and they have a regulatory structure in-place to look at, then they could obviously do that.

FOUKARA: What about a country like Liberia?

RIEMENSCHNEIDER: There again, I think you're...the possibility of getting the country to have the understanding, the regulatory system in-place, the research in-place, is going to be difficult; it's going to take a significant amount of capacity building.

FOUKARA: And maybe a closing comment, obviously about...I understand it's in your report about 830 million people face food shortage around the world. How do you plan or how do you think that addressing that situation in terms of genetically modified food production could be done?

RIEMENSCHNEIDER: Well, I think that there are lots of things that need to be done to address that problem and genetically modified foods are just one of many tools that are necessary, but we need to have the political will to address that. We know what will work to improve agricultural productivity around the world; genetic engineering is one of many tools, but we need to look at integrated pest management, at water control, at rural roads, and agricultural research as well.

LEDERER: And all of that costs money, and you talk about greater government regulations and monitoring particularly in all of these developing countries where this is very important. Where is it going to come from?

RIEMENSCHNEIDER: Well, part of it's going to have to come from the countries themselves, but it's also going to require a renewed commitment among the donor countries of the world as well.

FOUKARA: Are we going to see an international conference at some point to deal with that very issue?

RIEMENSCHNEIDER: Well, I think agricultural productivity is making a comeback in terms of the development agenda in the world and I hope that this would be part of that discussion.

ALDAY: You think there is enough political will right now to go ahead with it?

RIEMENSCHNEIDER: I think it's going to take a renewed commitment but we're moving in the right direction, the rhetoric has improved, the money is... not necessarily there yet.

FOUKARA: Dr. Riemenschneider, that's all the time we have. Thank you for being with us on this edition of **World Chronicle**.

Our guest has been Charles Riemenschneider, FAO Director for North America. He was interviewed by Edith Lederer of the Associated Press, and Ricardo Alday of Notimex.

I'm Abderrahim Foukara. Thank you for joining us, we invite you to be with us for the next edition of **World Chronicle**.

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