

**ADVANCING THE FIELD: SPARKING INNOVATION IN ANIMAL AGRICULTURE**

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Facilitator:

*Manuel Otero* – Director General, Inter-American Institute for Cooperation on Agriculture (IICA)

*Judith de Vor* – Farmer, The Netherlands – Global Farmer Network

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*Surita Sandosham* – President and Chief Executive Officer, Heifer International

*Please welcome Advancing the Field: Sparking Innovation in Animal Agriculture.*

Facilitator

*Manuel Otero*

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Good afternoon, everyone. It is a real honor to participate in this session that is going to focus on innovation and future trends in sustainable animal agriculture systems. Let me introduce myself. I am Manuel Otero, Director General of an international organization posted in America and committed where the culture and rural development.

First of all, let me confess you something. I was born in Argentina, and I studied veterinary science, and I grew up surrounded by cows. As the main actors of rural landscape, so I will be based in favor of defending a rational animal production worldwide, especially in the Americas. I defend this idea, because I am sure there is a present and a future for animal production. The future undoubtedly has to be linked to science and innovation with farmers as protagonists for a new time and more public and private alliances. Animal production is undoubtedly in a transition process towards a more regenerative sector, applying the concept of circular economy and being more integrated with forestry and crop production.

Let me share a few figures about the importance of animal agriculture in my region. In developed American and Caribbean countries, with almost 400 millions of cattle, more than 3.3 millions of ranches, especially small and medium, we represent 26% of worldwide production and 33 of total exports, playing a fundamental role in the food and national security of the planet.

But the question is – what lies in the horizon of animal agriculture? We have to be more efficient. We have to reduce carbon and water footprint, applying the concept of low-carbon animal production. We have to pay more attention to animal welfare. Today with such a high-level panel, I am sure we will learn more about how innovation in this important sector can improve the livelihood of finding more agriculture producers. How can we reduce the impact on our natural resource base? How can we improve animal welfare and wellbeing while producing nutritious, sustainable food and products that we need?

With these introductory remarks, let me go to find my seat and introduce the members of the high-level panel. So I would like to introduce, please, yourselves in a very brief way. You have a mic?

*Appolinaire Djikeng*

Yes. Good afternoon. My name is Appolinaire Djikeng. I'm the Director General of the International Livestock Research Institute, based in Nairobi and also Addis Ababa, Ethiopia. I'm also the Managing Director of the Resilient Agri-food systems of the CGIAR. Thank you for having me this afternoon.

*Judith de Vor*

Good afternoon. My name is Judith de Vor, and I am a dairy farmer from the Netherlands. I'm a member of the Global Farmer Network. This is a network of farmers from – let me say it correctly – 58 countries. There are 269 farmers members from all six continents, and our mission is to amplify the farmers' voice when it comes to technology, trade, economic growth, policies, and food security.

*Manuel*

Excellent. Surita, please.

*Surita Sandosham*

Good afternoon. My name is Surita Sandosham. I am the CEO of Heifer International, which was founded in 1944. So we're 80 years old, addressing hunger, poverty, while caring for the earth. We are in 19 countries in 3 regions, and our focus is really about supporting smallholder farmer families to get a sustainable living income.

*Manuel*

Thank you very much. First question for Judith de Vor. As a farmer, what are some of the success stories that you have seen when it comes to adopting new technologies or novelty practices? What are you hearing from farmers around the world?

*Judith*

Well, I can tell several stories, but I will only share some due to the time. So, for example, at my farm, animal welfare is really important, so we introduced a cow bit, like Fitbit, for my cows so we can monitor everything, how many steps they're taking, what are the feeding, what is the milk that they're giving, what is the temperature. We can see if they're in heat, for example. But I also met a farmer from Sweden, and his name is Dung. He is a pig producer, and he was able to work with partners in the supply chain, using data and block chain technology to improve traceability and transparency in the complete sector.

And I also know Debra – she's from Alberta, Canada, who is also a dairy farmer and struggling with labor. Now she's having a lot of robots actually at the farm, doing the work for her.

So some types of innovations can be very big, but sometimes it can be small or new to a certain group.

So I also know the story of Winnie, who is a dairy farmer in Kenya, and he was able to travel to Israel and the USA, and he learned there that, for example, there is a milk cooling system that works on a solar panel – so maybe not really a big innovation, but for them it is.

So what I've seen is that there's actually two things really important: First of all, regulations don't come as fast as innovations. And the second one, sometimes innovations or new techniques are not available or accessible or affordable – and to be honest, that's the case with me as well. A lot of these robots I can't afford myself. So for us farmers it's really important to drive change by using new technologies and innovations for a sustainable future, not only for a healthy planet but also for healthy farming. With these new innovations we can actually produce more effectively and be more profitable and also more resilient – so we need them.

*Manuel*

Excellent. Being a meat producer means that you have worked with your husband.

*Judith*

Yes, yes.

*Manuel*

All day long. Do you have spare time for getting interested in new technology? How do you do that?

*Judith*

Well, yeah, we work seven days a week, and for me being here is pretty hard for my husband, because he needs to run the farm on his own. But he's really supportive, so it's really important, taking time within these 80 hours a week that we are working, taking time to learn about new technology and innovations, so we can see if we are able to apply them on the farm. But we have to, because we want to be sustainable.

*Manuel*

Do you belong to any cooperative in order to work together ?

*Judith*

Well, there is really... There's several research institutes, but also from my own dairy co-op we are working together with them to see what is available in the world and how can we apply it at the farm. So we are mainly working together with research institutes, but also our own co-ops.

*Manuel*

OK I offer to, Dr. Appolinaire, do you have any questions for Judith?

*Appolinaire*

No. I think I just want to thank you for drawing some parallel between what you do in the Netherlands and a dairy farmer in Kenya. But in my term I would be able to provide a bit more context on how we could innovate within these two different spaces.

*Manuel*

OK, Surita, you have any comment?

*Surita*

I do have a comment. We have a ranch in Perryville, Arkansas; it's 1200 acres, and we are using it to test technology. And the technology that we're using is huge, right? So how do you make it accessible for smallholder farmers? So I like what you're doing on your farm, because I think this is the way to help farmers then be able to use technology, adapt it for their use.

*Judith*

Yes, I guess it's really important that what you are doing but also what we are doing, that we share in the knowledge, sharing it with other farmers, so we can actually learn from each other. So that's really important, all these new techniques as well.

*Surita*

I invite you to our farm.

*Judith*

Oh, I would love to come on over, so thank you so much.

*Manuel*

Good, good. Yes, please, some applause. Thank you, thank you, Judith. I have a question for Appolinaire. The question is – What are some of the most promising innovations emerging from your work at ILRI that could revolutionize the sector? How can we ensure these technologies are accessible, culturally applicant, and economically viable for smallholders in developing countries? What a question, huh?

*Appolinaire*

A big one, but it's a good question. Thank you so much for the opportunity to talk about animal agriculture in the context like this. We are often neglected, and the focus is usually on crop agriculture.

So the key points that I want to make to set the context is really stressing the systems approach. When we are talking about farmers in the part of the world where we are, we are not looking at very specialized farmers. Their own livestock, their own crops, and how can we make the system work?

And the second thing that I want to talk about is – In the Global South are up to 1.7 billion people continue to rely directly from animal agriculture. Those are the numbers that we have to keep in mind. And the other question is – Why do people keep animals in the Global South? It's for farming, but it's also for many other reasons – sociocultural dimension, nutrition, and assets that anybody needs in life to get by. And I think our innovations and interventions are always to help us drive protection from those. And we have in the context of the world that we do really focus also in making sure that animal-source foods are available, the proteins available to many people in various parts of the world to ensure that the first thousand days are well taken care of. Because if you miss that, due to a lack of protein and things like that, people will have a false start in life.

So our innovations are really around us. And some of the work that we do is really around ensuring that we have healthy animals, because they are also in endemic regions, lots of diseases, viral disease, bacterial disease, and stuff like that. We build vaccine, we build diagnostics to ensure that we can control those.

The second one is really genetic improvement. Do we have animals that are genetically fit to be in different production systems and different ecologies? I think that's another area of the work that we do.

And the third one is really nutrition – you know, how can we feed our animals sustainably in various places, relying on the resources that are available. And on this I want to mention the integration of crops and livestock, using crop residues to feed animals effectively.

And, finally, some of the work that we do is really to ensure that there are systems for protecting assets, animals' assets – index-based livestock insurance to ensure that farmers are not going to lose all their assets during drought and things like that. We are also involved in ensuring that the work that we do is used to drive policies to ensure our policymakers are making decisions based on knowledge.

So the innovation that really I want to talk about for the last decade for the past decades, for instance, we've demonstrated that we can drive innovation from these angles that I've talked about. But at the moment, if we believe climate is really a crisis and we're under pressure to ensure that we are addressing, what kind of livestock system are we imagining? We are imagining livestock systems that will be resilient to climate change and that will also be sustainable. And some of the drivers that we would like to see, it's really reducing methane emission in the systems. And the question is – what kind of animals are going to fit in those

systems? Can we use genetic improvement? The previous speakers talked about AI. We have massive datasets that we have. Can we use this to credit and help and support farmers' access to the right genetics?

And finally, it's one thing to tell the farmer that this is the best animal that will fit in your system, but it's another thing to ensure that 90% or a hundred percent of the farmers in that particular location have access to it. We also want to accelerate dissemination of early genetics to advance productive technologies, embryo transfer and things like that.

So that's really what I can share we're trying to do innovatively. And, by the way, our organization is 50 years old. We'll be celebrating 50 years anniversary later on this year.

But I think I'm just flagging this to say that we have done work on a single track enough. What we need to do is really bundle solutions that we can provide to smallholder farmers and make sure that they are customized to be accessible by farmers who own 120 animals like Judith, but also those who own only two or three animals. Thank you.

*Manuel*

Very, very interesting. Let me emphasize what you mentioned. Yes, congratulations for the first 50 years of ILRI. Your precise importance of diseases is due to the climate crisis, there is a new map of diseases. Genetic improvement, nutrition, integration. Considered animals as an asset, which is very important. And your last comment that, since the animal agriculture is very erogenous it is not one size that fits all. I wanted to consider tailor-made approaches for every system.

Do you have any question for Dr. Appolinaire?

*Judith*

Well, I can't agree with you more than just what you're saying. I'd like to know how you're assuring that you have the approach that suits different kind of farmers. How do you do it in practice?

*Appolinaire*

So I mean it varies. It depends on what you're trying to deliver to a farmer. Let me just give you one example. If you have a vaccine vial, for instance, that you have to deliver to a cool chain. Can you neutralize that vaccine? Can you make it more stable, such that you don't need a cool chain to take back to remote areas. These are some of the areas, some of the things that we consider in terms of customizing solutions that are accessible to smallholder farmers.

*Manuel*

Any comments, Surita?

*Surita*

Well, I just want to emphasize one thing that ILRI has done, which has been about creating platforms for partnerships so that you're not doing it alone but you know what your expertise is, but then you bring in other partners together, and that helps you also figure out the context in which you are providing that support, which our organization very much appreciates.

*Appolinaire*

Absolutely, thank you.

*Manuel*

I have a question, because you, at the very beginning, if I understood correctly, you mentioned that most of the investment in agriculture, science and innovation goes to cash crops. And the question is why animal agriculture is not receiving enough attention if there are millions of farmers and ranchers that need the result of science and innovation.

*Appolinaire*

If I knew the answer that would influence... I don't think we talk about the importance of animal agriculture enough. I think it's really important. When you go... We talk about GDP, agriculture around GDP, but we go in there to really provide supplementation to identify the contribution of animal agriculture. That's one. Secondly, the context is such that livestock or animal agriculture is constantly blamed. You know, it is blamed, yes, you know, it has an impact on the environment and things like that. But the reality is that we can turn into a solution to address some of the environmental issues that we face. We don't talk enough about it.

We... The thing I talk about the multiple dimension of owning animals, and I think those are the things that we don't play long enough. And during drought or during conflict and things like that, people do not move with their crops, they move with their animals. So I think that's really important.

But I think also in the ministries and things like that, we always talk about ministry of agriculture, and then we separate it from minister of livestock in many countries. And that always splits the investment.

*Manuel*

Probably what you are emphasizing is the necessity to communicate better.

*Appolinaire*

Absolutely.

*Manuel*

And we need a new narrative for defending the situation of funding animal agriculture.

*Appolinaire*

Talking about new narrative, I think for the past years in institution we've created a narrative for livestock in the Global South. I invite you to go to our website, and you'll see it's full of evidence, really overplaying and really playing the multiple dimensions I have mentioned. It's a tool that can be used by everybody at the local level, regional level of continent level, really just to see the true importance of livestock from these multiple dimensions.

*Manuel*

It's important to visit the website. I have a question for Surita. Heifer International works closely with the smallholder farmers across the globe. From your experience, what are the most effective ways to introduce innovations in animal agriculture to smallholders, particularly those with limited resources?

*Surita*

So I want to emphasize that we're talking about smallholder farmers with limited resources and therefore that's precious at the end of the day. And I'm going to draw on 80 years of our experience, which is – having relationships with communities, stewarding the trust that they have in us is critical before you introduce innovations.

I think today you heard from Jehiel Oliver from Hello Tractors who is looking at ways to increase yields through mechanization. Now this is a partnership that we have with him. And

one of the reasons we are working with Hello Tractors is he is making it accessible for farmers to be able to own a tractor so that they can increase their yields and then increase their incomes and go to market. And I have met farmers who have lost crops because of climate change. We provided weather insurance, and then they heard about Hello Tractors, and they learned that they could actually not only rent it but actually own it over a period of time.

And so this particular farmer – her name was Felicia – she basically ended up increasing the yield in her farm, and then she wanted to help her whole community. The result of our relationship with her and Jehiel and Hello Tractors and his company and his staff led to her supporting 500 families. And that didn't happen overnight. That takes time.

And I think if you don't build the foundation of that trust and you if you don't steward it accurately and you don't have the kind of partnerships that we have with ILRI and others in the same ecosystem, you can't then ensure that the innovations will take hold. And the farmers ought to be able to decide if this is going to work for them.

And so also listening and recognizing you might not be doing the right thing for them, and backing off, is really important.

*Manuel*

Excellent points. So to work for community, you have to create trust.

*Surita*

You have to trust them.

*Manuel*

Seems to me that everything is finally the result of public/private alliances. And I insist you cannot create miracles overnight, so it is very, very important. Do you have any comments, Appolinaire or Judith?

*Judith*

Well, I think that what you mentioned is really important, that farmers also play a commercial role in their community; and sometimes people seem to forget that, when farmers are leaving, they are also taking the soul out of the communities. So therefore it's really important to support especially farmers in countries where they have all these new access to Internet or technologies in areas and that we should be aware that, if they don't have access to these innovations and they can be sustainable as we demand. But it's also having a lot of impact on the communities as well.

*Surita*

Yeah, and I just want to emphasize that. I think if you don't know the situation that they're working in... We are working in 3 regions, 19 countries. Context matters.

*Judith*

Yes.

*Surita*

So what innovation might work in one country may not be applicable in another, and so you have to adapt. And then we have to understand – does the enabling environment exist, right, for the farmers actually to earn a living. So that's the other thing – going to market, understanding the economic realities. And understanding the ecosystem, and working with government is also critical – local government, local partners on the ground. And I would like to

say that Heifer has learned over the 80 years how to be more of a facilitative partner rather than a direct implementer. And that's built on the trust that we are stewarding.

*Manuel*

I imagine local governments but also rural leaders...

*Surita*

Yes.

*Manuel*

...that inspire the community.

*Surita*

OK. Well, I thank you very much for this round of questions. Let me make a general question to all of you, and the question is: How do you see the future of animal agriculture evolving in the next five to ten years, especially in the context of climate change, conflicts, and food security?

*Judith*

So actually I'm really hopeful for the future of animal agriculture, although sometimes it's a struggle. In the Netherlands, being a dairy farmer, I'm still very hopeful if I look beyond borders; because the world population is still growing. And if you look at the effects of climate change, it can be more difficult to grow crops, and so people need food; and animal protein is a very good source for a lot of people. So therefore I'm really hopeful but also for the sustainable production; because, if you know what already has been achieved and being sustainable as farmers... This morning I was able to attend the cost award. And I've seen the figures over there of the amount of emissions, how much they've been reduced; the CO<sub>2</sub> is being reduced so much but also what we are able to produce with the same inputs. So I'm really hopeful for the future, and especially with new kind of innovations and the usage of data, artificial intelligence, that we can do so much, so much more. So I'm really hopeful. And I think that, in order to achieve that, we really work together, go maybe beyond partnerships so that actually the innovations are brought to the farmers.

*Manuel*

Your optimism is shared among other farmers in Europe, for example?

*Manuel*

So for the last couple of years, the farmer's climate has been challenging due to regulations sometimes, and it also led to a lot of farmers' protest, especially in the Netherlands. But if you bring solutions to the table, have conversations, and talk to governments and all organizations and private sectors involved, and I think that's really important that we share our ideas and lead them to the knowledge so we can build upon maybe different kind of regulations. So maybe for the next couple of years it's still a struggle; but for the future for ten years, I'm still very hopeful.

*Manuel*

Are the consumers or the public in general in your country understanding the role of farmers?

*Judith*

Very little, I think. We are really spoiled as people. If you go to the supermarket in the Netherlands, there is so many dairy products you could choose from but also fresh foods and vegetables. It's, there's so much available. There is less farmers, not only in the Netherlands but



also in other countries, so less people know where the food is coming from. So I see also a very big responsibility for me as a farmer to share what we are doing, to share how we are producing. I feel that we need to share our story and bring people to the farm to show them what we do to increase biodiversity, how we are taking care of our animals and not only people from the city but also people working in all kinds of organizations and governments.

*Manuel*

Good point. Communication, storytelling.

*Judith*

Exactly.

*Manuel*

Transmitting what is the real life in the rural areas. Appolinaire, the same question.

*Appolinaire*

I share the same optimism. I'm very optimistic that the role of animal agriculture will continue to help, to be there. Secondly, we, in the context of the celebration this year, we are celebrating two outstanding people who have demonstrated that biodiversity can help. And I think in the animal agriculture we still enjoy a lot of biodiversity, and we have to use that for future resilience of this system—I think that's important. The third one is that, based on some of the work that we are doing, we are able to bring ICT and some of the data science things that young people would be interested in embarking on. If we do it right, we can also attract the young people to use data science, ICT technology to help us do proper animal farming. And third, we are beginning to see the transition. We are beginning to see farmers break even, based on some of the support, the choices that they are able to make in the type of animals their production system really helping to do that.

And, finally, we're in the part of the world where we are not looking at homogenous systems. We are looking at the pastoral systems where the ecosystem is really not healthy. We are looking at the system. And I think the opportunity to use animal agriculture to restore the health of some of those systems is also there. I'm very optimistic that we can use animal agriculture to meet not only some of the Sustainable Development Goals but really look at 2050 with some solutions that we can offer to our communities.

Let me close by saying that the biodiversity that we have really holds great promises, not only to drive animal agriculture in the Global South but also in the Global North. Thank you.

*Manuel*

Thank you, thank you very much. And for sharing the commission, which is very important. It is. Surita, are you optimistic also?

*Surita*

I too am optimistic, primarily because they are as well. But I think for us, focusing on the fact that we are representing smallholder farmers, recognizing that animal agriculture is part of their mixed farming, all focus has to be to help them to become more resilient in light of conflict and in light of all of the global velocity changes that are happening at the moment. And we believe that, if we can focus also on their local wisdom, plus add the kind of new innovations that are happening, we will get to a really good place. And I think that that's an important piece for us.

*Manuel*

Good, good. So resilience is a very, very important word. Follow-up question. In a few words, what is your key takeaway or most compelling action for our audience today? Judith.

*Judith*

So as a farmer there's only one thing I can say. *Take it to the farmer*. But it doesn't stop there. I think that we need to ask farmers more, what do they need, what do they know, what are the solutions that farmers can bring at the table, actually, and have the farmers involved in all kinds of decision-making processes, making sure that we hear them. Like I said earlier, we should do more than creating partnerships or collaboration. Maybe we should start co-creating together so farmers are actually the ones that can drive change for a better future.

*Manuel*

In this transition process, do you think farmers are participating in the international forum?

*Judith*

Well, I am so honored to be here as a farmer, actually, because I do see that sometimes a lot of people are talking about food production and farming, but very little farmers are actually at the table. And it's really important that farmers' voices are being heard, because we also have something to share; but also we are the ones that actually have to adopt and work within all these changes. So there should be more seats at the table for farmers, yes.

*Manuel*

Good point. Everybody agrees that we have to increase the participation of farmers in all forum.

*Judith*

Thank you, thank you so much.

*Manuel*

Dr. Appolinaire, please, your comments.

*Appolinaire*

Just two things to close. We come for partnerships. I think as an organization, when we talk about celebrating 50 years, we're celebrating the successes of the partnerships that we've established. And I think, given the magnitude of the challenges that we have to address, no institution can do it alone. I think we have to partner. And on this call, the private sector, the public sector, politicians, I think we have to be part of this so that we can really drive the transition that we are talking about.

The second thing I want to talk about is really investment. We are suffering in a system where there is very little investment, and the expectations are much higher than the resources available to do that. Thank you.

*Manuel*

OK, what about investment? Are there enough investments to convey the technology that small farmers are needing?

*Appolinaire*

So absolutely. I think our ability to respond to the needs or to the challenges very quickly is not there because of limited resources. From R&D investment and things like that, the pipeline is not as great as it should be.

*Manuel*

Surita, your final takeaway?

*Surita*

Yeah, I guess I would say it's really important to create these partnerships and to have farmers at the table to co-create the solutions together. And so recognizing that it shouldn't just be promotional, that they actually have a voice, and that there are feedback loops to understanding how things might work or not work and be there was a sidekick through the final impact that you want to see. I also think that investment's really important. I think climate change is existential to many of our farmers. What do we do to support them to become more resilient? What are the mechanisms? What are the resources, the working capital so that they can get through from one season to the other?

And I think the other thing is—in conferences like this we should have farmers at the table. We should also have youth at the table. I mean just think about the fact that we're also talking about the Africa Continent—70% of the population is under 30, and we're talking about how to make this sexy. I think we should have youth at the table as well to problem solve some of these issues around agriculture.

*Manuel*

Definitely. More farmers, young people, women.

*Surita*

Uh-huh, absolutely women.

*Manuel*

Absolutely.

*Surita*

All our farmers are women.

*Manuel*

Something else that I would like to address, since we have still five minutes?

*Appolinaire*

It's a question for Judy. How do you compare as the farmer in the North? What are the challenges? You mentioned a dairy farmer in Kenya. What do you have in common? When you said you are a farmer in the Netherlands, when you sit with Europeans, you're part of the Global Farm Network. So when you sit around the table, yes, you come from different environment; but what connects you? What are the things that you share?

*Judith*

You know, we share a lot of things, and there is first of all the love of farming, because that's... We all have a love of farming, because otherwise you can't work for 80 hours a week and earning very little money sometimes. We have the love for the land, love for the animals, but also wanting to make a difference for other farmers, trying to improve the way we farm, not only for ourselves but especially for other farmers. And that's what we have in common. And of course there are challenges that we share. Some of them are equal, some of them are different when it comes to regulations or access or finance. And we talk to each other, we support each other when sometimes farmers are in a difficult situation. But we share a lot of things, even it might seem that we are very different, not only the farmer from Kenya but also the farmer who grows bananas in Nepal or a very large grain grower in Uruguay. We share the same principles, I guess.

*Manuel*

The same universal principles.

*Judith*

Yes.

*Manuel*

...that we are... Absolutely. OK. Well, we have a few minutes, and in my condition as moderator, would like to thank all of you and to highlight your optimism you have, which is vital for having the sense of future for animal agriculture. This sector is in a transition process, and we need more farmers to participate in international forum. Would like also to highlight importance of full partnership. And the necessity of more investments, that innovations we have to put more money in innovation, based upon public and private and to be available to all producers but especially the small farmers. I would like to insist that we are underinvesting in science and innovation but in addition, as Dr. Apollinaire has said, more than 50% of agriculture research is in lack in Latin America and the Caribbean, my region, are focused on crop issues, and less than 10% is concentrated in livestock and dairy. Science must remain at the core of all policies, impacting the food systems, and international trade should be viewed as a solution, not an impediment.

As a veterinarian , I have to once again alert for the new map of plagues and disease, the recording of a screwworm, especially in Central America and probably is affecting Asia; African swine fever in Dominican Republic, an IT on the emergency of foreign influence. Acting together, we are going to have a bright future for animal agriculture. Thank you very much.