CENTRAL VETERINARY LABORATORY
Ministry of Agriculture, Water and Forestry
Republic of Namibia

CBPP IN NAMIBIA: FIELD AND DIAGNOSTIC LABORATORY ACTIVITIES

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Lusaka, Zambia
26 July 2022

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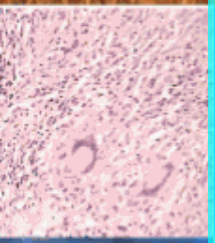
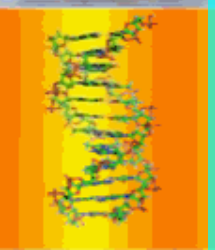
ERFAN
Enhancing Research For Africa Network





Presentation layout

- Synonyms
- Definition
- Introduction and background
- Brief history of CBPP in Namibia
- CVL: Mandate & Activities
- Field Activities
- Research & Publications

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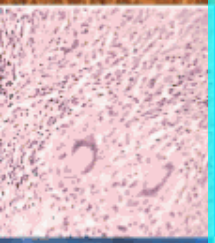



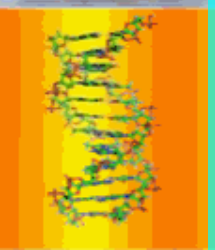

Synonyms

- Péripneumonie contagieuse bovine
- “Lung sickness”
- Longsiekte (Afr.)
- Epunga (OtjiHerero)
- Epunga (OshiWambo) and
- Kapunga (RuKwangali)
- …

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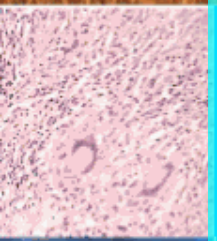



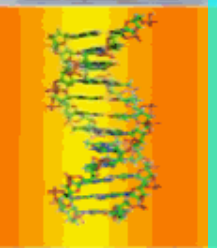

Definition

- Contagious bovine pleuropneumonia (CBPP) is a highly infectious respiratory disease of cattle that is caused by *Mycoplasma mycoides* subsp. *mycoides* (Mmm) and is characterized by severe fibrinous bronchopneumonia and pleural effusion during the acute to subacute stages and by pulmonary sequestra in chronic cases.

- It is a notifiable disease that is endemic in sub-Saharan Africa and causes important productivity losses due to the high mortality and morbidity rates.

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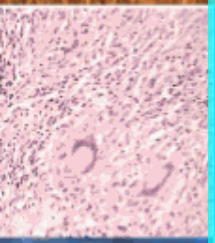



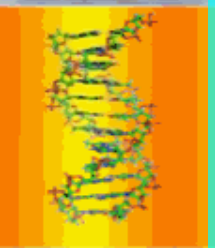

Introduction and background

- "*Contagious bovine pleuropneumonia* (CBPP) or lung sickness in cattle (…) is truly an African disease, long eradicated from the developed world, which represents a considerable burden for cattle owners in many parts of Africa (EMPRES-AH, FAO, 2013), from Senegal and the Gambia in the west through Somalia in the east, and as far south as Namibia and Tanzania".

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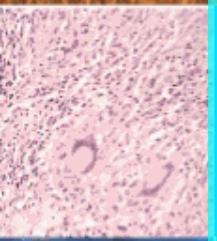



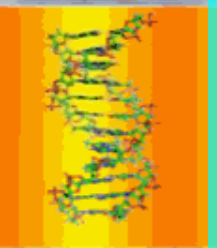

Introduction and background

- It is currently being reported as present by around 18 countries (WAHIS, Jan – Jun 2019) with the latest outbreaks having been reported from Namibia (2021, 2020, 2019), Niger (2020) and the Gambia (2018).

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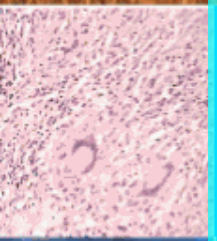



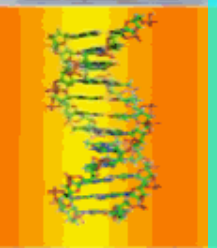

Introduction and background

- Only four countries in Africa are currently officially free from CBPP, i.e. Botswana, Eswatini, South Africa and Namibia (zone south of the VCF).
- Namibia and Zambia are also the only countries having a WOAH-endorsed official control programme for CBPP (see later)

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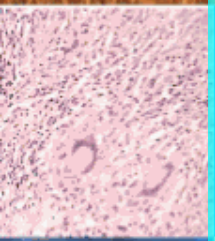



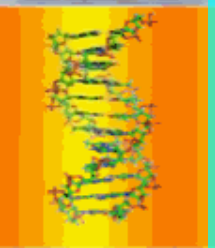

Introduction and background

- The livestock sector of Namibia, which is the backbone of the agricultural sector of the country, has a dual character.
- It is divided between the freehold, large-scale, predominantly white-owned commercial farming sector on one hand and an indigenous, resource-limited, communal, and smallholder sector on the other.
- This dualism is made more apparent by the animal disease zoning where FMD and CBPP) free zone in the southern areas of the country is predominantly occupied by commercial farms and the regions to the north are inhabited by communal farmers.

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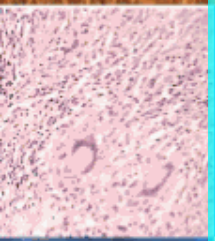



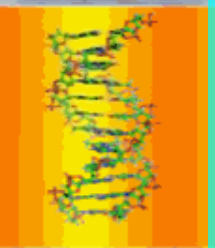

Brief history of CBPP in Namibia

- The disease was introduced into Southern Africa from the Netherlands in 1854.
- It was first diagnosed in Namibia in 1856 in Karas region, from where it spread northwards to the rest of the country.
- 1896 - Trans-veterinary Cordon Fence (VCF) erected
- 1919 - Disease eradicated from central commercial farms, but remained endemic in northern communal areas
- Control through yearly vaccinations since 1997

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Brief history of CBPP in Namibia

- Clinical diagnosis – difficult to distinguish from other respiratory diseases in cattle
- Confirmation through Laboratory diagnostic methods & at PM
- Cattle in all the eight northern regions are vaccinated against CBPP where sporadic outbreaks are still reported in some of the regions.

Pathognomonic signs

Cattle showing signs of CBPP: neck extension, mouth breathing, coughing, abducted elbows, abdominal breathing and heave line.

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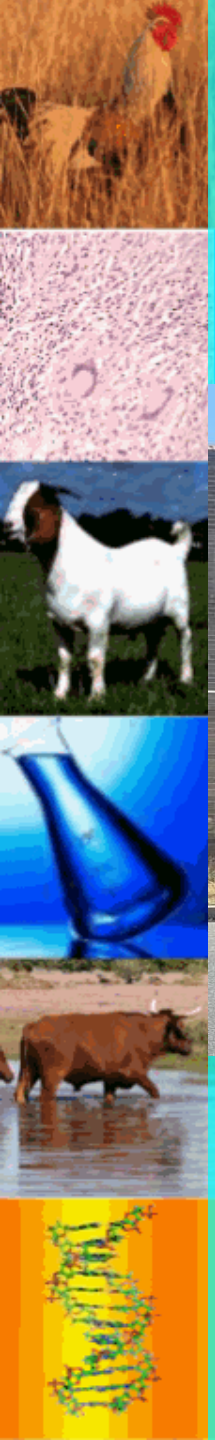
CVL: Mandate & Activities



- To provide analytical and diagnostic services to the agricultural industry, and to ensure the production and/or import of quality and safe food products through adherence to ISO 17025 and Good Laboratory Practice.

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CVL: Mandate & Activities

- CVL is a Government fully funded National laboratory
- Part of DVS- Division Diagnostic Services and Research
- Only Vet Lab with two satellite centres in Ondangwa, Grootfontein and Bergvlug Research farm
- CVL is an accredited laboratory (ISO 17025)
- Accreditation received from SADCAS/SANAS-2013
- 60 staff members

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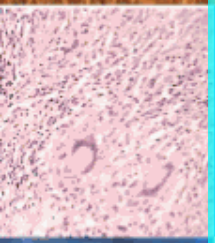
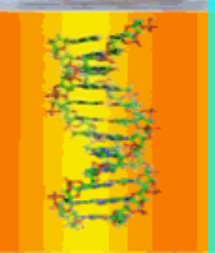


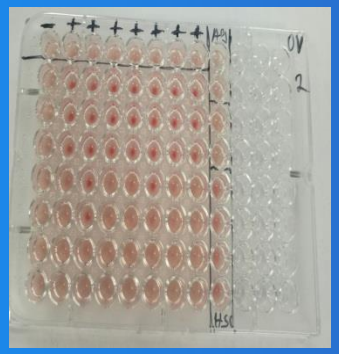




DIAGNOSTIC METHODS

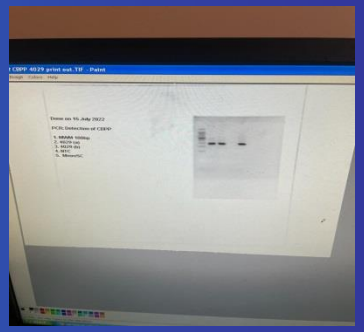
- **Complement Fixation Test (CFT)-detection of serum antibodies**



- **Polymerase Chain Reaction (PCR)-detection of causative agent**





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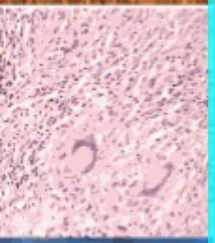



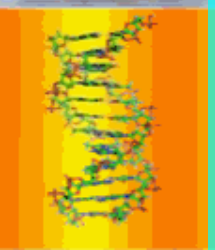

NUMBER OF SAMPLES TESTED PER YEAR

	NEGATIVE		POSITIVE		TOTAL	
	CFT	PCR	CFT	PCR	CFT	PCR
2019	577	4	122	1	699	5
2020	237	0	61	1	298	1
2021	77	2	3	2	80	4
2022	347	0	50	1	397	1

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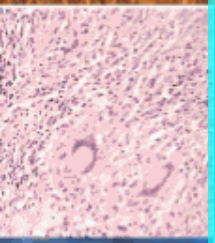



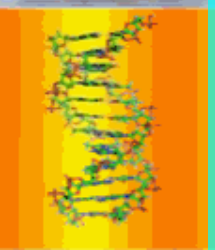

Field Activities

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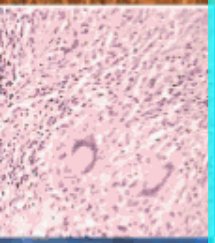



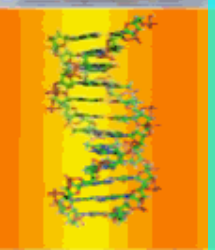

FIELD ACTIVITIES

- CBPP Contingency Plan in place
- Sero-surveillance
- Yearly Vaccination with T1/44
- Animal movement control through the use of permit
- Traceability system (animal identification)

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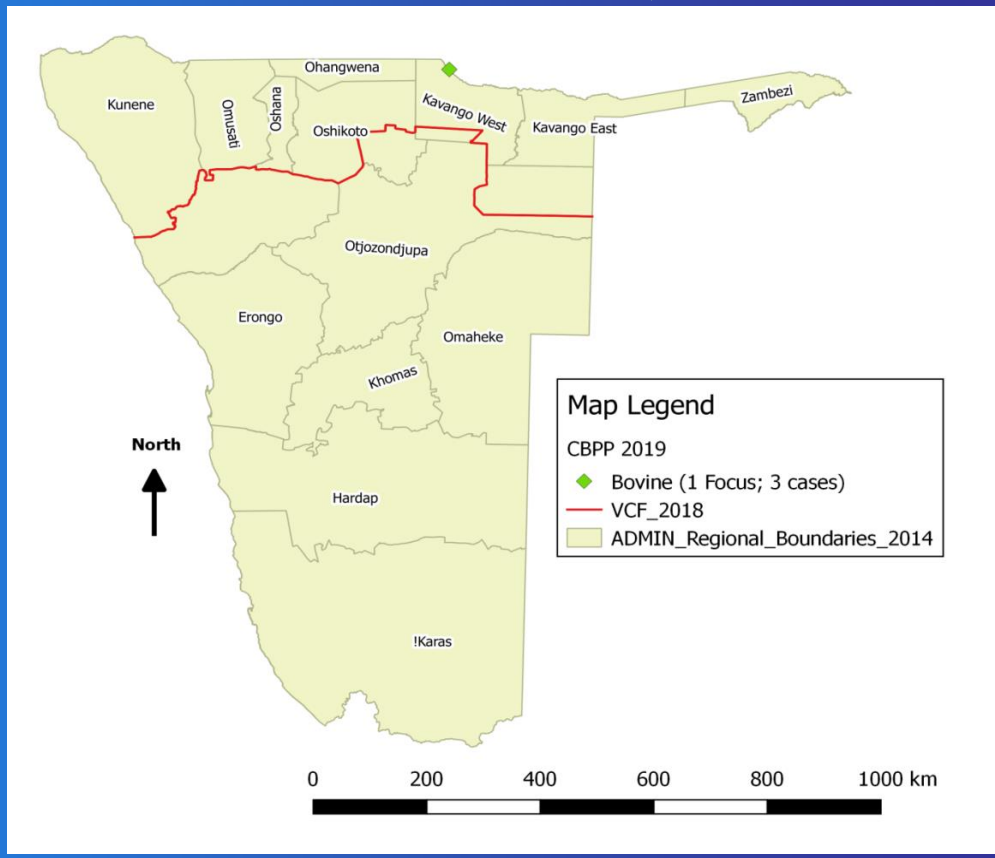
CBPP OUTBREAK IN 2019

- Kavango west (Karayi)
- Foci: 1
- Number of cases:3
- Number dead: 3



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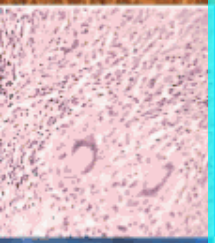



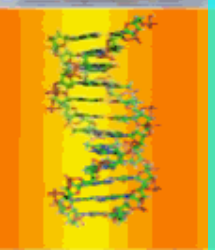

NUMBER OF CATTLE VACCINATED IN 2019

REGION/DISTRICT	# VACCINATED	TOTAL POPULATION	COVERAGE %
KAVANGO EAST	9610	100939	9.52
KAVANGO WEST	11203	120778	9.28
ZAMBEZI	41019	170000	24.13
GRAND TOTAL	**61832**	**391717**	

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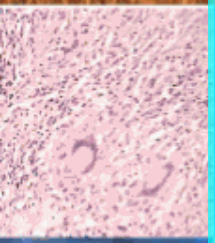



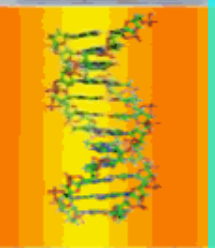

THERE WERE NO CBPP OUTBREAKS IN 2020

REGION/DISTRICT	# VACCINATED	TOTAL POPULATION	COVERAGE %
KAVANGO	104712	241920	42.28
KUNENE	26264	81680	32.15
OHANGWENA	47022	359419	13.08
OMUSATI	79674	82000	97.16
OSHANA	130698	139573	93.64
OSHIKOTO	185840	216218	85.95
OTJOZONDJUPA	8147	494927	1.65
ZAMBEZI	134551	163275	82.41
GRAND TOTAL	**716908**	**1779012**	

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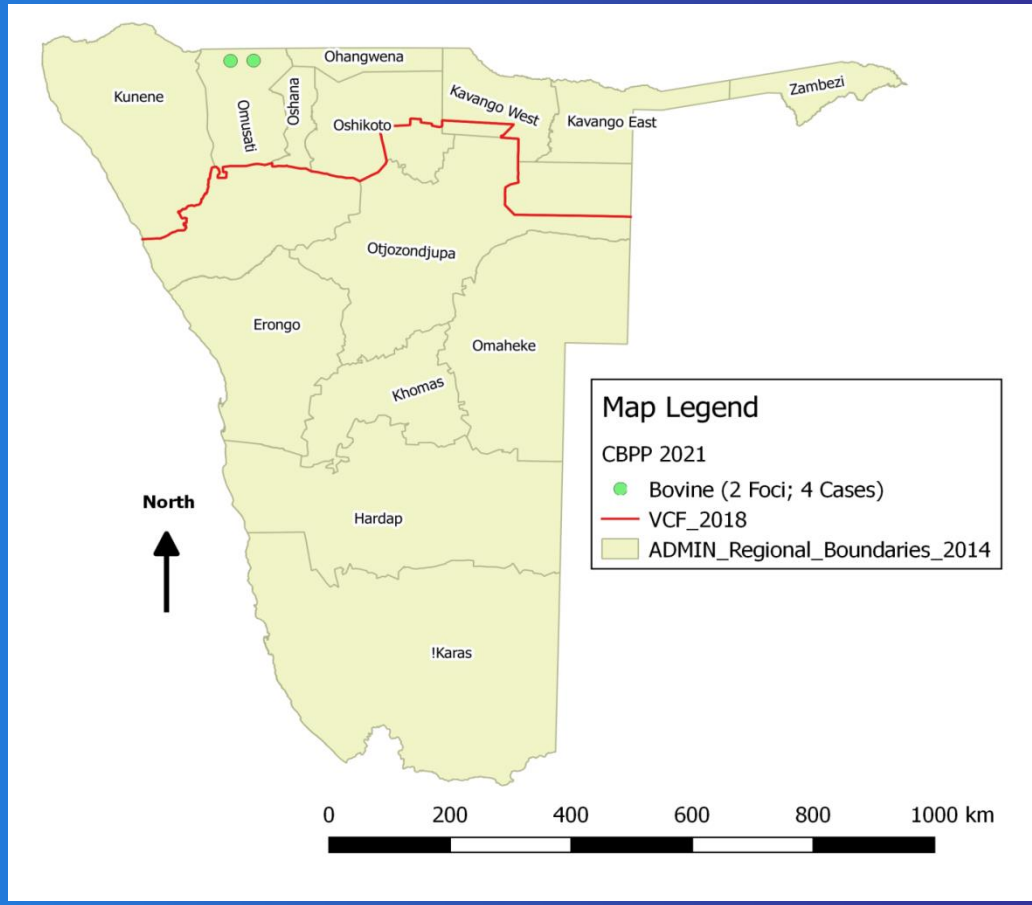
CBPP OUTBREAK IN 2021

- Omusati (Onesi and Okafitu Kakafimbi)
- Foci: 2
- Number of cases: 4
- Number dead: 2



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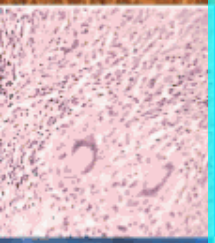



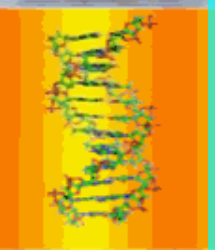

NUMBER OF CATTLE VACCINATED IN 2021

REGION/DISTRICT	# VACCINATED	TOTAL POPULATION	COVERAGE %
KAVANGO	85712	270732	31.66
KUNENE	18840	*	*
OHANGWENA	38075	303318	12.55
OMUSATI	35835	*	*
OSHANA	67333	*	*
OSHIKOTO	59513	198270	30.02
ZAMBEZI	17683	183069	9.67
GRAND TOTAL	**322991**	**955389**	

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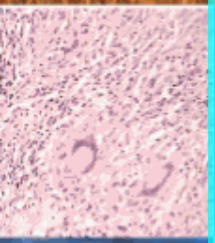
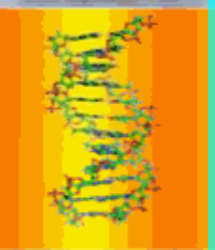
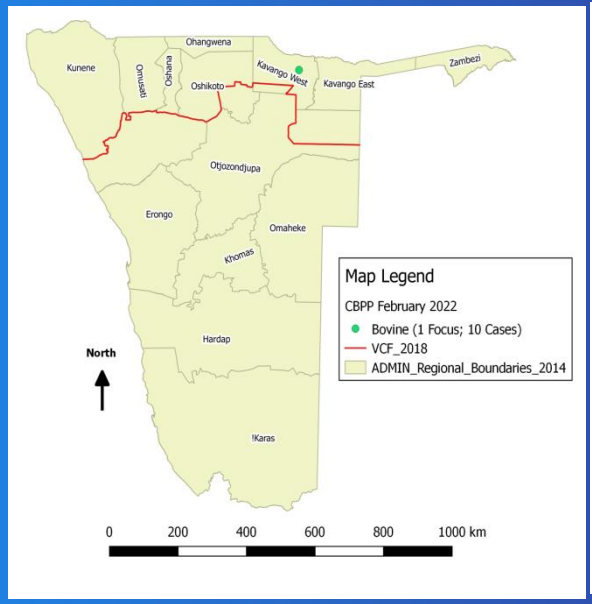


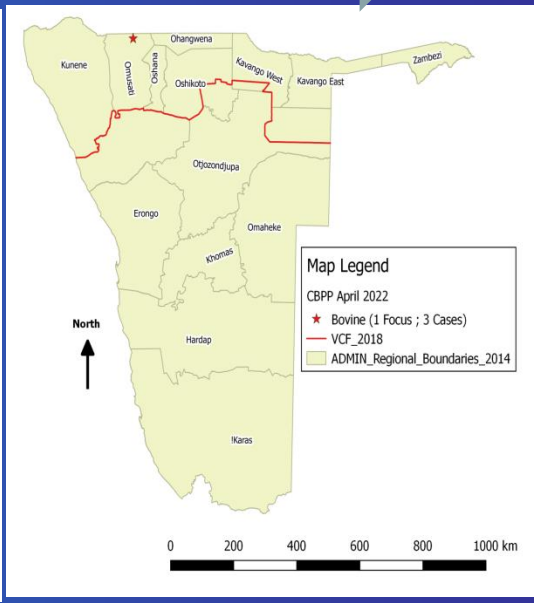


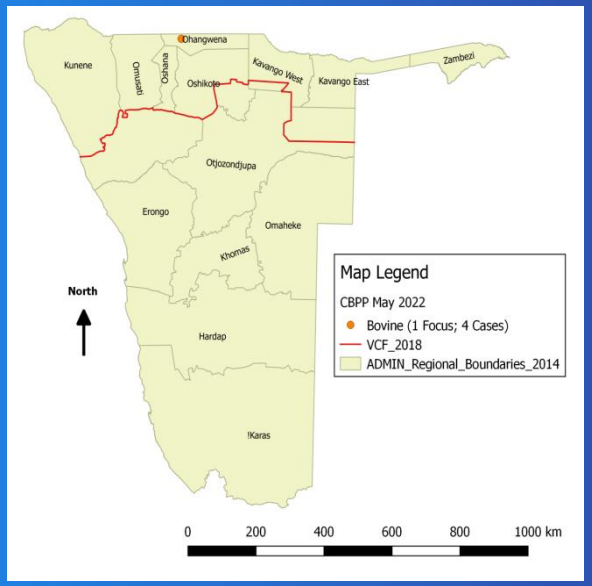


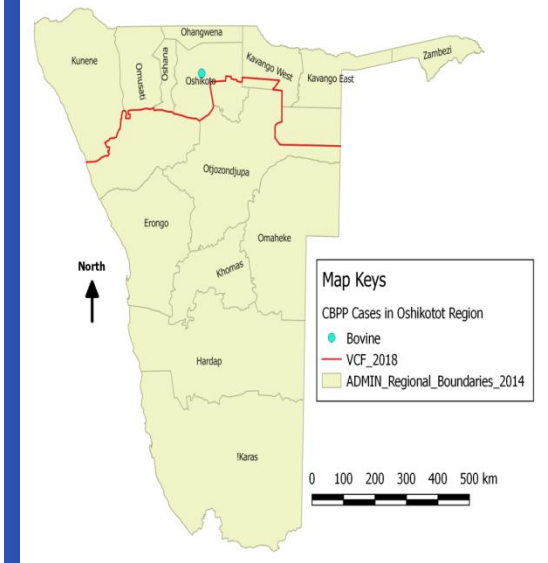
- **February**
  - KAVANGO West (Erango)
  - # Foci: 1
  - # of cases: 8
  - # dead: 2
- **April**
  - Omusati (Oshima)
  - # of foci: 1
  - # of cases: 3
  - # dead: 0
- **May**
  - Ohangwena (Oshandi)
  - # of foci: 1
  - # of cases: 4
  - # dead: 0
- **June**
  - Oshikoto (Omutsewonime)
  - # of foci: 1
  - # of cases: 4
  - # dead: 0

CBPP OUTBREAK IN 2022









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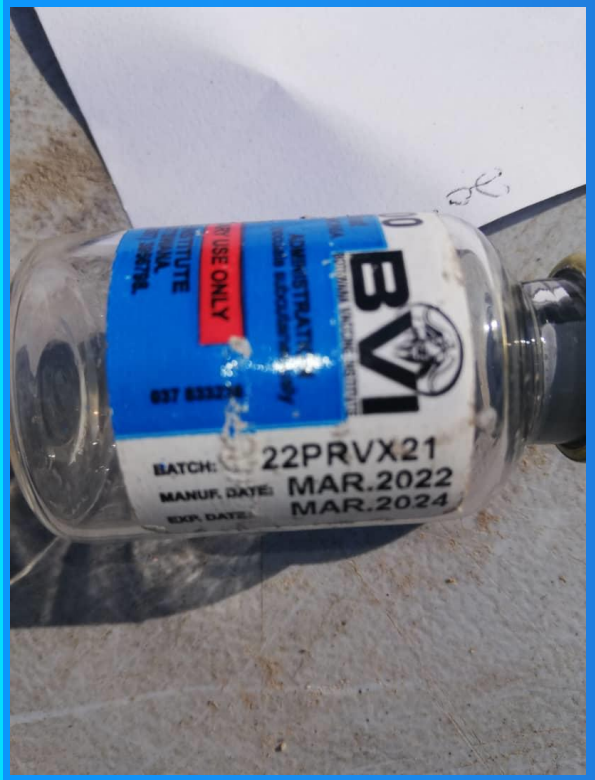
Vaccine currently used in Namibia



PERIBOV -Freeze-dried vaccine against Contagious Bovine Pleuropneumonia (CBPP)

T1-44/2 *Mycoplasma mycoides* – PANVAC modified strain

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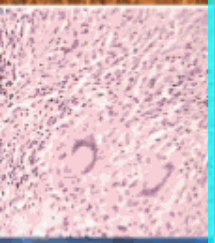



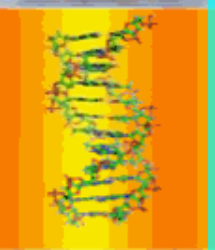

Surveillance, Monitoring actions and Response

(Extract from the contingency plan)

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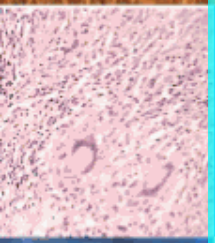



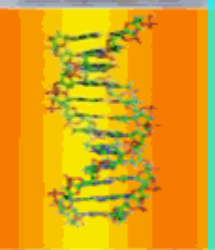

Surveillance

- Passive
  - Suspicion reported by a farmer to an animal health officer
- Active
  - Regular visits to communities
  - Regular visits to markets, auction pens, and open market butchers
  - Examination of animals at Border posts
  - Vaccination campaign
  - Trace forward and traceback from infected premises to detect the potential source(s) and or further spread

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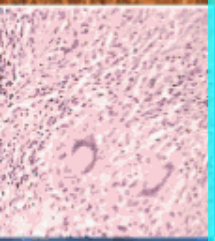



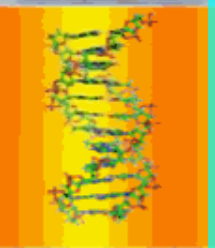

Response

- Suspect case
  - Quarantine affected herds- ensuring that affected and in-contact animals do not come into contact with other animals
  - Collect laboratory specimens to confirm diagnosis
  - Complete the Disease report form
- Confirmed case
  - Notify your superiors for further actions
  - Collect information on further cases from livestock keepers in the area and key informants.

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Response: Free Area

- An emergency response will be activated to contain and eradicate the outbreak.
- Outbreak investigation: to determine the source of the outbreak and possible further spread (trace back and trace forward)
- Slaughter and compensation
- Completion of weekly update reports and follow-up Disease Report Forms

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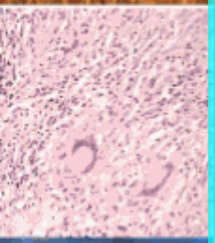



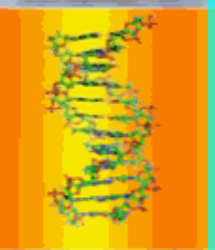

Response: Free Area

- Movement restrictions which may involve deployment of mobile electric fences
- Community awareness raising e.g. community meetings, radio announcements, press releases, distribution of pamphlets etc.
- Activation of the CBPP contingency plan – see 'Instructions for dealing with an outbreak of CBPP in FMD Free Zone' in "CBPP Contingency Plan"

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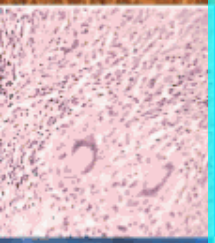



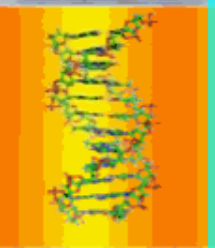

Response: Endemic Area

- Isolation of the diseased cattle
- Avoid any movement of cattle in the area and any contact with other cattle
- Avoid any entry/exit of cattle (sale, purchase, gift, loans, etc.)
- Vaccinate or re-vaccinate all the exposed cattle.
- Organize meetings to inform neighboring farmers about the disease and what they must do in case of a CBPP suspicion in their herd.
- Outbreak investigation using 'Inspection Procedure for CBPP' in "CBPP Contingency Plan"
- Disinfectant of choice: 3% Sodium hypochlorite

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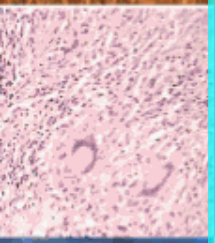



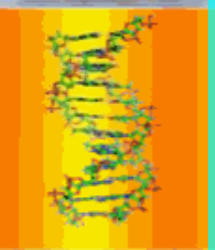

Research & Publications

- Pricilla Mbiri, Erick Kandiwa, Borden Mushonga, Alaster Samkange1*, Alec S. Bishi, Oscar Madzingira, Frank Chitate(2020). Incidence of Contagious Bovine Pleuropneumonia in the Northern Regions of Namibia. AJVS: 1-16
- Zaire, G.N (2019).Experimental studies on vaccines, *Mycoplasma mycoides* subsp. *mycoides* and Contagious Bovine Pleuropneumonia in cattle in Namibia: Vaccines, the role of Biofilm, Diagnostic tests and humoral immune response. PhD thesis. Kingston University, London UK.
- Scacchia, M., Sacchini, Tjipura-Zaire, G., Lelli, R., Sacchini, F. Pini, A. (2011). Contagious bovine pleuropneumonia: humoral and pathological events in cattle infected by endotracheal intubation or by exposure to infected animals. Veterinaria Italiliana, 47 (4): 407-413
- A.S. Bishi, J. A. Kamwi (2008). Transboundary animal disease and market access: future options for the beef industry in southern Africa. Institute of Development Studies, Brighton Working Paper Series: 1-6.

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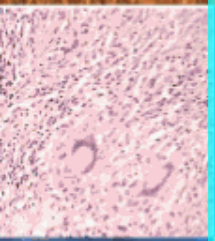



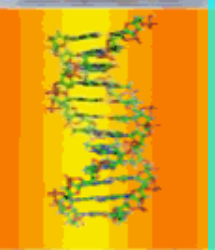

Thank you

For our attention!

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