Crawford Fund FOR A FOOD SECURE WORLD

FOOD AND NUTRITION SECURITY

The biosecurity, health, trade nexus

The Crawford Fund 2021 ANNUAL CONFERENCE

QT Hotel, Canberra ACT, Australia
and Online

13-14 December 2021

Editor A. Milligan

Conference synthesis

Dr Helen Scott-Orr AM PSM

The Crawford Fund NSW

At today's conference, it has been an absolute privilege to hear the speakers and the quality of the debate that they have engendered around this very complex topic.

The scene was clearly set by Su McCluskey, our very first speaker, who discussed the drivers for Australia to get more involved in the area of standard-setting, and to be able to maintain and strengthen our exports to the rest of the world. That is very important.

Then we had a really profound and complex address from Prabhu Pingali about food system transformations and biosecurity threats. He described how the global food system has been transformed in the last 60 years, with major changes and different threats coming through about every 20 years, and biosecurity threats rising with globalisation. He posed that differnt food systems around the world create both problems and solutions, challenging us to work together to find those solutions. COVID has proved overall food system resilience, but it varies greatly between areas. Smallholder resilience in developing countries will be quite different from resilience in more developed countries. Particularly, we must look to strengthen diversified and mixed farming systems rather than monocultures, while strengthening biosecurity.

Prabhu also discussed the need for value chain and societal investments. He considered the difficulty of raising consumer awareness of the externalities of food production. Possibly we are paying only a third as much for our food as we really should if we were costing in all the externalities, and it is not clear how such costing could be done. The pull from consumers was very much emphasised, with increasing demands to address biosecurity and climate resilience issues. This, of course, links with the trade nexus.

Next we heard from Rob Horsch about future-proofing our agriculture and our food systems with advanced and emerging technologies and tools. Rob skated over a terrific variety of areas with the key websites he displayed and mentioned. These sites basically summarise the massive increases in data availability and management, and the power of big data now, which we can all draw on and examine, to challenge our assumptions and try to inform broader thinking about the particular areas that we might be involved with.

Three case studies followed.

- Pablo Zarco-Tejada talked about remote sensing and hyperspectral imaging, with the example of the terrible pest *Xylella fastidiosa* that is menacing the olive groves of Europe, if not the world, and the way that early infestation

---

This is an edited transcript.

of olive trees could be detected. Early detection is critical for better control, and this new technology shows great promise.

- Stacey Lynch discussed LAMP – Loop-mediated isothermal amplification – a very powerful surveillance technology that allows investigators to find a pathogen's genome in the field, using small portable equipment. LAMP enables surveillance that could not be done otherwise in many situations, such as:

  – for foot-and-mouth disease prevalence in Bhutan using oral swabs and being able to get test results 20 minutes after taking the sample, with high sensitivity and specificity;

  – for African swine fever in Timor-Leste; and

  – for khapra beetles in imported cargo entering Australia.

- Andrew Barnes spoke about the fish-farmer backpack that, again, can rapidly diagnose genomes of disease-causing bacteria in fish farms. Normally the farmer would reach for antibiotics, and with overuse of antibiotics comes AMR (antimicrobial resistance). However, with proper sequencing of the pathogen in the field, customised vaccines can be developed locally and used instead of antibiotics. This gives a more precise response, supports fish farming, and also delays or prevents the onset of AMR, which is terribly important to us.

In the third session, Rob Kaan from Corteva Agriscience spoke about the role of the private sector in this nexus area, and how public and private sectors must work together in a complementary way. Various issues and threats are being managed by companies supplying chemicals and seeds to agriculture and working across the whole crop protection and digital platform. A strong, reliable and transparent regulatory framework is needed to underpin the use of chemical products, to avoid consumer resistance. Corporate social responsibility is profoundly important: these chemical companies must be seen to be, and actually be, doing good in the areas they are working in. The best young people will only be attracted to work in firms that take on that responsibility, work with trusted public bodies, and do not solely chase quick profits, as shown by the Edelman Trust Barometer – a powerful monitor. For example, chemical companies consulted extensively with FAO to determine appropriate roles of pesticides in responses to recent invasions by fall armyworm in different systems around the world.

After lunch, Andrew Robinson gave an impassioned talk about the need for shared responsibility for biosecurity. That thinking has in recent years become a mantra in Australia and New Zealand, where they say ‘We have five million biosecurity officers in New Zealand’; in other words, their total population. Agriculture, fishing and similar fields of work are predominant in New Zealand, whereas five million in Australia is not even the population of Melbourne or Sydney. Although it is harder to sell the concept of shared responsibility right across a country like Australia, it is terribly important to do so.

Three case studies followed.

- Irene Kernot spoke about managing Panama disease in bananas: the need, once it is diagnosed, to work out what to do about it. It is very distressing to find a serious new pathogen, control of which will require destruction of the host crop, or the host animals if it is an animal pathogen. It can be emotionally and economically devasting for farmers and also for government or industry officials or others who have to implement that process. There is a need to work with farmers and look at the practicalities of the operational biosecurity they have to apply on-farm to prevent disease spread and protect other people, very often at their own expense. And, of course, compensation arrangements need to be worked out as well.
- Chris Dale talked about fall armyworm again: about preparedness and response and management, and not just prevention. We had heard about prevention in the morning session, and prevention obviously is the optimum if you can do it; but we must get the preparedness right. There are some principles of inclusivity and collaboration which are easy to say but hard to put into practice because you need to get the right stakeholders for every system, every crop, and you need to get the right control measures for the different pests and diseases.
- Tarni Cooper discussed the socioeconomic and livelihood assessment of African swine fever (ASF) and its impact on Timor-Leste, where all the pigs are very valuable because of their cultural importance there. African swine fever is also a huge issue in the Philippines where there have been much bigger economic losses, and also profound cultural and social impacts across both small and large producers of pigs. Mass depopulation is really still the only solution, followed by extremely good biosecurity. Again, that is easy to say, and terribly hard to do in a smallholder situation. There is no vaccine yet for African swine fever.

The final session was about standard-setting, and how we can manage that. Nicola Hinder brought the discussion back to Su McCluskey's opening comments: the need for rigorous, transparent standards that are feasible and not artificial trade barriers. Nicola explained very clearly the processes by which Australia works hard within the international sphere – to everyone's benefit in the long term, and certainly to Australia's benefit – to set these defensible standards. They need to be more transparent, but also strong enough to provide protection both for us and for other countries, should they choose, to implement properly against invasions of pests and diseases where possible. Nicola talked about the work of Codex and also OIE and the IPPC which are absolutely critical to this process. It makes me proud to be Australian when you see what we are doing in that standard-setting area.

Three case studies of international collaborative networks followed.

- David Gale spoke about the International Plant Sentinel Network – a lovely creative network that links botanical gardens around the world and all those people who are passionate about their plant collections. They are the obvious group to be monitoring and checking for pests and diseases. Different gardens have different sentinel crops to look at and watch over, for different pests: a very creative response to one problem.

- Jay Anderson described the long-standing Crawford Fund plant biosecurity program in Lao PDR championed by Lester Burgess. He has had young volunteers going there, working with Lao people who did not understand the diseases and did not speak much English. Lester has also linked these people with 54 or more e-mentors around the world who are specialists on different plant diseases and insects. He has developed whole networks via WhatsApp and other software, so that the local Lao people can be connected with experts, who may be in New Zealand or Sardinia, and who are thrilled to receive a new specimen or a new image that might add to global information. Then information goes back to Laos to help them manage the disease or pest there. Some local teams have now delivered scientific papers to international journals and to the Australasian Plant Pathology Network Conference a couple of weeks ago. The Australian volunteer program and some ACIAR programs are helping develop that program as well.
- Walter Okelo talked about curbing antimicrobial resistance (AMR) through a One Health approach. It is incredibly difficult to mitigate AMR in a low resource setting, and therefore he is applying a very collaborative approach, working with Fiji as a first trial, with a view to expanding the learnings to other countries in the future. Antimicrobial resistance is a very big biosecurity problem that we shall be confronting in the future, so the work Walter outlined is looking over the horizon, and getting on the front foot with new systems.

Overall, today we have heard about projects that require tremendous imagination, persistence and resilience in the scientific community to keep them all going, in spite of COVID.

This very positive and encouraging conference allows allows us to see how our food systems will, we hope, be able to withstand the biosecurity challenges of the future.

Dr Helen Scott-Orr AM PSM is a former Australian Government Inspector-General of Biosecurity; and Executive Director Research, Advisory and Education; NSW Chief Veterinary Officer; and Director, Brucellosis and Tuberculosis Eradication with NSW Agriculture. She led veterinary capacity-building projects in Indonesia on zoonotic disease control, especially rabies, anthrax, brucellosis and leptospirosis. Helen is a Fellow of the Australian Institute of Company Directors and served on the boards of Animal Health Australia and the Cooperative Research Centres for Invasive Animals, Weeds, Beef, Sheep, Cotton and Rice.