Panel Discussion

Moderator:
Masayasu Kato, JIRCAS
and ***Masaya Matsumura***, NARO

Speakers:

Jingyuan Xia, Secretary, International Plant Protection Convention Secretariat

Ulrich Kuhlmann, Executive Director, Global Operations, CABI

Akira Otuka, Unit Leader, Institute of Agricultural Machinery, NARO

Frédéric Baudron, Principal Scientist, Sustainable Intensification Program, International Maize and Wheat Improvement Center, Harare, Zimbabwe

Claudia Vieira Godoy, Researcher, Embrapa Soybean, Brazil

Yukio Yokoi, Director for WTO, International Affairs Department, MAFF, Japan, former Director of Research Division, Yokohama Plant Protection Station, MAFF


Embrapa
Claudia
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Dr. Masayasu Kato:

Thank you for the introduction. Before the panel discussion, I would like to wrap up the excellent presentations by the keynote and session speakers using diagrams of transboundary plant pests and their contributions to SDGs.

Today's theme for the symposium is collaborative research on transboundary plant pests and its contributions to SDGs. We would like to see how our collaboration contributes to the SDGs. Before the invasion of plant pests, they don't worry about the plant pests. At the borders there is a quarantine system. Some plant pests may be introduced by human activities, but the quarantine stops their invasions. Some plant pests may pass through the quarantine system and are established in new countries. Sometimes the plant pests can migrate by themselves or by wind. The invaded countries need information on the target pests to develop control measures. Just after the invasion, the information is scarce for them, so they need collaboration with the countries of origin. But the information in the origin is not sufficient, because of the differences in the environments. The invaded countries need the risk assessment and the surveillance and control measures. After the invasion, they can obtain some information within the countries. They make collaborations with researchers, extensionists, and farmers. Finally, they can develop applicable control measures under the balance of cost and benefit. These collaborations contribute to most of the SDGs, especially for No Poverty, Zero Hunger, Life on Land, and the Partnership for the Goals. From now we would like the panelists to show how the collaboration contributes to the SDGs. Thanks.

From now, I would like to pass the moderator role to Dr. Matsumura from the National Agriculture and Food Research Organization.

Dr. Masaya Matsumura:

My name is Matsumura. Unfortunately, only 20 minutes is left for the panel discussion.

I would like to ask all the six panelists a direct question. My question is this. There are various ways to promote international collaboration. In some cases, collaboration is not only between researchers, but also with farmers, private companies, and officials. In each of your cases, my question is, what are the challenges and difficulties for promoting international collaboration on transboundary plant pests, and how do you solve them?

Let's start with Dr. Xia. Sorry, a very short comment please.

Dr. Jingyuan Xia:

Okay, thank you very much. This diagram of the relationship to SDGs is very important. I'm going to add something here first. For transboundary pests, there are contributions to the SDG goals. Number one, of course, is for poverty. Second is food security. Third one is biodiversity, and then trade. There is another one that is very important, and that I would recommend adding. I deal with Climate Change, because climate change is very relevant to transboundary pests. This means we have five important goals to contribute to for transboundary pests. Plant health, transboundary pests research, contributes to five SDG goals. We have already mentioned in the FAO, like this. And I am going to promote another one, Climate Change.

I want to make a concrete example now of how to research and then promote these kinds of collaboration. I want to make an example here of fall armyworm. For fall armyworm I am going to make four recommendations. We need that research, education and government work together.

Nowadays, I think there are four very important areas. The first one is about an area-specified strategy for fall armyworm control. The first area is potential to be spread, like the north Pacific. This is a far area but is quite possible, and then also south Europe. This is one area. The second area is the overwintering area. We've already studied that the fall armyworm maybe overwinters in some places. The strategy in the overwintering area is different from others. And the third area should be the migratory area. These three areas should have three different strategies. This is very important. I hope that all the research people will please pay attention to this. This is a very important global strategy, area-specified, original-specified strategy. This is the number one in my speech.

And for the second one, I would like to make a recommendation. Everybody knows that there are two types of fall armyworm. One is the corn type, and the other one is the rice type. What is my concern? Because nowadays people are saying, "Okay, this is corn type," many in this continent. But remember that 80% of rice is produced in Asian countries, and 80% of the people live on rice there. If one day a fall armyworm adapts to rice, this will be disastrous. So, now, please study it. This is my second recommendation.

And the third recommendation is about natural enemies. We should study this. I have this experience. We already mentioned that there is one person from CIMMYT. Originally, the fall armyworm was in Latin America. I'm sure there are a lot of natural enemies under control. But now it spread to new areas. Why did it spread so fast? Because there are no natural enemies, or no natural controls. So in this case, I think at this time that we scientists study this. You should go to Latin America to study what real important natural enemies are. Even in this case, we should introduce it. Otherwise, we only depend on pesticides. That will be a disaster. That's my third recommendation.

Another one is pesticide resistance. I know that small-scale farmers only rely on pesticide. Remember, pesticide resistance would be a lot of disasters. So I think this area is very important, and could use collaboration.

Thank you.

Dr. Masaya Matsumura:

Okay, thank you. Next, Dr. Kuhlmann. Please.

Dr. Ulrich Kuhlmann:

Okay. We are talking in particular about collaborative research. I would like to come back to the issue where of course the G20 countries have an incredible advantage in terms of conducting research and have processes and functions in place to deal with the incoming problems. As I was trying to mention already in my presentation, however, there is a huge disconnect between the G20 and developing countries. The developing countries have no processes or mechanisms, no capacity in place, to deal with these incoming problems. It is just an ad hoc mechanism. They find out they have another pest problem. So it is a task, I believe, in terms of collaborative research between the G20 and the developing countries, to share information as much as possible. When we have done certain activities in the G20 and have researched results, we must be able to share these kinds of information more quickly, more efficiently.

Of course, we also need to understand that adaptation to the local needs is urgently required. However, this kind of exchange is very, very important, in my opinion, going forward. And these are not only particular research areas; this is the entire area related to the prevention and containment and control of transboundary plant pests.

Dr. Masaya Matsumura:

Okay, thank you. Next, Dr. Otuka, please.

Dr. Akira Otuka:

Yes. I would like to talk about migration. We want to predict migration into Japan. We need information about the density and character of the insect, and the insect resistance information. These two kinds of information are very important.

But access to that information from foreign countries is a little bit difficult. I don't like to blame China, I don't intend to cast blame, but that information is very important for them, and not easy to freely disclose. Now, our approach is information on the Internet. Nowadays, many plant protection stations and provinces in China are disclosing occurrence information on the Internet, so we can access that information from Japan. That is a great help. International cooperation needs information sharing. I'd like to emphasize that -- information sharing.

Dr. Masaya Matsumura:

Okay, thank you. Next, Dr. Baudron, please.

Dr. Frédéric Baudron:

Yes. Thank you very much. I won't talk about what's happening upstream before quarantine, but rather how to manage a pest when it arrives, and especially the experience we have with fall armyworm.

I think we are probably too slow to provide information and research to farmers on how to manage this. I liked very much to hear the last speaker talk about big data. I think definitely sharing data and "FAMEWS" for example, for fall armyworm, led by FAO, is a great example. But I think we can do more, especially with perhaps ICT and science, making sure that farmers also… We take seriously the information uploaded by farmers. With ICT now it is really possible to gather much more information, much more data, and actually use a big data approach to much more quickly provide a solution.

And of course, capacity development is also very important. One of the roles I think of research and extension is to quickly build capacity in terms of identification of those new pests once they arrive, and how to deal with them. Thank you.

Dr. Masaya Matsumura:

Okay, thank you. Next, Dr. Godoy, please.

Dr. Claudia Vieira Godoy:

Just to give an example of collaborative research for Asian soybean rust introduced in Brazil. We had one researcher, Dr. Tadashi Yorinori and one breeder travel through Asia just to study all the PIs, the plant introductions, that had resistance. Embrapa started the breeding problem even before we had the disease in Brazil. In the background of the variety we had some resistance, which helped in the beginning, but the fungus overcame this kind of resistance. So this collaborative research is important to anticipate some new diseases that we are expecting in the country, especially ones as severe as Asian soybean rust.

So, when we can travel to other countries, have this collaboration, and have this kind of germplasm in our material, it is really good to work in advance, before the introduction of the new disease, as it happened in soybean rust.

Dr. Masaya Matsumura:

Okay, thank you. Next, Dr. Yokoi, please.

Dr. Yukio Yokoi:

Thank you. Your question is about the challenges and difficulties in collaboration.

Probably we have to start thinking the collaboration forward. I just listed up the collaboration in awareness-raising, monitoring and surveillance, diagnostics, controlled experiences, and probably innovative approaches. These five issues I have in mind for collaboration.

Awareness is already presented in the picture. But public awareness, plus probably awareness of the researchers, is also important. Traditionally, researchers in this field are looking at this transboundary pest issue as a mostly biological issue. But because of a lot of innovative approaches, such as those mentioned by the previous speakers, AI and IoT types of things, we probably need the awareness of engineering researchers, as well. Those collaborations between researchers over different areas would be really necessary in this situation. I think now Japan has started doing that kind of collaboration, among the different areas to do that.

Also about the monitoring and surveillance plus information-sharing, which was mentioned before, as Dr. Otuka mentioned very specifically, the information on occurrence from other countries is really not easy to get. This is the challenge part. They have a certain resistance to transparency, because of the political control they wish to keep. Maybe we need international collaboration to lessen that kind of hurdles, that part.

Also the innovative approach. I think many of us in this room have experiences with OK Google or Alexa. I'm just dreaming that whenever I say, "OK Google, what is the situation for fall armyworm," suddenly the display shows me red spots for the fall armyworm, that pest. This kind of technology is already available, but we haven't really developed how to use it. That is probably a kind of resistance to new technologies. Thank you.

Dr. Masaya Matsumura:

Thank you very much for your excellent, nice comments. Do you have any comment to the other panelists? No? Dr. Xia?

Dr. Jingyuan Xia:

In terms of research cooperation, I think it is important to exchange genetic materials. Like breeding for the fall armyworm, we need to breed a new variety, to TR4 of banana fusarium wilt and even soybean rust in Indonesia. We need genetic materials. Nowadays, so many modern varieties are very narrow for genetic bases. Later we should permit these genes. We need a very quick and efficient way to exchange germ plasms. By the way, previously we had some problem in exchanging genetic materials or germplasms. Now International Standards for Phytosanitary Measures 38, ISPM38, is allowed for exchange, for this kind of seeds and materials. This is now very important for research people to exchange this material. Thank you.

Dr. Masaya Matsumura:

Okay.

Dr. Akira Otuka:

May I? I talked about China and Japan. Due to the time limitation, your impression is negative on China. But I have many, many Chinese collaborator friends, and we drink with them so much. So personal communication and friendship is a basis for international cooperation. It is very important. I want to emphasize this one. Thank you.

Dr. Masaya Matsumura:

Okay. So, the time is almost... Any other comment or question? From the audience? If you have some comments.

Dr. Yukio Yokoi:

Thank you. I would like to share some information with everybody here. I was in another international meeting in the previous week, an international conference for environmental issues. There was a very strict conflict between developing countries and developed countries, something that I've never seen in the plant health community. I think this is a really promising area for collaboration. I was so surprised to see that conflict between those groups. I just would like to share that situation. Thank you.

Dr. Masayasu Kato:

Okay. Thank you. A question to Dr. Baudron. You showed us very good evidence of the factors that accelerate the fall armyworm, and what has a negative effect on the fall armyworm. But your research was only conducted at two sites. After that, how do you develop your recommendations to the other farmers?

Dr. Frédéric Baudron:

That's a good question. We had the same discussion with my colleague Victor, here.

Yes, indeed. It is really very localized, based on two sites and only two seasons. Hence my plea for big data. I think the FAMEWS, for example, is a huge contribution. All these databases are really important. For us researchers, it is really important to have some data sets that can talk to each other. So it is very important

to have the same ontology about what we are measuring, what unit, etc., and to be able to report that.

I think we also need to find ways to collect data from farmers. As I said, some of our recommendations come a bit late, but farmers don't wait, and they try a lot of things. Sometimes it is dismissed by research, but there are farmers in Africa who are using sugar solution or fish soup to control fall armyworm. It was a bit dismissed, but it works very well to attract ants and control with the natural enemies of the fall armyworm.

Yes, we need to have data sets, databases, that can talk to each other and be much more agile in collecting data. With ICT, and now the development of smartphone -- every extension agent has a smartphone --it is really possible to collect a lot of data very quickly and pass it to research. I believe it is our role to be able to analyze this research and very quickly give some feedback about what works.

So I'm starting to collaborate with people, like working with FAMEWS. The idea is to try to use the same methodology with much larger data and to see if we have general patterns. Yes. But essentially, researchers need data to be able to do something at a larger scale and with many more seasons.

Dr. Masayasu Kato:

From now, the smartphone and social networks are very important tools for collecting data from local farmers. Dr. Kuhlmann showed us a program "Plantwise." The farmer can send image data to the platform of CABI. This kind of technology is very useful to get the information for the researchers and others, mainly the researchers.

When I visited Thailand, there were fall armyworm problems there. The Thai government wanted to collect information using Social media. So that was very impressive to me. Do you see possibility for the social media for transboundary pests and surveillance of the pests?

Dr. Ulrich Kuhlmann:

Yeah, indeed. The Plantwise program is also exploring opportunities to use these kinds of technologies more, though I have not talked about this in detail at all. In the process there, plant doctors have also been equipped with tablets. One of the fascinating developments, which we had not planned, was that they also immediately started to share photos among the plant doctors themselves. They started to have WhatsApp groups; they started to have Telegram groups, and supported themselves. That was actually what I found fascinating. It was not even our idea. That was a very good development. Of course, there are other means. However, I think we also need to be realistic from all viewpoints. Not in every country is this kind of technology still working. Right? We shouldn't be over-enthusiastic. We need to be realistic, and we should not assume that what is working in our country will work very well in a particular African country, for example.

Dr. Masaya Matsumura:

Okay, thank you. Sorry. It seems that we have spent all our time for the panel discussion. So I would like to close this session. I would like to thank all of you, the panelists and the speakers.

Thank you very much.