The 1st OIE/FAO-APHCA Regional Workshop on Bluetongue Diagnosis and Control
(in collaboration with DGLAHS and Bbalitvet)
Bogor, Indonesia, 7-10 March 2011

Conclusions and Recommendations

Background

1. The 1st OIE/FAO-APHCA Regional Workshop on Bluetongue Diagnosis and Control was organized, in collaboration with the Directorate General of Livestock and Animal Health Services (DGLAHS) and Bbalitvet of the Ministry of Agriculture of Indonesia, in Bogor between 7 and 10 March 2011.

2. The main objectives of this Workshop were:
   - To give an update on Global situation of Bluetongue with an emphasis on current epidemiological situation in Asia and the Pacific,
   - To give lectures on diagnosis of Bluetongue, control and prevention measures of the disease, and
   - To provide laboratory hands-on training on diagnosis of BT.

3. The Workshop was attended by 17 participants and 1 overseas observer from 17 member countries namely: Bangladesh, Bhutan, Cambodia, P.R. China, India, Indonesia, Iran, Lao PDR, Malaysia, Mongolia, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Thailand and Vietnam, and 11 local observers from Indonesia.

4. Lectures were given by Dr Ross Lunt and Dr Ian Pritchard from the CSIRO-Australian Animal Health Laboratory (AAHL), and Dr Indrawati Sendow from Bbalitvet of the Indonesian Research Center for Veterinary Science of the Ministry of Agriculture of Indonesia, covering the following subjects:
   - Etiology and epidemiology of BT
   - Strategies for surveillance and laboratory testing in Australia and Indonesia
   - Serological tests, virus isolation and serotyping
   - Molecular detection (real-time PCR) and genotyping

5. Hands-on training on laboratory diagnosis was given focusing on: (i) Antibody ELISA techniques, (ii) real-time PCR techniques, (iii) Intravenous egg inoculation techniques and harvesting, and (iv) CPE in cell culture infected with BTV.

6. All participants presented their country papers with regard to situation on BT and its diagnosis and control in their respective countries

Recognition

The Workshop recognized/confirmed:

7. That Bluetongue (BT) is a non-contagious, vector-borne, viral disease of domestic and wild ruminants, including sheep, cattle, buffaloes, deer, goats and camelids (as well as other bovine species, e.g. mithun – *Bos frontalis* and yaks – *Bos gruniens*).

8. That severity of the disease varies among different susceptible ruminant species and breeds. The disease is considered as one of the most feared diseases in sheep-producing countries. Although sheep are most severely affected, cattle and buffaloes are the main mammalian reservoirs of BTV and are very important in the epidemiology of the disease.

9. That BT is commonly found in all the continents except Antarctica and has been observed serologically and/or virologically in the Americas, Australia, Africa, the Middle East, Asia and Europe.
   However, due to limitations of reliable data, the global distribution of the disease is still unclear.

10. That BT is known to be endemic in most tropical and subtropical regions where competent biological vectors and hosts inhabit.
    The disease has been spreading northward since late 1998, possibly due to climate changes which might affect distribution of the disease vectors.

11. That surveillance programmes have confirmed BTV vectors in Australia such as *Culicoides brevitarsis, C. actoni, C. wadai* are also present in Indonesia.
    Animal sentinel programmes may contribute to the study on BTV and other vector-borne viruses and give the picture of the seasonality of BTV infections.

12. That several laboratory diagnostic tests are available for serological testing and BTV identification.
    Agar Gel Immuno-diffusion (AGID), c-ELISA and RT-PCR are prescribed as the tests for international trade by the OIE standards (OIE codes and manuals).

13. That competitive enzyme-linked immunosorbent assay (c-ELISA) can detect antibodies to the BTV sero-group antigens with high sensitivity and specificity without detecting cross-reacting antibodies to other orbiviral species.
    This assay is prescribed as one of the tests for international trade by the OIE standards.

14. That BTV infected ruminants may produce neutralizing antibodies to BTV serotypes other than those to which animals are exposed, especially when they are infected with multiple serotypes.

15. That BTV identification traditionally requires isolation and amplification of the virus using embryonated chicken eggs, tissue culture or animal inoculations, and the subsequent application of serogroup- and serotype-specific tests.

16. That reverse-transcription polymerase chain reaction (RT-PCR) permits rapid amplification of BTV RNA to detect the presence of BTV in clinical samples and suspected vectors.
    This technique is now available and prescribed as one of the tests for international trade by the OIE standards.

17. That real-time PCR allows even more rapid and sensitive tests to detect the presence of BTV RNA in clinical cases. This has not been validated to the level required by the OIE validation template and is expected to become a test for international trade in the future.

18. The importance and necessity of: (i) sharing information on epidemiological situation of BT, (ii) the establishment of a laboratory network, (iii) promoting collaboration on the disease diagnosis and control amongst the participating countries, and (iv) the establishment of surveillance programme for a comprehensive study on BT.

19. The importance to continue training for selected participating countries in real-time PCR, c-ELISA, virus isolation, conventional PCR and sequence analysis to improve/strengthen the diagnostic and control capacity.

20. The importance to: (i) establish regional reference laboratories for BT in the region to comprehend and improve the technical capability, and (ii) establish a BT laboratory network in the region.

21. That some participating countries expressed necessity of further technical supports to strengthen their BT diagnostic and control capability at national level through bilateral/multilateral technology transfer from the OIE Reference Laboratories.

22. AAHL, as one of the OIE Reference Laboratories for BT, is responsible for assisting in the development of technical capability for testing as well as provision of reference reagents and technical advice.

Recommendations

The Workshop recommended that;

23. The participating countries should obtain and collate reliable data to represent the actual epidemiological situation of BT in their respective countries.

24. Absence of clinical cases should not be considered as an indication of absence of the BTV in a country where competent biological vectors might inhabit. Existence or freedom of BT should only be defined by the outcomes of the appropriate surveillance strategies in compliance with the OIE standards (codes and manuals).

25. c-ELISA be considered as the first choice for the serological surveillance of BT in susceptible herds.

26. Virus isolation and identification be considered as the most reliable method to identify the existence of BTV including their serotypes so as to obtain more reliable data of the disease risk and virus prevalence in a country.

27. Each participant shall take necessary actions to adopt and transfer the know-how and technology learned from this Workshop to other laboratory staff in his/her respective country.

28. A comprehensive BT surveillance programme be conducted, where and when applicable, using sentinel herds and virus isolation supported by serological tests.

29. Farmers and other stakeholders as well as field workers be educated on BT recognition in the field to enable rapid reporting to the Veterinary Authorities.

30. The participating countries should actively share information on the disease situation and laboratory diagnostic data amongst themselves to strengthen the regional (laboratory) networking and collaboration.

31. AAHL, as one of the OIE Reference Laboratories for BT, should facilitate the process of submission of samples to AAHL as well as providing technical assistance, supports and technical guidance to the participating countries.

32. Countries are encouraged to send BTV isolates, samples and/or RNA as well as vectors to the OIE Reference Laboratories for genetic and antigenic characterization.

33. OIE Asia-Pacific and FAO-APHCA should support co-organization of the 2nd workshop/training to improve BT diagnosis and control capacity at regional level, subject to official request(s) from the member countries.

34. OIE Asia-Pacific and FAO-APHCA consider possible further support in developing and establishing regional reference laboratories for BT in the region to comprehend and improve the disease situation.
    The OIE Twinning Programme be considered as one option to facilitate this development/establishment process.

35. AAHL should consider possible technical assistance to selected participating countries through either bilateral or multilateral channel, with support/collaboration from international organizations such as OIE Asia-Pacific and FAO-APHCA.

Acknowledgement

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