OIE Reference Laboratory annual reports (RINDERPEST)

Activities in 2020

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A: Maintaining Scientific and Technical Skills

1. Did your laboratory perform relevant diagnostic tests for purposes such as disease, diagnosis, screening of animals for export, surveillance, etc. (not for quality control, proficiency testing or staff training)

    a. For the specified disease?
    b. For closely related diseases or pathogens?

Disease	Diagnostic Test	Indicated in OIE Manual (Yes/No)	Total number of tests performed last year	
			Nationally	Internationally
Rinderpest	No			
Peste des petits ruminants	C-ELISA	Yes	8	201
"	Real-Time PCR	Yes	696	122
"	RT-PCR	Yes	0	41
"	Partial sequencing	Yes	0	21

“	Full genome sequencing	Yes	7	2
“	Isolation	Yes	0	15

2. Did your laboratory produce, supply, or import standard reference reagents officially recognised by the OIE for the specified disease or for closely related diseases? **No**

Type of Reagent Available	Related diagnostic test	Produced/Supplied/Imported	Amount supplied nationally (ml, mg)	Amount supplied internationally (ml, mg)	Name of recipient OIE member countries

3. Did your laboratory supply, exchange or receive standard reference reagents and/or other diagnostic reagents for the specified disease: **No**

Type of reagent	Related diagnostic test	Supplied by your lab, exchanged or received	Amount	Name of recipient or supplier member country

4. Did your laboratory provide expert advice in technical consultancies on the request of an OIE Member Country for the specified disease or for closely related diseases? **Yes for PPR**

Name of the OIE member country receiving the technical consultancy	Purpose	How the advice was provided
SENEGAL	Protocols for PPR sampling and storage	
BURKINA FASO	Protocols for PPR sampling and storage	
MALI	Protocols for PPR sampling and storage	
RUSSIA	Quality control of vaccine strains produced in Russia, validation of a new diagnostic method	
BANGLADESH	Request for the PPR Nigeria 75-1 vaccine strain	

SYRIA	Request for the PPR Nigeria 75-1 vaccine strain	
PAKISTAN	Request for the PPR Nigeria 75-1 vaccine strain	
SUDAN	Camel vaccination, ELISA tests, virus detection	
COMOROS	PPR suspicion, support for diagnosis	
EGYPT	PPR suspicion, support for diagnosis	

5. What method of dissemination of information is most often used by your laboratory? (please provide information on activities for other diseases relevant to maintaining capability for specified disease) [a: Articles published in peer-reviewed journals; b: International conferences; c: National conferences; d: Other]

a) **Articles published in peer-reviewed journals: 4**

• Fine AE, Pruvot M, Benfield CTO, Caron A, Cattoli G, Chardonnet P, et al. Eradication of Peste des Petits Ruminants Virus and the Wildlife-Livestock Interface. Frontiers in Veterinary Science. 2020;7(50).

• Dundon WG, Diallo A, Cattoli G. Peste des petits ruminants in Africa: a review of currently available molecular epidemiological data, 2020. Arch Virol. 2020.

• Fernandez Aguilar X, Mahapatra M, Begovoeva M, Kalema-Zikusoka G, Driciru M, Ayebazibwe C, et al. Peste des Petits Ruminants at the Wildlife–Livestock Interface in the Northern Albertine Rift and Nile Basin, East Africa. Viruses. 2020;12(3):293.

• Comerlato J, Albina E, Puech C, Franco AC, Minet C, Eloiflin R-J, et al. Identification of a murine cell line that distinguishes virulent from attenuated isolates of the morbillivirus Peste des Petits Ruminants, a promising tool for virulence studies. Virus Research. 2020:198035.

b) **International conferences: 2**

1- EU-FMD, online dec 2020. Geographical distribution of PPR

2- Annual workshop of NRLs for PPR, online, dec 2020. Presentation 1: results of proficiency tests; presentation 2: OIE PPR GEP-Ref lab network; presentation 3: New project on wildlife serology tests

c) **National conferences: 0**

d) Other:

(Provide website address or link to appropriate information) **1**

1. ÉTUDE DE LA VIRULENCE DU VIRUS DE LA PESTE DES PETITS RUMINANTS. Chloé Corbanini. 2020. Montpellier: UM2, 48 p. Mémoire de master

2: Interactions Microorganismes Hôtes et Environnements. Mention Biologie Agrosciences. Université de Montpellier.

6. Did your laboratory provide scientific and technical training to laboratory personnel from other OIE Member Countries? **For PPR**

☒ Yes ☐ No

7. Did your laboratory implement activities to ensure ongoing capability for the designated disease or closely related disease in the event of loss of the key staff including the OIE Reference Expert?

Activity	Description
PPR OIE Ref Laboratory and RP OIE Ref Laboratory	Activities related to both these references will be maintained on the long run, after the leave of the actual key expert. Several CIRAD scientists are currently contributing to scientific knowledge on PPR and rinderpest and have skills in the domain of virology, molecular epidemiology, development of new diagnostic tools (antibody-, antigen-, and nucleic-acid-based tests) and their validation. The extensive experience in the field of PPR molecular biology and serology in the approach of standardization of assays must be considered a key element for rinderpest expertise. In addition, the PPR staff implements the routine operation of diagnosis under quality assurance and proficiency testing enabling test comparison, an important component of test validation. The group has also established a sequence database to study the phylogenetic relationship between PPRV isolates and RP isolates (in the frame of the Sequence and Destroy project). The main activities and expertise implemented in majority for PPR are as described below:
Diagnosis	For PPRV, routine performance of diagnostic tests (C-ELISA, real-time PCR, RT-PCR, VNT, isolation, sequencing, sequence analysis). For RPV sequencing performed in the frame of the Sequence and Destroy project, sequence analysis maintained. Sharing of Standard Operating Procedures (SOPs) of ISO/IEC 17025 accredited methods. Sharing best practices and maintaining a high quality performance for reference laboratories

Control and maintenance of biological materials for PPRV and RPV	Maintain reagents and reference material collections (positive controls for diagnostic tests ; production of an Internal Reference Material for batch to batch C-ELISA control and PT implementation; sharing of live and inactivated PPR strains; and SLAM cells. For PPRV, hold the collection of samples containing PPRV, collated from different geographical locations, isolated strains and of vaccine strains. Maintain the seed strain of PPRV Nigeria 75/1 vaccine strain Maintain the seed strain of rinderpest RBOK vaccine strain and others
Expertise	Providing scientific and technical assistance to organisations and countries and in support to regional control programmes; Networking with OIE reference laboratories and with NRLs for PPR; Networking with Rinderpest holding facilities.
Rinderpest vaccine production	Production and maintenance of a reserve of quality-assured stocks of RBOK rinderpest live vaccine strain; The reserve of quality-assured vaccine is made available in case of rinderpest re-emergence upon request of FAO

B: Laboratory Systems

8. Does your laboratory have a Quality Management System certified according to an International Standard? If YES indicate the name of the quality management system adopted or currently in place. Also attach a scanned certificate of the system.

ISO 17025

9. Is your laboratory accredited by an international accreditation body? If 'yes' indicate test for which your laboratory is accredited and name of the accreditation body.

PPR C-ELISA, COFRAC

10. Does your laboratory maintain a "biorisk management system" for the pathogen and the disease concerned?

☒ Yes ☐ No

11. Does your laboratory have a biosecurity system in place to ensure security for the pathogen and materials that may contain the infectious pathogen?

☒ Yes ☐ No

C: Capability to Respond to a Suspected Case

12. In the last year, did your laboratory perform diagnostic tests for the specified pathogen and the disease in order to confirm ongoing capability?

Diagnostic Test	Indicated in OIE Manual (Yes/No)	Total number of tests performed last year
RT-real time PCR	NO	20
PCR	YES	20
Viral titration	YES	5
Isolation and cell culture (CPE visualisation and virus production)	YES	11

13. Did your laboratory produce vaccines for the specified disease or similar diseases?

Disease	Amount supplied nationally or internationally
Rinderpest	0
PPR	3 countries X 10 vials of 10^4 $TCID_{50}$

14. Did your laboratory organise or participate in inter-laboratory proficiency tests with any other laboratories for the specified disease or similar diseases?

Role of your laboratory (organiser or participant)	Disease	Test	Number of participating laboratories	Regions of participating OIE member countries
Organiser	PPR	Serology and virology	40	EU, Non EU

D: Networks and Linkages

15. Did your laboratory organise or participate in scientific meetings for the specified disease?

Title of event	Date	Location	Role (Organiser, speaker, presenter)	Title of work presented
OIE/FAO holding facilities networking meeting	09 Oct 2020	Visio conference	presenter	Quality controlled master seed bank of the RBOK rinderpest vaccine
Global Rinderpest Action Plan: Safeguarding the Global Freedom	11 May 2020	Visio conference	presenter	CIRAD's activity for the seed bank

16. Did your laboratory exchange information with other OIE Reference Laboratories designated for the same pathogen or disease?

☒ Yes ☐ No

17. Was your laboratory involved in maintaining a network with OIE Reference Laboratories designated for the same pathogen or disease?

☒ Yes ☐ No

18. Did your laboratory place expert consultants at the disposal of the OIE?

☒ Yes ☐ No

19. Did your laboratory carry out activities to raise awareness and improve capability for this disease in other member countries? **No**

Description of activity	Date	Member countries

E: Biosafety

20. What level of biocontainment is used in your laboratory for (a) storage and (b) handling of potentially infectious material for the specified disease?

CIRAD facility was recommended by the FAO-OIE rinderpest Joint Advisory Committee to be designed as RHF, and was approved in May 2019 at the 87th OIE General Session to be a RHF category A and B. All laboratory activities are carried out in the facility either at BSL-3+ or BSL-2 biocontainment. Additionally, CIRAD's facilities are authorized by the French Agency for Health Products (ANSM, equivalent to the FDA) to store and handle selected agents. Rinderpest wild strains are preserved at BSL-3+ level; vaccine strains, comprising the RBOK strain are kept at BSL-2 biocontainment level. For all microorganisms handled, activities are under a quality management system according to ISO 17025, accreditation no. 1-2207, since 1st March 2010

21. Does your laboratory maintain a structured risk assessment for work with potentially infectious material for the specified disease?

☒ Yes ☐ No

22. Was your laboratory's risk assessment for work with potentially infectious material reviewed in the past year?

☒ Yes ☐ No

23. Does your laboratory have an emergency response plan for biosafety incidents involving potentially infectious material for the specified disease?

☒ Yes ☐ No

F: Research

24. Did your laboratory develop new diagnostic methods for the designated pathogen or disease, or a similar disease? **No**

Disease	Diagnostic Method	Description

25. Did your laboratory participate in international scientific studies in collaboration with OIE Member Countries other than your own?

Title of study	Duration	Purpose of study	Partners (Institutions)	OIE Member Countries Involved other than your Country
Livestock Disease Surveillance Knowledge Intregration (LIDISKI)	4 years	Improving surveillance and control of PPR in Nigeria	CIRAD, IZSVe, Ikore, NVRI	ITALY NIGERIA
Epidemiology and Control of Peste des Petits Ruminants (ECO-PPR)	2 years	to inform and support ongoing national, regional and global efforts for PPR control and eradication by generating the necessary evidence to support policy dialogue.	ILRI ISRA LCV CIRDES	BURKINA FASO MALI SENEGAL
Study of virulence of peste des petits ruminants virus in relation to variability of host response	3 years	Study of virulence of peste des petits ruminants virus in relation to variability of host response	IVI, Bern	SWITZERLAND
Development of multispecies validated serology protocols for complex ecosystems, focused on East Africa, in support of Global PPR eradication	1.5years	Development of multispecies validated serology protocols for complex ecosystems, focused on East Africa, in support of Global PPR eradication	RVC, PI, IAEA, U of Glasgow, SACID	AUSTRIA TANZANIA UNITED KINGDOM
Support Towards the Operationalization of the SADC Regional Agricultural Policy (STOSAR)' Project	1.5 years	Specialized services for risk analysis, training and sample testing for the management of PPR	FAO, SADC	ANGOLA BOTSWANA COMOROS ESWATINI LESOTHO MADAGASCAR MOZAMBIQUE SEYCHELLES SOUTH AFRICA TANZANIA

				ZAMBIA ZIMBABWE

26. Did your laboratory collaborate with other OIE Reference Laboratories for the same disease on scientific research projects for the diagnosis or control of the pathogen of interest or a similar pathogen?

Title of Project or Contract	Scope	Name(s) of relevant OIE Reference Laboratories
Organisation of the network of OIE ref lab for PPR	Organisation of the network of OIE ref lab for PPR	Pirbright, China Animal Health and Epidemiology Center

27. Additional comments regarding your report (if any):

There is no rinderpest vaccine supplied for this year as said in §13, but vaccine production is related to the project 'Preparation of a quality controlled master seed bank of the RBOK rinderpest vaccine strain" in the frame of the FAO-OIE Rinderpest Holding Facility category A and B of CIRAD. This project provides an opportunity to prepare from quality controlled vaccine (1) a master seed bank destinated to be kept at CIRAD and (2) a production seed for vaccine producers to expand and replenish the reserves in case of an emergency.

In relation to §12, the laboratory performed diagnostic tests on RPV in the frame of the above project.