WOAH Reference Laboratory Reports Activities 2023
Activities in 2023
This report has been submitted: 24 juin 2024 09:29

Laboratory Information

Name of disease (or topic) for which you are a designated WOAH Reference Laboratory:
Foot and Mouth Disease Virus

Address of laboratory:
Plot 6385/90 Lejara Road, Broadhurst Industrial, Gaborone Botswana

Tel:
+2673912711

E-mail address:
jhyera@bvi.co.bw

Website:
www.bvi-bw.com

Name (including Title) of Head of Laboratory
(Responsible Official):
Dr Joseph Hyera

Name (including Title and Position) of WOAH Reference Expert:
Dr Joseph Hyera, Laboratory Manager

Which of the following defines your laboratory?
Check all that apply:
Parastatal Governmental

TOR1: DIAGNOSTIC METHODS

1. Did your laboratory perform diagnostic tests for the specified disease/topic for purposes such as disease diagnosis, screening of animals for export, surveillance, etc.? (Not for quality control, proficiency testing or staff training)
Yes

<table>
<thead>
<tr>
<th>Diagnostic Test</th>
<th>Indicated in WOAH Manual (Yes/No)</th>
<th>Total number of test performed last year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Nationally</td>
<td>Internationally</td>
</tr>
<tr>
<td>Indirect diagnostic tests</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NSP ELISA</td>
<td>Yes</td>
<td>7592</td>
</tr>
<tr>
<td>VNT</td>
<td></td>
<td>258</td>
</tr>
<tr>
<td>Direct diagnostic tests</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Virus Isolation in Cell culture</td>
<td></td>
<td>21</td>
</tr>
<tr>
<td>Genome Detection (RT-PCR and Sequencing)</td>
<td></td>
<td>21</td>
</tr>
</tbody>
</table>

TOR2: REFERENCE MATERIAL

2. Did your laboratory produce or supply imported standard reference reagents officially recognised by WOAH?
No

3. Did your laboratory supply standard reference reagents (nonWOAH-approved) and/or other diagnostic reagents to WOAH Members?
Yes

<table>
<thead>
<tr>
<th>TYPE OF REAGENT AVAILABLE</th>
<th>RELATED DIAGNOSTIC TEST</th>
<th>PRODUCED/ PROVIDE</th>
<th>AMOUNT SUPPLIED NATIONALLY (ML, MG)</th>
<th>AMOUNT SUPPLIED INTERNATIONALLY (ML, MG)</th>
<th>NO. OF RECIPIENT WOAH MEMBER COUNTRIES</th>
<th>COUNTRY OF RECIPIENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>FMD virus antigens (SAT1, SAT2, SAT3, TYPE O)</td>
<td>Liquid Phase Blocking ELISA (LPBE)</td>
<td>Produced</td>
<td>No</td>
<td>200 ml per each serotype</td>
<td>1</td>
<td>NAMIBIA,</td>
</tr>
<tr>
<td>FMD antisera(rabbit) SAT1, SAT2, SAT3, TYPE</td>
<td>LPBE</td>
<td>Produced</td>
<td>No</td>
<td>50 ml per each serotype</td>
<td>1</td>
<td>NAMIBIA,</td>
</tr>
</tbody>
</table>

WOAH Reference Laboratory Reports Activities 2023
**4. Did your laboratory produce vaccines?**

No

**5. Did your laboratory supply vaccines to WOAH Members?**

No

**TOR3: NEW PROCEDURES**

6. Did your laboratory develop new diagnostic methods for the designated pathogen or disease?

Yes

7. Did your laboratory validate diagnostic methods according to WOAH Standards for the designated pathogen or disease?

Yes

<table>
<thead>
<tr>
<th>NAME OF THE NEW TEST OR DIAGNOSTIC METHOD DEVELOPED</th>
<th>DESCRIPTION AND REFERENCES (PUBLICATION, WEBSITE, ETC.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Validation of commercial 3ABC ELISA Kit (IDEXX) for detection of antibodies to NSPs of FMDV in cattle sera from southern Africa. Validation continues in 2024 to cover cattle, goat, sheep and pig sera. Final results will be published in peer reviewed journal.</td>
<td>Validation Report submitted to Mr. Thabang Radira, IDEXX Medical Representative in Botswana; contact: <a href="mailto:thabang@visibilitymarketing.co.bw">thabang@visibilitymarketing.co.bw</a></td>
</tr>
</tbody>
</table>

8. Did your laboratory develop new vaccines for the designated pathogen or disease?

Yes

<table>
<thead>
<tr>
<th>NAME OF THE NEW VACCINE DEVELOPED</th>
<th>DESCRIPTION AND REFERENCES (PUBLICATION, WEBSITE, ETC.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering an epitope-based vaccine for control of FMD associated with SATs of FMD virus in southern Africa</td>
<td>A thesis (PhD) concluded last year by one of the Staff members. The Thesis has been submitted to the University of Botswana (UB) and was supervised jointly by myself (Joseph Hyera) and Professor S.W. Mpoloka of the Department of Biological Science, UB. The whole research work was conducted at this laboratory. Contact: <a href="mailto:mpoloka@UB.AC.BW">mpoloka@UB.AC.BW</a></td>
</tr>
</tbody>
</table>

9. Did your laboratory validate vaccines according to WOAH Standards for the designated pathogen or disease?

No

**TOR4: DIAGNOSTIC TESTING FACILITIES**

10. Did your laboratory carry out diagnostic testing for other WOAH Members?

Yes

<table>
<thead>
<tr>
<th>NAME OF WOAH MEMBER COUNTRY SEEKING ASSISTANCE</th>
<th>DATE</th>
<th>WHICH DIAGNOSTIC TEST USED</th>
<th>NO. SAMPLES RECEIVED FOR PROVISION OF DIAGNOSTIC SUPPORT</th>
<th>NO. SAMPLES RECEIVED FOR PROVISION OF CONFIRMATORY DIAGNOSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOTSWANA</td>
<td>2023-03-31</td>
<td>NSP ELISA, RT-PCR and Sequencing</td>
<td>94</td>
<td>1</td>
</tr>
<tr>
<td>BOTSWANA</td>
<td>2023-04-30</td>
<td>NSP</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>BOTSWANA</td>
<td>2023-08-31</td>
<td>NSP</td>
<td>533</td>
<td>0</td>
</tr>
<tr>
<td>BOTSWANA</td>
<td>2023-09-30</td>
<td>NSP, RT-PCR and sequencing</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>BOTSWANA</td>
<td>2023-10-31</td>
<td>NSP, VNT</td>
<td>1296</td>
<td>0</td>
</tr>
<tr>
<td>BOTSWANA</td>
<td>2023-11-30</td>
<td>NSP, VNT</td>
<td>5196</td>
<td>0</td>
</tr>
</tbody>
</table>
11. Did your laboratory provide expert advice in technical consultancies on the request of an WOAH Member?
No

**TOR5: COLLABORATIVE SCIENTIFIC AND TECHNICAL STUDIES**

12. Did your laboratory participate in international scientific studies in collaboration with WOAH Members other than the own?
No

13. In exercising your activities, have you identified any regulatory research needs* relevant for WOAH?
No

**TOR6: EPIZOOLOGICAL DATA**

14. Did your Laboratory collect epidemiological data relevant to international disease control?
Yes

**IF THE ANSWER IS YES, PLEASE PROVIDE DETAILS OF THE DATA COLLECTED:**

Bovine epithelial tissues samples collected from Ethiopia and Malawi and buffalo probang samples collected from Botswana were tested and FMD virus was detected in these samples. The circulating FMDV serotypes were identified which include SAT 2 from Malawi, serotype A and O from Ethiopia and SAT 1 from Botswana samples. Serological samples(n=200) were received for FMD surveillance from Lesotho which is FMD free/green zone. All the 200 samples tested negative for FMDv antibodies indicating that Lesotho is maintaining its status of being FMD free.

15. Did your laboratory disseminate epidemiological data that had been processed and analysed?
Yes

**IF THE ANSWER IS YES, PLEASE PROVIDE DETAILS OF THE DATA COLLECTED:**

The data was collected from analysed test results and disseminated in the form of test reports. Four FMDv serotypes were detected and identified in samples from three countries; serotype A and O were identified from Ethiopia samples, SAT 2 identified from Malawi samples and SAT 1 from Botswana samples. The serological samples collected from Lesotho (FMD free country) tested negative for FMDv antibodies indicating absence of FMD.

16. What method of dissemination of information is most often used by your laboratory? (Indicate in the appropriate box the number by category and list the details in the box)

a) Articles published in peer-reviewed journals:

2


b) International conferences:

1

c) National conferences:


d) Other (Provide website address or link to appropriate information):

0

**TOR7: SCIENTIFIC AND TECHNICAL TRAINING**

17. Did your laboratory provide scientific and technical training to laboratory personnel from other WOAH Members?

No

**TOR8: QUALITY ASSURANCE**

18. Does your laboratory have a Quality Management System?

Yes

<table>
<thead>
<tr>
<th>Quality management system adopted</th>
<th>Certificate scan (PDF, JPG, PNG format)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO 17025</td>
<td>PDF (Attached)</td>
</tr>
<tr>
<td></td>
<td>SADCAS Certificate of Accreditation(BNVL-BVI).pdf</td>
</tr>
</tbody>
</table>

19. Is your quality management system accredited?

Yes

<table>
<thead>
<tr>
<th>Test for which your laboratory is accredited</th>
<th>Accreditation body</th>
</tr>
</thead>
<tbody>
<tr>
<td>FMD virus isolation in primary lamb kidney cell culture</td>
<td>SANAS &amp; SADCAS</td>
</tr>
<tr>
<td>FMD virus serotype identification by antigen ELISA</td>
<td>SANAS &amp; SADCAS</td>
</tr>
<tr>
<td>FMD virus genome detection and sequencing</td>
<td>SANAS &amp; SADCAS</td>
</tr>
</tbody>
</table>

20. Does your laboratory maintain a “biorisk management system” for the pathogen and the disease concerned?

Yes

We have several Standard operating procedures (SOPs) which guide on the biorisk management. The documents are: (i) SHEB 0001 Virus Leak/spill Containment and clean-up: It clearly outlines the steps to be taken should the FMD virus leak or spill, posing a potential breach of containment. (ii) SHEB 0013 Autoclaving SOP: The document spells out the removal of utensils and autoclavable equipment out of a Biosafety level 3 laboratory, where the virus pathogen is inactivated through heat. (iii) SHEB 0014 Waste disposal SOP: All laboratory waste undergoes decontamination before being removed from the BSL 3 facility to prevent any potential environmental risks. Once removed from the contaminated area, the waste is further incinerated within the compound. (iv) SHEB 0015 Procedure for entry and exit of visitors at BVI: Entry and exit of personnel into the BSL3 laboratory are controlled to minimize the risk of spreading the virus to the environment personnel interact with. (v) SHEB 0028 Organisation of Movement: A movement grid has been implemented to further minimize contamination of virus-free areas by personnel and equipment exiting the BSL3 laboratories. (vi) SHEB 0029 Decontamination Procedure: Utilizing the Safety Airlock System, the procedure further decontaminates materials that cannot be autoclaved.

**TOR9: SCIENTIFIC MEETINGS**

21. Did your laboratory organise scientific meetings related to the pathogen in question on behalf of WOAH?

No

22. Did your laboratory participate in scientific meetings related to the pathogen in question on behalf of WOAH?

No

**TOR10: NETWORK WITH WOAH REFERENCE LABORATORIES**

23. Did your laboratory exchange information with other WOAH Reference Laboratories designated for the same pathogen or disease?
Yes

24. Do you network (collaborate or share information) with other WOAH Reference Laboratories designated for the same pathogen?
Yes

<table>
<thead>
<tr>
<th>NETWORK/DISEASE</th>
<th>ROLE OF YOUR LABORATORY (PARTICIPANT, ORGANISER, ETC)</th>
<th>NO. PARTICIPANTS</th>
<th>PARTICIPATING WOAH REF. LABS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foot and mouth disease</td>
<td>Participant</td>
<td>2</td>
<td>All labs designated for Foot and Mouth</td>
</tr>
</tbody>
</table>

25. Did you organise or participate in inter-laboratory proficiency tests with WOAH Reference Laboratories designated for the same pathogen?
Yes

<table>
<thead>
<tr>
<th>PURPOSE OF THE PROFICIENCY TESTS</th>
<th>ROLE OF YOUR REFERENCE LABORATORY (ORGANISER/ PARTICIPANT)</th>
<th>NO. PARTICIPANTS</th>
<th>PARTICIPATING WOAH REF. LABS/ ORGANISING WOAH REF. LAB.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assurance of Test results</td>
<td>Organiser</td>
<td>3</td>
<td>Pirbright Institute, CFIA, CORDA CEVA</td>
</tr>
</tbody>
</table>

26. Did your laboratory collaborate with other WOAH Reference Laboratories for the same disease on scientific research projects for the diagnosis or control of the pathogen of interest?
No

**TOR11: OTHER INTERLABORATORY PROFICIENCY TESTING**

27. Did your laboratory organise or participate in inter-laboratory proficiency tests with laboratories other than WOAH Reference Laboratories for the same pathogen?
No

**TOR12: EXPERT CONSULTANTS**

28. Did your laboratory place expert consultants at the disposal of WOAH?
No

29. Additional comments regarding your report:
No