Technical International Animal Health Liaison Group

The Technical International Animal Health Liaison (TIAHL) group consists of representatives from the Australian Government Departments of:

- Agriculture and Water Resources
- Foreign Affairs and Trade (DFAT)
- Defence

and:

- State and territory governments
- Australian Centre for International Agricultural Research (ACIAR)
- Australian Animal Health Laboratory (AAHL)
- Zoo and Aquarium Association (ZAA)
- Veterinary Schools of Australia and New Zealand (VSANZ).

Chaired by the Australian Chief Veterinary Officer Dr Mark Schipp, the role of this group is to gain a better understanding of offshore animal biosecurity risks to Australia and the region and to share information on overseas projects and activities. The group does this by discussion of emerging international animal health issues to promote operational coordination and information sharing between its members.

The group meets every four to six months to discuss current international animal health activities conducted by Australian government agencies and universities, with a focus on the South East Asia and Pacific regions. The coordination of these activities with multilateral international animal health agencies such as the World Organisation for Animal Health (OIE), the Food and Agriculture Organization of the United Nations (FAO), and international animal health laboratories and research organisations, is also a focus.

Focus on...foot and mouth disease (FMD)

Introduction

Foot and mouth disease (FMD) is the most important biosecurity threat to Australia’s livestock industries. An outbreak in Australia could have devastating consequences for livestock industries and the wider community in lost production, trade and tourism. It could also have significant social consequences on rural communities resulting from movement restrictions and response activities during an outbreak. Within our region New Zealand, Indonesia, Singapore, Papua New Guinea, the Philippines, Timor-Leste, Brunei Darussalam and the Pacific island nations are free from FMD. Parts of Malaysia are also free, as are Central and North America and continental Western Europe. However, FMD is endemic in several parts of Asia, most of Africa and the Middle East; ongoing endemicity is frequently associated with inadequate investment in animal health systems. Australia’s close geographical proximity to South East Asia, along with increasing economic, political and trade activities in the area, may present a risk of introduction to Australia. Figure 1 shows the geographical and serotype distribution of outbreaks in the last two years, with outbreaks reported in China, Mongolia, Vietnam, Cambodia, Laos PDR, Myanmar, Malaysia and Thailand. These outbreaks have been associated with the topotypes SEA/Mya-98, ME-SA/PanAsia, ME-SA/Ind-2001d and Cathay (Serotype O), ASIA/Sea-97 (Serotype A) and Asia/G-VIII (Serotype Asia-1).
There are currently a number of Australian and state government FMD-related activities and projects reflecting its importance as a priority emergency animal disease (EAD). The majority of the work focuses on improving preparedness for FMD, enhancing surveillance capacity in Australia and our near neighbours (with a focus on early detection), and increased research and development on FMD disease modelling and epidemiology.

**Foot and mouth disease activities**

**Australian Animal Health Laboratory**

The Australian Animal Health Laboratory (AAHL) is currently involved in a major FMD-related project. The “FMD Ready Project” is major collaborative effort to improve surveillance, preparedness and return to trade for emergency animal disease incursions, using FMD as a model. The objectives of the project are to:

- Provide assurance that Australia continues to have a fit-for-purpose FMD vaccine bank effective against the highest risk FMD viral strains for Australia and rapid diagnostic tests suitable for testing strains pre-, post- and during an outbreak
- Develop a farmer-led surveillance system for improved early detection of incursions and effective control and management of diseases, using FMD as a model
- Develop an integrated EAD outbreak management decision support system to allow response scenarios to be rapidly tested and costed before and during outbreaks
- Develop meteorological, pathway and molecular diagnostic based tools to rapidly characterise and map outbreak pathogen spread and provide animal biosecurity response intelligence.

This project is supported by Meat & Livestock Australia (MLA), through funding from the Australian Government Department of Agriculture and Water Resources as part of its Rural R&D for Profit programme, and by producer levies from Australian FMD-susceptible livestock (cattle, sheep, goats and pigs) industries, and Charles Sturt University (CSU), leveraging significant in-kind support from the research partners. The research partners for this project are the Commonwealth Science and Industrial Research Organisation (CSIRO), CSU through the Graham Centre for Agricultural Innovation, the Bureau of Meteorology (BOM) and the Australian Department of Agriculture and Water Resources, supported by Animal Health Australia (AHA). The project commenced in July 2016 and is expected to conclude in June 2020.
Department of Agriculture and Water Resources

The Department of Agriculture and Water Resources (the department) has a number of FMD-related programs and activities. In 2018, the department continued its agreement with the European commission for the control of foot and mouth disease (EuFMD), with funding support from the Agricultural Competitiveness White Paper for the provision of real-time and online FMD training for Australian veterinarians and livestock workers. This training aims to provide participants with the skills necessary to identify and manage an outbreak of FMD. When the program ends in 2019, about 300 Australians will have attended real-time training and another 300 will have participated in an online course.

Through the Agricultural Competitiveness White Paper the department has also been working closely with Australia’s northern neighbours to build a strong and sustainable regional surveillance system, with a focus on early warning in Timor-Leste and Papua New Guinea. Departmental veterinarians support surveillance activities by local counterparts in both countries, and provide basic training in the principles of animal health surveillance and veterinary epidemiology. By supporting additional active FMD surveillance activities in both Timor-Leste (Figures 2 and 3) and Papua New Guinea over the past 12 months, these countries can be confident that they remain free from FMD.

Figure 2. Timor-Leste surveillance activities 2017-2018 – Sub-districts in which active FMD surveillance has been conducted (goats, sheep, cattle and pigs).
Another important part of EAD planning and preparedness in Australia is to assess and test ‘what if’ scenarios and control strategies in the event of an outbreak. Part of this planning has been the development of Australia’s first national-scale simulation model for animal disease spread and control, the Australian Animal Disease model (AADIS). AADIS came into operation in 2015 through a collaboration between the Department of Agriculture and Water Resources and the University of New England. It offers full national-scale modelling capability, and addresses the needs of disease managers to capture complex disease epidemiology, regional variability in transmission (e.g. due to different livestock movement patterns, production systems and climates) and different jurisdictional approaches to control. Local and international epidemiology professionals are being trained in the use of this new generation highly configurable disease model, to assist in contingency planning and response by animal health agencies. A 2017 project expanded the functionality of AADIS to include capacity to evaluate different approaches to post-outbreak surveillance in the event of an FMD outbreak, including the management of vaccinated animals. The study found that there were higher costs associated with keeping vaccinated animals in the population (‘vaccinate and retain’) following an outbreak compared to removing them from the population (‘vaccinate and remove’).

Queensland

The Queensland Department of Agriculture and Fisheries (QLD DAFF) was recently involved in two FMD simulation exercises. Led by Animal Health Australia (AHA) and in collaboration with QLD DAFF and Boehringer-Ingelheim, Exercise Dragonglass aimed to test the arrangements for supply and distribution of simulated FMD vaccine and vaccination equipment from the suppliers to a designated vaccine centre (DVC) in Queensland, Australia, including assessment of the cold chain. The outcomes from this exercise will lead to development of standard operating procedures and improvements in procedures. The exercise was held in the first quarter of 2018, and was immediately followed by Exercise Obsidian, which tested the arrangements for supply and distribution of simulated FMD vaccine and vaccination equipment from the Queensland DVC to the producer level (i.e. farm gate).

Victoria

Agriculture Victoria, (Department Economic Development, Jobs, Transport and Resources) and AgriBio, Centre for AgriBioscience have been developing and validating a pen-side test for FMD virus (FMDV). Loop-mediated isothermal amplification (LAMP) is a nucleic acid amplification technique performed at a constant temperature, allowing it to be performed with simple unspecialised equipment, making it an ideal technique.
for in-field use (Figure 4). Previous studies have demonstrated the test to have an accuracy comparable with current PCR techniques and capable of producing a result within thirty minutes. Early detection of disease is a significant advantage when dealing with threats such as FMD and easy to use pen-side tests such as this provide the technology to facilitate a rapid and sensitive early diagnostic indicator.

Collaboration with the National Institute of Animal Health (NIAH), Bangkok and the FMD Regional Reference Laboratory (RRL), Pak Chong in Thailand facilitated the initial trial work to validate the FMDV assay on a range of positive FMDV serotypes. Subsequent partnerships with the University of Melbourne finalised the diagnostic specificity validation studies through the Masters in Veterinary Public Health (Emergency Animal Disease) program. Further testing of positive FMDV samples is planned for the coming months in Thimphu, as part of a collaborative program with colleagues from the National Centre for Animal Health (NCAH) in Bhutan.

Figure 4. Sampling FMDV cattle in Thailand and testing using the LAMP Genie III machine, 2017