



NATIONAL VETERINARY SERVICES



2021 ANNUAL REPORT

Veterinary Epidemiology Unit

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Dr Robert Thwala

2021 commenced with the untimely passing of Dr Robert Thwala, the 3rd Swazi Director of the National Veterinary Services (NVS). Dr Thwala was transferred to the Department from the Swaziland Dairy Board. As a director, he represented the country in the World Organization for Animal Health (OIE) as country delegate and during his time with the OIE, he served as the President of the OIE Regional Commission for Africa and as a member of the OIE Working Group of

Food Safety. At the time of his demise, Dr Thwala had retired from Civil Service. He retired after serving as Principal Secretary in the Ministry of Agriculture for two consecutive terms. May his soul rest in peace!

The lock-down brought by the Covid-19 was lifted by the end of the year 2020 but the other restrictions remained in place. The National Veterinary Services (NVS) continued its mission of preventing, controlling and eradicating animal and zoonotic diseases for the promotion of food security, socioeconomic utilization of animal resources and human health in line with the developed Department's Covid-19 Safety Guidelines. The usual problems of resource shortages, budgetary constraints, transport shortages, fuel shortages and staff shortages continued affecting service delivery.

REPORT SUBMISSION

A good reporting performance for the Department is measured by the number of reports submitted on time in the year. A total of 80 reports are expected to be submitted on time annually, which is at least 10 reports submitted on time by each reporting unit. In the year 2021, there was an improvement in submission when compared to the year 2020. The Central Veterinary Laboratory and Headquarters submitted 5 or more reports on time. Hhohho, Manzini and Shiselweni regions and the Veterinary Public Health Unit failed to submit a single report on time. The Veterinary Epidemiology Unit in 2016 introduced its own monthly Report which is composed of the different components of the Unit. Headquarters submits reports on import permits issued (wildlife & Immediate Slaughter Permits).

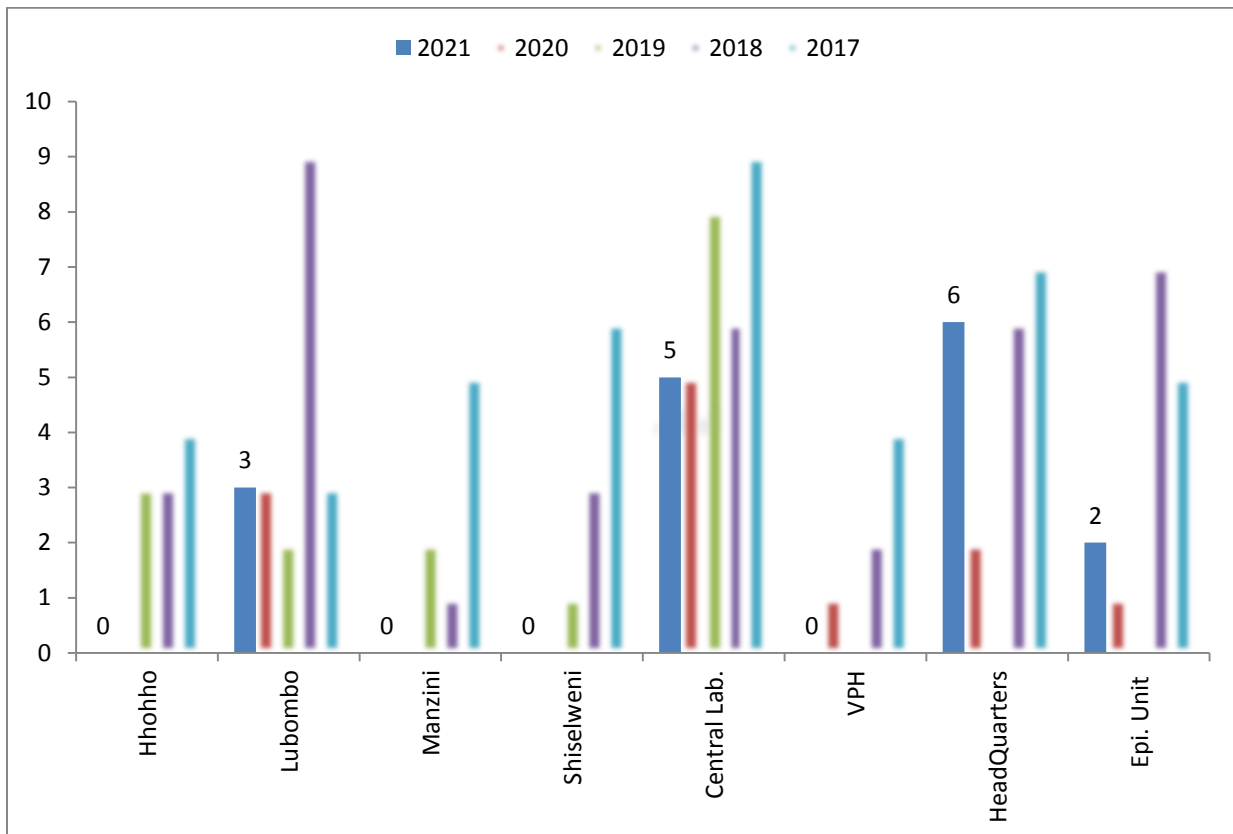


Figure 1: Number of reports submitted on time in 2017-2021 by the Reporting Units

MAJOR OCCURENCES

World Rabies Day

World Rabies Day was commemorated on the 28th September 2021 at Princess Pholile Hall in Malkerns. The event theme was **“Rabies: Facts, Not Fear”**. The theme focused on sharing facts about rabies and dispelling myths or misconceptions. The commemoration was combined with a vaccination campaign for covid-19. Activities done included; rabies vaccinations for pets and covid-19 vaccinations for humans, awareness and education campaigns in schools and the public in the Malkerns area.

Various stakeholders attended and these included; Ministry of Health, Agriculture, Tinkhundla, Schools, WHO, Swaziland Animal Welfare and local government. The guest speaker was the Minister for Agriculture, represented by the Principal Secretary in the ministry.

Entertainment was provided by St. Anne's and St. John Bosco high schools. One of the highlights of the event was a debate on vaccination of pets for rabies and vaccination of humans for Covid 19. This debate was used to stir up the conversation around vaccines, and a panel of experts from the Ministries of Health and Agriculture attended to the points and questions which had arisen from the debate, and clarity was given on some myths and misconceptions on rabies and covid-19, based on scientific facts.

The minister in his address summarized and brought home the key message, which was emphasis on dog vaccinations as a means to end rabies, and covid-19 vaccinations as means to assure herd immunity and prevent severe covid-19 illness and deaths.

World Antimicrobial Awareness Week

World Antimicrobial Awareness Week (WAAW) is commemorated on 18-24 November annually. The theme for this year's commemoration was "SPREAD AWARENESS, STOP RESISTANCE" and the overarching theme was "HANDLE ANTIMICROBIALS WITH CARE". Eswatini through the support of the UK Department of Health and Social Care under the Fleming Fund joined the world in commemorating WAAW with the involvement of different stakeholders. A series of activities were done pre and post the WAAW to ensure that AMR issues remained a top priority even after WAAW.

The National Veterinary Services was involved in the following activities;

Community awareness event

A community awareness event was held at Ntsababovu (004) dip tank at Ntfontjeni subregion on 16 November 2021. Over 100 local farmers attended the awareness event. The event was also attended by representatives from the Ministry of Health and Ministry of Natural Resources.

Stakeholder training – A stakeholder awareness workshop was held on the 17 November 2021 to discuss issues around AMR, prudent use of antimicrobials and any other related matter. This was a sensitization meeting to raise awareness on the AMR issues and how the stakeholders can contribute to controlling AMR.

Radio shows

There were radio jingles on Eswatini Broadcasting and Information Services (Siswati channel) on the care of water resources and proper use of antibiotics in humans and animals. There were television and radio interviews highlighting the challenges of AMR in the country.

WAAW commemoration event

An Inter-Ministerial breakfast meeting was held on the 24th November 2021 at the Mountain Inn Hotel, Mbabane. The event was attended by senior government officials in the Ministries of Health, Agriculture and Natural Resources. The main purpose of the meeting was to bolster AMR public awareness and

knowledge at a higher political level. It was also to foster and display political will and government support and commitment for the national AMR agenda

Webinars

Table 1: Meetings and Training attended in the year

Date	Topic	Host
March 2021	Lumpy Skin Training Course for Southern Africa	FAO Virtual Learning Centre for Southern Africa (SFS-VLC) and EUFMD
20 Aug 2021	Animal and Plant Health Inspection and Quarantine	Taiwan ICDF (International Cooperation and Development Fund)
9 Sept -7 Oct 2021	African swine fever online course for Southern Africa	FAO Virtual Learning Centre for Southern Africa (SFS-VLC)
20-24 Sept 2021	Regional Training of National OIE Focal Points for Wildlife (intermediate cycle)	World Organization for Animal Health (OIE)
12 Oct 2021	Eswatini & International Atomic Energy Agency (IAEA) - Bilateral meeting	IAEA
9-10 Nov 2021	Parasite Control in Livestock for enhanced Food Security: Expert Consultation on the Sustainable Management of parasites in livestock challenged by the global emergence of resistances	FAO
9 Nov -14 Dec 2021	Import risk analysis for African swine fever	GF-TADs, FAO and OIE
23-24 Nov 2021	OIE/FAO FMD Laboratory Networks	FAO

STAFF

Compliment

The Veterinary Staff compliment as of December 2021 consisted of 14 professionals including the Director and Deputy Director and 258 Veterinary Technicians including the Chief Animal health Inspector. The Technical Staff was complimented by 489 Diptank assistants at diptank level and 210 cordon guards responsible for the maintenance of the sanitary cordon fences.

	Hh	Lb	Mz	Sh	CVL	VFTC	VPH	VEU	HQ	Total	Total

										Present	Post
Director Veterinary Livestock Services										1	1
Deputy Director Veterinary Services										1	1
Senior Veterinary Officer							0	1	1	2	3
Veterinary Officer	2	2	2	1	1	1	1	0	0	10	14
Chief Animal Health Inspector									0	0	1
Senior Anima Health Inspector	1	0	1	0				0		2	6
Animal Health Inspectors	8	11	5	6	1			2	1	34	44
Veterinary Assistant	48	63	57	51	1		2			222	236
Cordon Guard	31	160		19						210	265
Senior Lab Technologist					1		1			2	2
Lab Technologist					3		1			4	4
Principal Meat Inspector							1			1	1
Senior Meat Inspector							1			1	3
Meat Inspector							5			5	8
Lab assistants							0			0	3
Assistant Education Officer						1				1	1
Animal Husbandry Officer							1			1	2
Lecturer						2				2	3
Diptank Assistants	138	91	138	122						489	
Other	12	6	24	8	5	3	3	1		62	

Changes

Four (4) officers left the Department because of various reasons. Three (3) retired one (1) passed away. Two (2) were added to the Department in the year and one was a Veterinary Officer deployed to the Lubombo Region. Twelve (12) officers were redeployed.

Staff shortages were one of the main challenges for the National Veterinary Services in the year. The regions lost personnel in crucial cadres such as Senior Animal Health Inspectors (SAHIs) and Animal Health Inspectors (AHIs) due to compulsory retirement and vacancies not filled due to freezing of promotions by government. This affected service delivery immensely because officers were multitasking and delaying other activities in the process.

Table 2: Table showing staff changes in 2021 per region and per cadre

	Hhohho	Lubombo	Manzini	Shiselweni	Grand Total
Deceased				1	1
VA				1	1
New		1	1		2

VA			1		1
VO		1			1
Redeployed	5		3	4	12
AHI	2		1	1	4
VA	3		2	3	8
Retired				3	3
AHI				2	2
SAHI				1	1

LIVESTOCK POPULATION

The total population of cattle and goats remained unchanged as seen in Figure 2 below.

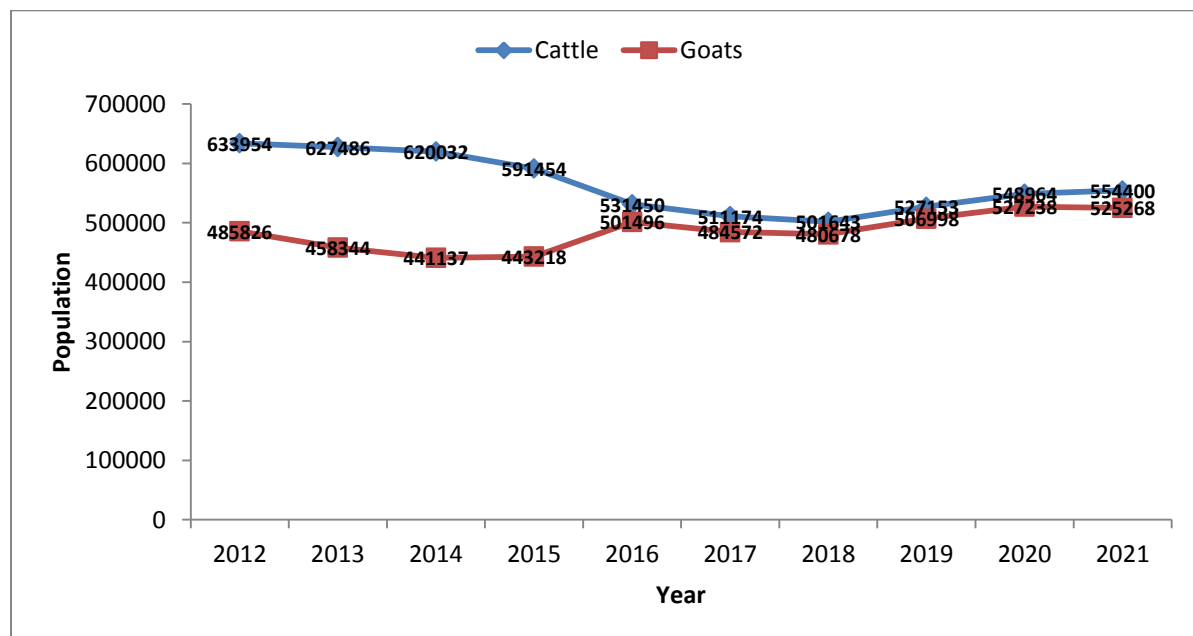


Figure 2: Graph showing the population of cattle and goats for the years 2014 to 2021

Table 3 shows the total number of livestock present in the country as at August 2021 derived from the Annual Census 2021. There were 554 400 cattle, 525 268 goats, 62 360 pigs and 17 995 sheep.

Table 3: Total number of Livestock per region in Eswatini at August 2021

	Hhohho	Lubombo	Manzini	Shiselweni	Total
Cattle	123146	141133	166758	123363	554,400
Goats	87010	174649	138687	124922	525,268
Sheep	5120	3310	4713	4852	17,995
Pigs	14444	11492	18380	18044	62,360
Chickens	619762	269568	806537	276892	1,972,759
Horses	518	64	251	84	917

Donkeys	1679	2823	1266	3662	9,430
Mules	0	8	20	0	28
Dogs	24730	20560	29946	24647	99,883

Calves born

A total of 92 764 calves were born in the year. There were 46 612 female calves and 46 152 male calves. This marked a slight increase from the total number born in 2020. As in the past three years, Lubombo and Manzini regions had the highest number of births whilst Hhohho had the lowest.

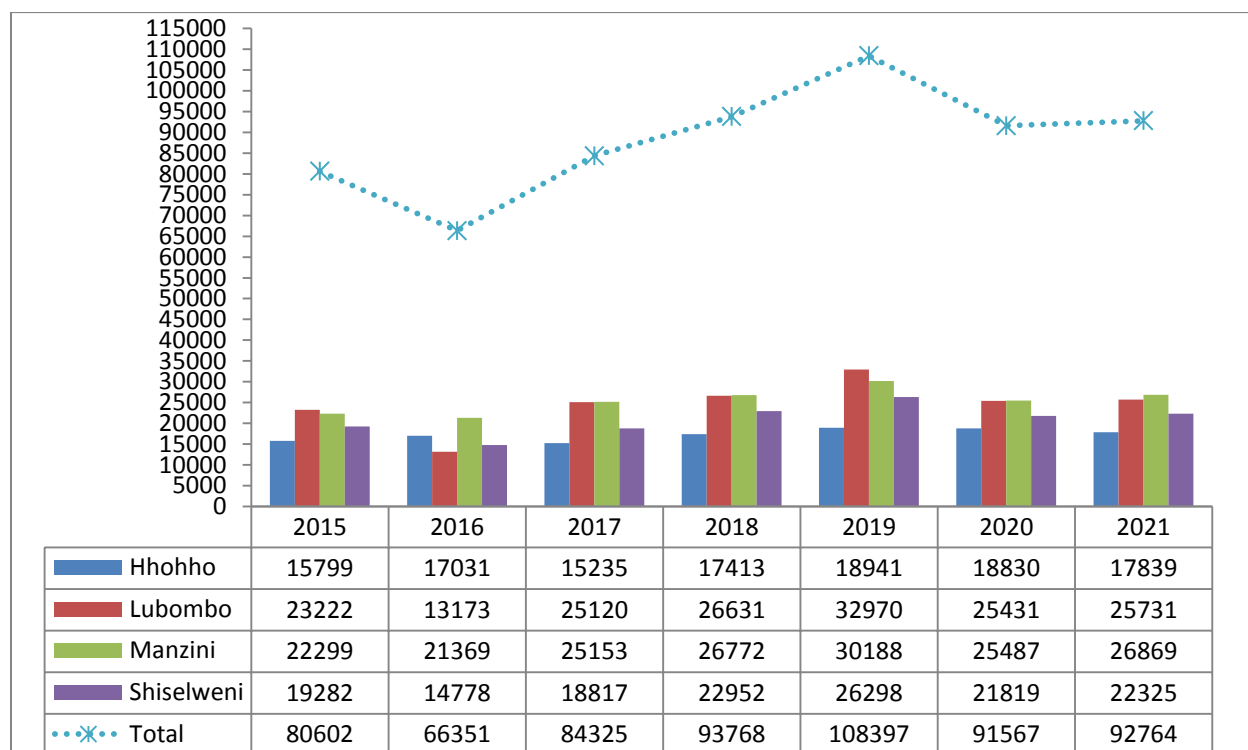


Figure 3: Total number of calves born by region in the years 2015-2021

The monthly trend of birth followed the same trend as seen in the past 5 years. There is always a decrease between March and September and a peak around November to January.

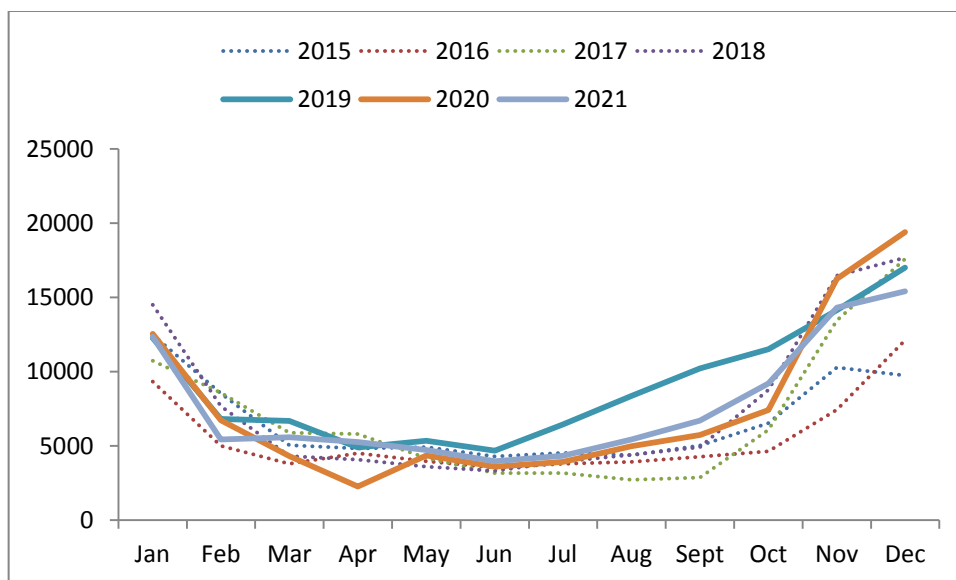


Figure 4: Total # of calves born in the years 2015-21 by month

Cattle death

A total number of 79 105 cattle died in the year, of which 65% were slaughtered and 35% died of other causes other than slaughter. Of the slaughtered, 42% were slaughtered for home consumptions and traditional ceremonies, 21% were slaughtered for sale at community level, 25% slaughtered in butcheries and abattoirs around the country and 12% slaughtered at the export abattoir SG1.

Reason for death	Total number of animals					
	Year 2016	Year 2017	Year 2018	Year 2019	Year 2020	Year 2021
Slaughtered in butchery and local abattoirs	20 712	15 529	10 274	11 163	11 314	12 598
Died of disease/condition (D)	46 123	33 038	24 280	33 691	25 589	27 780
Killed for home consumption (Kh)	28 579	27 474	26 256	26 564	20 057	21 626
Killed for sale (Ks)	8 919	8 395	8 360	8 048	9 230	10 803
Slaughtered at export abattoir (SG1)	10 541	5 087	3 510	4 855	6 204	6 298
Grand Total	114 874	89 523	72 680	84 321	72 394	79 105

As in the past three years, male animals accounted for 59% of the total deaths and they were mostly slaughtered. Only 24% died of other causes. The proportion of female animals which were slaughtered versus those that died of other causes was the same. The male animals were mostly slaughtered for sale and the females for home consumption.

Overall, the class with the highest mortality was cows at 29%, followed by oxen at 21%, calves at 15%, bullocks, at 15% bulls at 15% and then heifers at 5%.

Table 4: Table showing number of cattle that died and their reasons for death in 2021

	SGI	Butchery	D	KH	KS	Total
Bull calf	0	0	6071	0	0	6071
Heifer calf	0	0	5566	0	0	5566
Bullock	3624	321	2709	2394	2612	11660
Heifer	108	464	2358	624	350	3904
Cow	648	2827	8818	8340	2641	23274
Bull	1026	4932	741	2268	2813	11780
Ox	892	4054	1517	8000	2387	16850
Total	6298	12598	27780	21626	10803	79105

The monthly trend for death remained the same as in the previous years as shown in Figure 5 below.

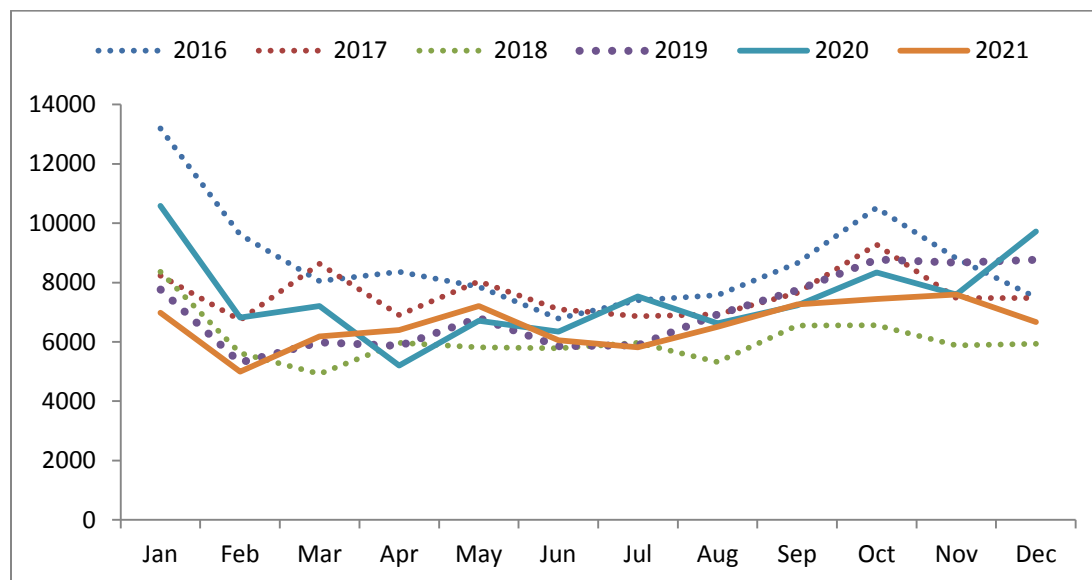


Figure 5: Total number of cattle deaths per month for the years 2016-2021

SURVEILLANCE

FOOT AND MOUTH DISEASE (FMD)

Surveillance

The aim of the surveillance program is to effectively and efficiently detect early outbreaks of introduced FMD virus in susceptible species. The surveillance program is both passive and general as well as active,

specific and risk based. The population of interest is cattle, goats, sheep, pigs and buffaloes. The disease is most severe in cattle and as such, active surveillance is focused on cattle. The epidemiological unit for all species is a dip tank (diptank area).

The recommended case definitions for domestic animals are;

Suspect case: (observed by farmer or picked at diptank inspection)

1. An animal that is lame and or salivating
2. An animal that has oral and or feet lesions

Clinical case: An animal that has typical FMD oral or feet lesions, diagnosed by a veterinarian.

Confirmed case: A clinical case that test positive on serology and/or isolation and identification of FMD virus.

Passive Surveillance

Passive clinical surveillance is done through a comprehensive National Dip Inspection Program, weekly or fortnightly depending on the season and region. It is also conducted through regular Veterinary Clinics provided by each veterinary region from reports made by farmers. A case could be an individual animal, a kraal or a herd with similar clinical signs/diagnosis.

Farmer Reporting System

It involves mandatory reporting by livestock owners throughout the country of suspicions of occurrences of FMD infection in their herd. The livestock owners can report to the nearest veterinary official. They can report to the veterinary assistant at diptank level or to the veterinary officer at the clinics. They can also report to a private veterinarian who has an obligation to report the case to a government vet.

Eswatini has 6 Government Veterinary Clinics. These are located in the 4 Veterinary Regions. The clinics are run by Government Veterinary Officers (Veterinarians) and are supported by Government. The country also has a network of diptanks which serves as centres for disease control and surveillance. These are controlled by Veterinary Assistants (Animal Health Technicians). In addition, there are Private Veterinary Clinics located around the country.

Findings

Table 5 shows the number of clinical cases that were reported in Veterinary Clinics in the period October 2020 to September 2021. Eight (8) goats were reported to have wounds in the hooves and on examination by the veterinarian they were diagnosed as having footrot. One animal was reported to be salivating profusely and had oral lesions. The animal tested positive on serology using the NSP-ELISA at the Central Veterinary Laboratory in Manzini. Further field investigations and laboratory testing ruled out FMD infection. Detailed report of the case is in Report 1, "*Suspected FMD outbreak at Gangakhulu Diptank*".

Table 5: Table showing Clinical cases seen by Veterinary Clinics October 2020 to September 2021

Clinical cases attended to by species						
Month	Cattle	Goats	Sheep	Pigs	# of cases reported by farmers as FMD suspect	Diagnosis made on reported cases
Oct	12	2	0	2	3 caprine	Footrot
Nov	5	6	0	1		
Dec	13	2	1	3	2 caprine	Footrot
Jan	14	0	1	4		
Feb	8	0	1	3		
Mar	13	0	0	0		
Apr	9	2	0	1		
May	9	4	0	2		
Jun	2	1	1	2		
Jul	3	0	1	2		
Aug					1 bovine 3 caprine	Salivating due to chemical abrasion
	92	2	1	1		Footrot
Sep	14	1	0	0		
Total	194	20	6	21	9	

Diptank Inspections

It involves regular inspection of cattle, goats and sheep at diptanks throughout the country and inspection of pigs in their different holdings within the diptank area.

Eswatini is divided into four (4) veterinary regions (Hhohho, Lubombo, Manzini and Shiselweni) which are further subdivided into twenty eight (28) subregions. There is a network of diptanks (834 in total as at December 2020), which serve as centers for disease control and surveillance programs. Each diptank

services an area of not more than 4km radius. The diptanks are classified as private (TDL) or public (SNL) depending on whether they serve private or public farmers.

Diptanks are managed by Veterinary Assistants (VA) assisted by Diptank Assistants (DTA) and Diptank Committees.

All cattle, sheep and goats are registered at diptanks. Pigs are registered by way of census. Cattle are inspected weekly in summer and fortnightly in winter in all areas except the Highveld where they are inspected fortnightly in summer and monthly in winter. Sheep and goats are brought to the diptank for inspection monthly.

Driving the animals from the kraal of residence to the diptank gives the farmer an opportunity to observe signs such as exercise intolerance, lameness and report to the Veterinary Assistant on arrival at the diptank.

Findings

Table 6 below show the number of cattle, goats and sheep inspected in the period of October 2020 to September 2021. All animals registered in the diptanks were targeted for inspection. Inspection coverage of 91.17% for cattle, 89.5% for goats and 92.83% for sheep was achieved. None of the inspected animals (cattle, sheep, and goats) showed any specific or diagnostic clinical signs of FMD.

However, 60 cases were reported by farmers to the Veterinary Assistants for further investigation. Eighteen (18) cattle were reported to be lame. On examination by Veterinary Officials, 9 were found to have foot rot and 9 were lame due to trauma. Thirty six goats had lameness and all had footrot. Six pigs were reported to be lame and were found to have footrot.

Additional inspections and mousing exercises were conducted in diptanks along the frontier lines in response to a FMD suspect case investigation at Gangankhulu Diptank in northern Hhohho and a buffalo incursion in northern Lubombo. None of the animals inspected had any clinical signs or lesions suggestive of FMD infection. Results of the inspections are contained in Report 1, "*Suspected FMD outbreak at Gangakhulu Diptank*" and Report 2, "*Response to buffalo incursion at Lomahasha area*".

The inspections were conducted concurrently with awareness and sensitization exercises.

Table 6: Table showing % of cattle, goats and sheep inspected between October 2020 and September 2021

Month	CATTLE			GOATS			SHEEP		
	Total Registered	Total inspected	% inspected	Total Registered	Total Inspected	% Inspected	Total Registered	Total Inspected	% Inspected
Oct	581320	527129	91%	534617	479615	90%	18628	17340	93%
Nov	594337	544986	92%	546944	497684	91%	19074	18067	95%
Dec	608399	558437	92%	567666	522489	92%	19103	18126	95%
Jan	613541	546210	89%	573043	513539	90%	19186	17893	93%
Feb	609033	552054	91%	561829	494357	88%	18962	17667	93%
Mar	609011	557536	92%	552288	480928	87%	18984	17339	91%
Apr	608719	558079	92%	544901	478327	88%	18780	17427	93%
May	605615	552792	91%	537596	480209	89%	18584	17573	95%
June	602504	550771	91%	530278	466107	88%	18111	16757	93%
July	603267	543511	90%	534074	481211	90%	18712	17409	93%
Aug	602516	549893	91%	531055	478953	90%	18834	15900	84%
Sept	600617	554823	92%	529904	482574	91%	19010	18269	96%
Average	603239.92	549685.08	91.17%	545349.58	487999.42	89.50%	18830.67	17480.58	92.83%

Month	# of cases reported by farmers as suspect FMD cases	Diagnosis made on reported cases	
	# of cases	Species affected	
Oct 2020	3	Goats	Footrot
Dec 2020	2	Goats	Footrot
	2	Cattle	Lameness due to trauma
Jan 2021	3	Cattle	Footrot
Feb 2021	20	Goats	Footrot
Apr 2021	7	Goats	Footrot
	3	Cattle	Footrot
May 2021	3	Cattle	Footrot
	7	Cattle	Lameness due to trauma
July 2021	6	Pigs	Footrot
Aug 2021	3	Goats	Footrot
Sept 2021	1	Goats	Footrot
Total	60		

FMD Monitoring at Export abattoir

Cattle destined for the export abattoir are derived from both SNL and TDL diptanks from the whole territory excluding the Protection Zone. Special, intense (European Union approved) physical inspection is carried out by both professionals and Animal Health Technicians at loading and at ante-mortem inspection. Further, the tongue, mouth and all four hooves are also examined after stunning. FMD examination is also conducted during inspection at the kill floor

As shown in Table 7 below, a total of 6579 animals were inspected in the period of October 2020 to September 2021. None of them had any oral and or feet lesions pathognomic of FMD. Six (6) animals were suspected of having abscesses on their tongues and this was confirmed at Meat Inspection. One (1) animal had Wooden Tongue.

Table 7: Table showing number of cattle inspected for FMD at the Export Abattoir

Month	Total cattle inspected	Number of FMD Suspect case identified
Oct	394	
Nov	197	
Dec	649	
Jan	373	1 (Wooden tongue)
Feb	439	
Mar	821	3 (abscess)
Apr	801	
May	744	1 (abscess)
Jun	705	1 (abscess)
Jul	561	
Aug	431	1 (abscess)
Sep	464	
Total	6579	7

Sentinel Surveillance in Mkhaya Game Reserve

It involves regular physical inspection of cattle located within the Mkhaya Game Reserve. Mkhaya Game Reserve is the only Game Reserve with buffaloes in the country. The buffaloes are a close herd and are free from FMD. In the Reserve, the buffalo herd lives in close proximity to cattle and these are used as a sentinel herd for FMD surveillance of the buffalo. The cattle are registered in the Mkhaya (275) diptank. The diptank is supervised by a Government Veterinary Assistant (VA). They are inspected weekly in summer and fortnightly in winter.

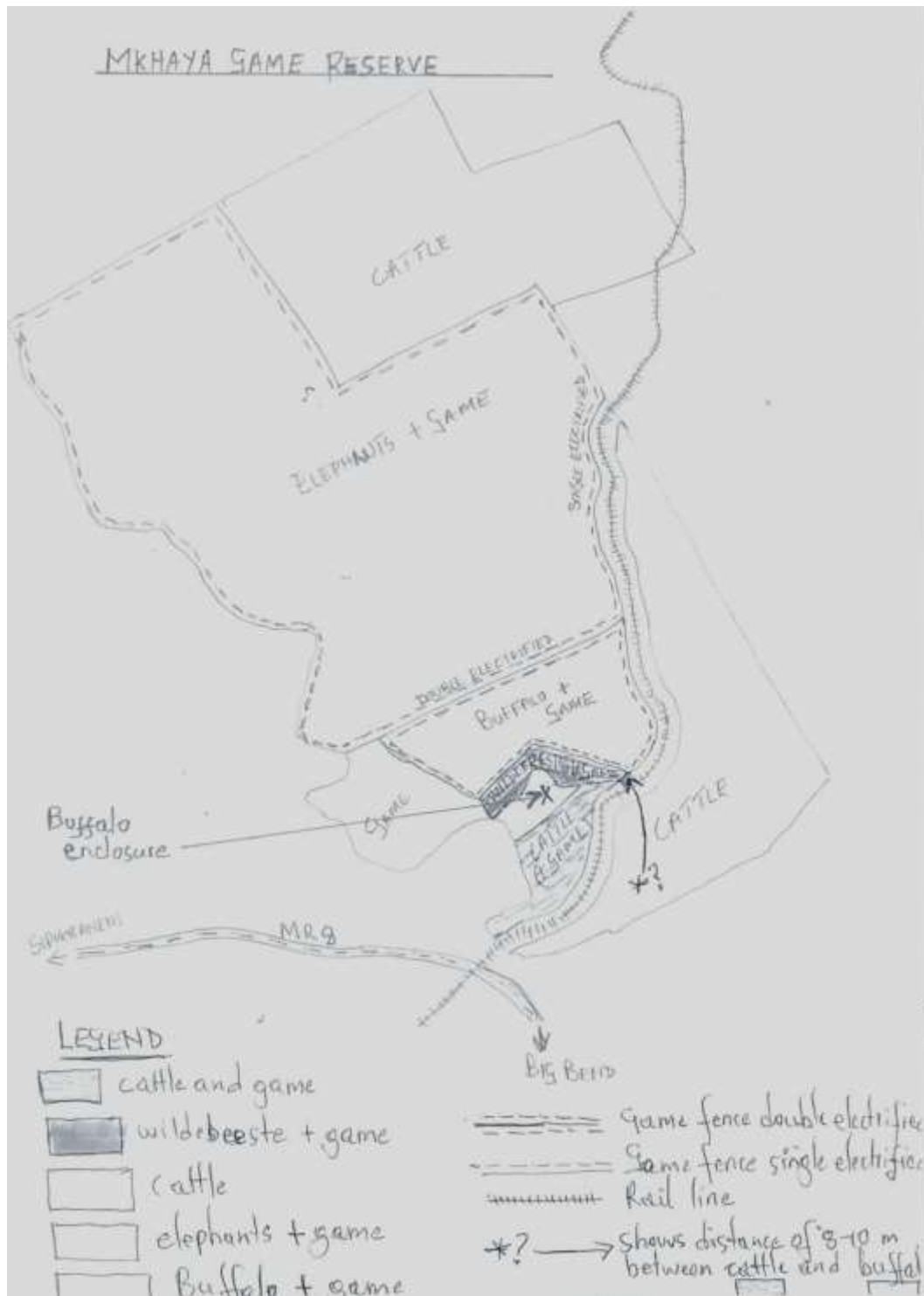


Figure 6: Schematic representation of the Map of Mkhaya Game Reserve and position of the Zambian Buffalo enclosure

Table 8 shows the number of cattle inspected in the period of October 2020 to September 2021. All animals registered in the diptank were targeted for inspection. Inspection coverage of 96% on average was achieved. None of the inspected animals showed any specific or diagnostic clinical signs of FMD.

Table 8: Table showing number of cattle inspected for FMD at Mkhaya Game Reserve

	Total cattle on Register	Total Cattle Inspected	% Inspected	Number of FMD Suspect case identified
Oct	495	495	100%	0
Nov	495	495	100%	0
Dec	475	475	100%	0
Jan	474	474	100%	0
Feb	474	474	100%	0
Mar	474	474	100%	0
Apr	460	345	75%	0
May	424	344	81%	0
Jun	423	423	100%	0
Jul	423	423	100%	0
Aug	423	423	100%	0
Sep	423	423	100%	0
Average	455.25	439	96%	0

Three (3) buffaloes imported from Zambia were introduced into Mkhaya Game Reserve and physically separated from the local buffalo herd and from other wild animals in the Reserve. They were enclosed in a high biosecurity holding, made of concrete slabs inner fence and 2.1 m high outer game fence that is double electrified. The buffaloes are under the custody of Big Game Parks (BGP), an agency that has the competency and resources to manage wildlife, empowered by the Game Act but under the overall sanitary supervision of the National Veterinary Services. In the year 2020, a female calf was born to the herd. Since their transfer from the Quarantine Boma at King Mswati III International Airport to their Isolation/Sequestration Camp at Mkhaya Game Reserve, the following supervision activities have been undertaken by the Veterinary Services;

Table 9: Supervision activities carried out by the National Veterinary Services on the 3 imported buffaloes

Date	Name of Officers	Activity	Remarks
27/02/2018	Dr N.E Chikuni, Dr P Danso, Dr P.M Dlamini, Dr Fantu, , Shaun	Sample collection for FMD testing at Pirbright	Serum and probing samples collected successfully
06/04/2018	Dr P.M Dlamini, D. Mavuso, Aggripah Dlamini	Supervising translocation of buffaloes from KMIII quarantine facility to Mkhaya Game Reserve Quarantine	Successfully translocated to Isolation Facility.
04/07/2018	Dr N.E Chikuni	Inspection at Mkhaya Game Reserve	All buffaloes looking good and still isolated.
08/09/2018	Dr N.E Chikuni	Inspection Mkhaya Game Reserve	All buffaloes looking good and still isolated.
26/10/2018	Dr N.E Chikuni, Dr P Danso, Dr P.M Dlamini, Dr Fantu, Dr Trevor, Shaun	Sample collection for annual FMD testing	Serum and probing samples collected successfully.
11/03/2019	Dr N.E Chikuni , Dr P. Danso	Routine Inspection	All buffaloes in good condition, growing well and still isolated.
11/09/2019	Dr P. M Dlamini , Dr N.E Chikuni , Dr K Fantu , Dr Trevor	Immobilization and sampling of buffaloes for annual FMD tests	Buffaloes were in good condition and were growing well, immobilization and sampling were done successfully
02/12/2020	Dr N.E Chikuni & Khangezile Bhembe	Routine Inspection	All buffaloes looking good and still isolated. Female calf born February 2020.
21/01/2021	Dr N.E Chikuni , Dr K Fantu , Dr Kobus & Shaun	Immobilization and sampling of buffaloes for annual FMD tests	Buffaloes were in good condition and were growing well, immobilization and sampling were done successfully
30/03/2021	Khangezile Bhembe	Routine Inspection of Mkhaya Diptank (275) and buffaloes.	All buffaloes looking good and still isolated.



Figure 7: Pictures showing the buffaloes in their Sequestration/Isolation Facility taken on the 21/01/2021

Active Surveillance

Annual Serological Testing

It involves serological testing of cattle in diptanks situated in the FMD High Risk Areas. High Risk Areas were determined to be along the entire eastern border of the country, bordering KwaZulu Natal (South Africa) in the south, Mozambique in the east and Mpumalanga (South Africa) in the north. The FMD outbreak in KwaZulu Natal (KZN) in the year necessitated the inclusion of diptank areas in the southern parts of the country. Twenty seven diptanks were randomly selected along a 10km wide strip from the International Borders as shown in Figure 8 below. Gangakhulu (883) diptank in the north-western part of the country was added to the annual testing because of the FMD suspect case and the ongoing surveillance activities in the area.



Figure 8: A map showing diptanks sampled for FMD testing in the year 2021

Findings

A total of 732 blood samples were randomly collected from 27 diptanks and tested for FMD. The sample size was sufficient to provide 95% probability of detecting evidence of FMD if it were present at a prevalence of 10% of animals in each diptank. All samples tested negative for antibodies to FMDV. Samples from 5 diptanks were tested at the Central Veterinary Laboratory (CVL) in Manzini using NSP-ELISA. The laboratory then ran out of reagents and attempts to procure were futile. The rest of the samples from 22 diptanks were then sent to Onderstepoort Veterinary Institute (OVI) in South Africa for testing using NSP-ELISA. A total of 140 samples were tested at the CVL and 592 tested at OVI. Fifteen samples were randomly selected from the samples tested at CVL and sent to Onderstepoort Veterinary Institute (OVI) in South Africa as part of the inter-laboratory comparison testing.

Table 10: Table showing number of samples tested by CVL and OVI laboratories for FMD

# of diptanks	# of samples	Lab	Test	Results
5	140	CVL	NSP	Negative
22	592	OVI	NSP	Negative
27	732 Surveillance Samples			
Inter lab testing	15	OVI	NSP	Negative

Serological Testing of Repatriated Animals

Eswatini has a problem with cattle rustling. Animals are stolen to Mozambique and South Africa. Some of the stolen animals are recovered by the Royal Eswatini Police in collaboration with Law Enforcement Agencies in Mozambique or South Africa. These recovered animals are then repatriated to the country and are placed in Maphiveni Quarantine for at least 30 days where they are individually identified. Those coming from Mozambique and from areas not recognized by the World Organization for Animal Health (OIE) as free from FMD in South Africa are tested serologically for FMD.

Findings

In the period of October 2020 to September 2021, 51 blood samples were collected from repatriated cattle from Mozambique. The samples were tested for FMD at Onderstepoort Veterinary Institute (OVI) in South Africa using the Solid-Phase blocking ELISA. There were no positive samples indicating presence of antibodies to the FMD virus either through natural infection or vaccination. At the time of reconfirmation, results for 22 animals were still pending.

Table 11: Table showing number and results of repatriated animals tested for antibodies to the FMD virus

# of samples received	Species	Tested at Onderstepoort Veterinary Institute
		SPCE Results

3	Bovine	Negative (results were pending in 2020 reconfirmation)
28	Bovine	All negative
22	Bovine	Pending
53		

Serological Testing of buffaloes imported from Zambia

Since their arrival, the three (3) buffaloes have been tested several times for FMD by three different laboratories. In all instances, the buffaloes tested negative to FMD using a combination of antigen tests; on probang fluid using PCR and virus isolation and to serum antibody tests using NSP as well as liquid phase blocking ELISA.

The buffaloes were first tested on arrival, in 2017 by the Central Veterinary Laboratory in Eswatini using NSP-ELISA and the Onderstepoort Veterinary Institute (OVI) in South Africa using the Liquid-Phase blocking ELISA, Virus Neutralization test, NSP-ELISA and PCR with negative results. They were then tested for the second time in March 2018 by the World Reference Laboratory for Foot and Mouth Disease, Pirbright Institute, United Kingdom after being screened with NSP-ELISA by the Central Veterinary Laboratory with negative results.

The buffaloes were again sampled on the 26th October 2018 and tested by the Central Veterinary Laboratory using the NSP-ELISA with negative results and also tested on 2nd November 2018 by the Onderstepoort Veterinary Institute (OVI) in South Africa using the NSP-ELISA and PCR with negative results.

In 2019, the buffaloes were sampled on the 11th September 2019 and tested by Onderstepoort Veterinary Institute (OVI) in South Africa on 18th September 2019 using the NSP-ELISA and PCR with negative results.

In 2020, the buffaloes could not be sampled in the set period due to logistical problems caused by Covid-19 restrictions. They were eventually sampled on the 21st January 2021 and tested by Onderstepoort Veterinary Institute (OVI) in South Africa on 27th January 2021 using the NSP-ELISA and PCR with negative results.

Changes to importation from Republic of South Africa

Introduction

When South Africa lost its FMD free status without vaccination in January 2019, import requirements for cloven hoofed animals and their products from South Africa to Eswatini were completely banned and then reopened with modification in import requirements for live animals. The complete ban of imports

was again instituted in November 2019, when another outbreak occurred in the suspended FMD free zone. The ban was subsequently lifted for the importation of “less risky products” which included all processed products and remained in place for high risk commodities like live animals. Importation of high risk commodities including live animals was re-instated later in the year 2020.

Importation after KwaZulu Natal Outbreak

In June 2021, following the outbreak of FMD in KwaZulu Natal, high risk commodities including live animals were once again banned from entering or transiting through Eswatini through Directive 3/2021, *“Response to FMD outbreak reported in Mtubatuba, KZN, SA”*. Products of cloven-hoofed animal origin that have been adequately processed via canning, cooking and pasteurization from all provinces except Limpopo and KwaZulu-Natal were exempted from the ban. The ban was adjusted with the changing FMD situation in KwaZulu-Natal province in October 2021 through Directive 7/2021, *“Response to FMD outbreak reported in Mtubatuba, KZN, SA; FMD Risk Management response”*.

The ban on importation of cloven hoofed animals and their products was lifted except for those originating from KwaZulu Natal and Limpopo provinces as well as from all the known RSA FMD zones. Import conditions were modified in accordance with the provision of the OIE Terrestrial Animal Health Code, Article 8.8.12. The modifications included; a 30 days pre-export quarantine, all animals in pre-export quarantine to be subjected to a diagnostic virological and serological test for evidence of FMDV with negative results, results to be attached to the Health attestation and the official veterinarian to attest that the animals were born and bred outside KwaZulu Natal and Limpopo provinces and FMD controlled/restricted areas, were not vaccinated against FMD and the farm of origin was not within 30km from an area of FMD outbreak during the last 12 months. Pigs were to be imported only from officially approved compartments which are routinely tested for Foot and Mouth Disease, Porcine Reproductive and Respiratory Syndrome (PRRS), Classical Swine Fever and African swine fever with negative results.

Quarantine of imported animals

Imported domestic cloven hoofed animals are quarantined with inspections for 30 days on arrival in Quarantine Facilities. Animals smuggled out of the country and then returned to the country are generally quarantined for 30 days at Maphiveni Government Quarantine Station. Those recovered from Mozambique and from areas not recognized by the World Organization for Animal Health (OIE) as free from FMD in South Africa are tested serologically for FMD. After the KwaZulu Natal outbreak, repatriation of stolen animals from South Africa was suspended through Directive 3/2021 and a safe kraal (“paddock”) created at Maphiveni Quarantine Station to handle animals illegally repatriated without due process or authority. The illegally imported animals were to be tested for FMD. The suspension was further extended by Directive 7/2021.

Table 12: Imports of domestic cloven hoofed animals October 2020-June 2021

Year	Month	Species	Quantity	District	Province	Country
2020	Oct	Pigs	33	Magaliesburg	Gauteng	RSA

2020	Dec	Cattle	2	Midrand	Gauteng	RSA
2020	Dec	Goats	13	Hartbeesport	North West	RSA
2021	Jan	Goats	11	Hartbeesport	North West	RSA
2021	Jan	Pigs	42	Villiers	Mpumalanga	RSA
2021	Feb	Goats	18	Vereeniging	Gauteng	RSA
2021	Feb	Goats	37	Hartbeesport	North West	RSA
2021	Feb	Sheep	11	Vereeniging	Gauteng	RSA
2021	Feb	Pigs	20	Magaliesburg	Gauteng	RSA
2021	Mar	Cattle	14	Ermelo	Mpumalanga	RSA
2021	May	Sheep	6	Reitz	Free State	RSA
2021	Jun	Cattle	59	Alexandra	Eastern Cape	RSA

CONTAGIOUS BOVINE PLEUROPNEUMONIA (CBPP)

The surveillance goal is to effectively and efficiently detect early outbreaks of introduced CBPP in cattle. The surveillance program is both passive and general as well as active, specific and risk based. It combines clinical, pathological and serological methods. The population of interest is all cattle in the country and the epidemiological unit is a dip tank.

A suspect case is defined as an animal that has difficulty in breathing and coughing after exercise and or an animal that has lungs adhering to the chest wall and covered with yellowish material at post mortem. A confirmed case is a suspect animal that test positive on serology with isolation and identification of MmmSC.

Passive Surveillance

Clinical Surveillance

Passive clinical surveillance is done through a comprehensive National Dip Inspection Program, weekly and fortnightly depending on the season and region. It is also conducted through regular Veterinary Clinics provided by each veterinary region. A case could be an individual animal, a kraal or a herd with similar clinical signs/diagnosis.

Diptank Inspections

It involves regular inspection of cattle at diptanks throughout the country. At the diptank, Veterinary Assistants closely monitor animals for signs of disease such as exercise intolerance (coughing, difficulty in breathing) as they arrive at the diptank. Driving the animals from the kraal of residence to the diptank gives the farmer an opportunity to observe signs such as exercise intolerance and report to the Veterinary Assistant on arrival at the diptank.

Reported and or diptank identified suspect cases are investigated further by Government Veterinary Officers assisted by the Central Veterinary Laboratory to come up with a final diagnosis.

Findings

On average, 91.17% of cattle were inspected in the period of October 2020 to September 2021 as shown in Table 13. No suspect cases of CBPP were identified.

One (1) animal was presented with exercise intolerance at the diptank and was diagnosed as having pneumonia. Sixty four (64) animals were reported absent sick at dipping. On further investigations they were seen to have serous nasal discharges and were listless. They were all diagnosed as having Bovine Ephemeral Fever and all recovered.

Table 13: Table showing number of animals inspected at diptanks in the period October 2020 to September 2021

Row Labels	Sum of Cattle Registered	Sum of Cattle inspected	% inspected	# of cases thought to be showing clinical signs of CBPP	
Oct	581320	527129	91%		
Nov	594337	544986	92%		
Dec	608399	558437	92%		
Jan	613541	546210	89%	40	Bovine Ephemeral Fever
Feb	609033	552054	91%	6	Bovine Ephemeral Fever
Mar	609011	557536	92%	10	Bovine Ephemeral Fever
Apr	608719	558079	92%		
May	605615	552792	91%	2	Bovine Ephemeral Fever
June	602504	550771	91%	6	Bovine Ephemeral Fever
July	603267	543511	90%	1	Pneumonia
Aug	602516	549893	91%		
Sept	600617	554823	92%		
Average	603239.92	549685.08	91.17%	65	

Farmer Reporting System

In the Clinics, Veterinary Officers (veterinarians) respond to farmer's reports of suspicion of disease and conduct further investigations to make a diagnosis. Generally, the Veterinary Officers look out for clinical signs as indicated in Table 14 to classify a case as a CBPP suspect which needs confirmation.

Table 14: key signs to look for in clinical surveillance for CBPP

Fast difficult or noisy breathing
Discharge from the nose
Coughing especially after exercise
Anorexia, debility, weakness and loss of weight

<http://www.fao.org/docrep/005/y4143e/y4143e08.htm>

Findings

Table 15 shows that, Government Veterinary Clinics attended to 194 bovine clinical cases between October 2020 and September 2021. Twenty two (22) of these cases were reported by farmers to be showing one or more of the key signs indicated in Table 14 above. Examination of these cases by Veterinary officers indicated other diseases, findings and or conditions as shown in Table 16 below.

Table 15: Table showing bovine clinical cases attended to by Vets in the period October 2020 to September 2021

Month	# of Bovine Clinical cases seen	# of cases reported by farmers to be showing clinical signs of CBPP
Oct	12	
Nov	5	
Dec	13	
Jan		5 3 Bovine Ephemeral Fever
	14	2 Pneumonia
Feb	8	3 Bovine Ephemeral Fever
Mar	13	6 Bovine Ephemeral Fever
Apr	9	7 Bovine Ephemeral Fever
May	9	

Jun	2	1	Pneumonia
Jul	3		
Aug	92		
Sep	14		
Total	194	22	

Table 16: Table showing no of cases mistaken for CBPP suspect cases” in the period October 2020 to September 2021

Surveillance Method which identified case	Disease/conditions/findings	Number of cases
Farmer Reporting	Pneumonia	3
Farmer Reporting	Bovine Ephemeral Fever	19
Diptank inspections	Bovine Ephemeral Fever	64
Diptank inspections	Pneumonia	1
	Total	87

Abattoir Monitoring

Passive Post-Mortem Inspection is conducted in all Cattle Abattoirs by Meat Inspectors from the Department of Veterinary and Livestock Services or the Ministry of Health. Inspections look for indicators as shown in Table 17 below. Diagnostics samples are taken from all suspected lungs and sent to the Food Hygiene Laboratory and or Central Veterinary Laboratory for a final diagnosis.

Table 17: Key indicators of CBPP in meat inspection

Yellow fluid in the chest cavity
Lungs covered with yellowish material
Lungs adhering to the chest wall
Lungs which do not collapse and are solid or marbled
Sequestra in the lungs of chronic cases

<http://www.fao.org/docrep/005/y4143e/y4143e08.htm>

Findings

Post Mortem Inspections were conducted in approximately 24% of all cattle that died in the country (see Table 18). A total number of 1286 cases with lung and thoracic cavity involvement were examined further to rule out CBPP. The final findings, including laboratory confirmation, are as shown in Table 19 below.

Table 18: Table showing cattle deaths in the period October 2020 to September 2021

Months	Total Deaths	Abattoir Slaughters	% inspected	Total # of cases examined further to rule out CBPP (confirmed for TB, Hydatid cyst etc)
Oct	8338	1388	17%	45
Nov	7594	1231	16%	27
Dec	9717	2213	23%	98
Jan	6979	1231	18%	61
Feb	4999	1243	25%	82
Mar	6181	1737	28%	180
Apr	6398	1722	27%	145
May	7242	2143	30%	174
Jun	6051	1946	32%	177
Jul	5820	1572	27%	117
Aug	6501	1631	25%	88
Sep	7256	1506	21%	92
Total	6923	1630.25	24.08%	1286

Table 19: Final diagnosis of cases examined further to rule out CBPP

Disease/conditions/findings	Number of cases
Abscess	8
Hydatid cyst	170
Pericarditis	23
Traumatic Reticulo-peritonitis	707

Pneumonia	40
Pleuritis	224
Tuberculosis	114
Total	1286

ACTIVE SURVEILLANCE

Annual serological testing in high risk areas

Annual Serological Testing was done in diptanks considered to be “High Risk”. These are diptanks along the eastern frontier with Mozambique where the Sanitary Cordon Fence has areas of possible permeability due to natural geographic structures. These diptank areas are as shown in Table 20 and Figure 9 below.

Table 20: Table showing Diptanks in CBPP high risk areas

Diptank Number	Diptank Name	Subregion	Tenure	Cattle population
216	Majembeni	Lomasha	SNL	571
224	Mhlumeni	Siteki II	SNL	694
234	Sitsatsaweni	Siteki II	SNL	577
274	Ncephu	Tikhuba	SNL	1280
305	Nkonjane	Tikhuba	SNL	1978
Total				5100

SNL → Swazi Nation Land (Communal Lands)

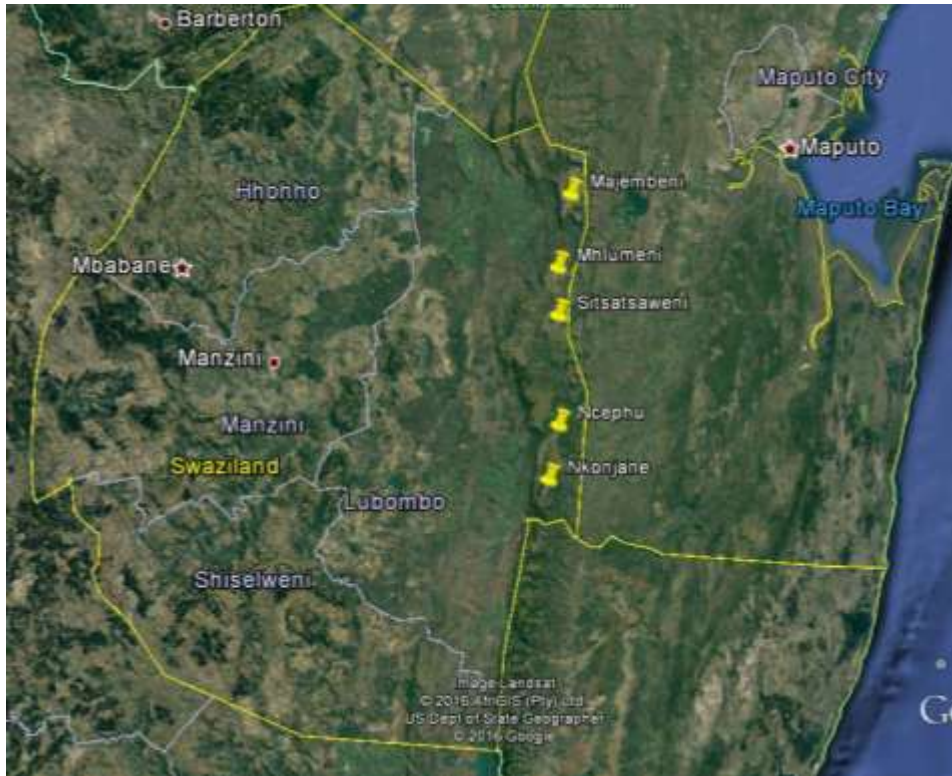


Figure 9: Map showing Diptanks in CBPP high Risk Areas

Findings

Year 2020

One hundred and forty (140) blood samples were randomly collected from the diptanks shown in Table 20 (28 samples from each diptank) and sent to Botswana National Veterinary Laboratory in Gaborone for testing. The sample size was sufficient to provide 95% probability of detecting evidence of CBPP if it were present at a prevalence of 10% of animals in each diptank. At the time of submission of re-confirmation for freedom, the results were not yet out. Botswana National Laboratory analysed the samples on 15/12/2021 using the Complement Fixation Test (CFT). No CBPP antibodies were detected in any of the samples. The results were then submitted in 2020 to the OIE with clarifications which were requested.

Year 2021

One hundred and forty (140) blood samples were randomly collected from the diptanks shown in Table 20 (28 samples from each diptank) and sent to Botswana National Veterinary Laboratory in Gaborone for testing. The sample size was sufficient to provide 95% probability of detecting evidence of CBPP if it were present at a prevalence of 10% of animals in each diptank. Botswana National Veterinary Laboratory analysed the samples on 24/11/2021 together with samples of animals repatriated from Mozambique using the CBPP Complement Fixation Test (CFT). No CBPP antibodies were detected in 139 of the samples. One sample had anti complementary activity.

Serological testing of all cattle repatriated from Mozambique

Eswatini has a problem with cattle rustling. Animals are stolen to Mozambique and South Africa. Some of the stolen animals are recovered by the Royal Eswatini Police in collaboration with Law Enforcement Agencies in Mozambique or South Africa. These recovered animals are then repatriated to the country and are placed in Maphiveni Quarantine for at least 30 days where they are individually identified and those coming from Mozambique tested serologically for CBPP.

Findings

In the period of October 2019 to September 2020, 41 blood samples were collected from repatriated animals and at the time of submission of re-confirmation for freedom plans were underway to send them to Onderstepoort Veterinary Institute (OVI) in South Africa for testing. The samples were eventually tested in March 2021 with 24 other samples collected in the period of October 2020 to December 2020. A total of 64 samples were tested at OVI using CBPP Complement Fixation Test and all were negative for CBPP antibodies. One sample leaked on transit.

In the period of January 2021 to September 2021, 51 samples were collected from repatriated animals and sent to Botswana National Veterinary Laboratory in Gaborone for testing. The samples were tested on the 24/11/2021 using the CBPP Complement Fixation Test (CFT). No CBPP antibodies were detected in the samples.

Table 21: Table showing number of samples from repatriated animals tested for CBPP in the 2020 and 2021

Number of samples	Period	Laboratory	Results
41	Oct 2019 – Sept 2020	OVI	All negative
12	Nov 2020	OVI	All negative
12	Dec 2020	OVI	All negative
51	2021	BNVL	All negative

PESTE DES PETITS RUMINANTS (PPR)

The aim of the surveillance program is early detection of introduced PPR in sheep and goats. The surveillance program is both passive and general as well as active, specific and risk based. The population of interest is all goats and sheep in the country and the epidemiological unit is a dip tank.

A suspect case is defined as one or more animals with serous or mucopurulent nasal discharge and ulcers on the tongue or mucous membranes. A confirmed case is a suspect animal that test positive on serology with isolation and identification of PPR virus.

Passive Surveillance

Passive clinical surveillance is done through a comprehensive National Dip Inspection Program, weekly or monthly depending on the region. It is also conducted through regular Veterinary Clinics provided by each veterinary region from reports made by farmers. A case could be an individual animal, a kraal or a flock with similar clinical signs/diagnosis.

Farmer Reporting System

In the Clinics, Veterinary Officers (veterinarians) respond to farmer’s reports of suspicion of disease and conduct further investigations to make a diagnosis.

Findings

In the period October 2020 to September 2021, Government Veterinary Clinics attended to 20 caprine clinical cases and 6 ovine clinical cases. Nine goats were reported to be having sores around the muzzles and on further investigations they were found to be suffering from ORF.

Table 22: Table showing number of caprine and ovine clinical cases attended to by Government Veterinary Clinics

Month	Number of Caprine Clinical cases seen	Number of Ovine Clinical cases seen	# of cases thought to be showing clinical signs of PPR
Oct	2	0	0
Nov	6	0	5 (ORF)
Dec	2	1	1 (ORF)
Jan	0	1	0
Feb	0	1	0
Mar	0	0	0
Apr	2	0	0
May	4	0	0
Jun	1	1	1 (ORF)

Jul	0	1	0
Aug	2	1	1 (ORF)
Sep	1	0	1 (ORF)
Total	20	6	9

Diptank Inspections

At the diptank, Veterinary Assistants (Animal Health Technicians) routinely (weekly, monthly) inspect animals for any signs indicative of PPR infection as they arrive at the diptank. Driving the flock from the kraal of residence to the diptank gives the farmer an opportunity to observe such signs as exercise intolerance and report to the Veterinary Assistant on arrival at the diptank.

Findings

On average, 89.5% of goats and 92.8% of sheep were inspected in the period of October 2020 to September 2021. A total of 21 goats were thought to be showing clinical signs suggestive of PPR. Further examination indicated that they were suffering from ORF.

Table 23: Table showing % of goats and sheep inspected between October 2020 and September 2021

Month	GOATS			SHEEP			# of cases thought to be showing clinical signs of PPR
	Total Registered	Total Inspected	% Inspected	Total Registered	Total Inspected	% Inspected	
Oct	534617	479615	90%	18628	17340	93%	7 (ORF)
Nov	546944	497684	91%	19074	18067	95%	
Dec	567666	522489	92%	19103	18126	95%	
Jan	573043	513539	90%	19186	17893	93%	
Feb	561829	494357	88%	18962	17667	93%	5 (ORF)
Mar	552288	480928	87%	18984	17339	91%	7 (ORF)
Apr	544901	478327	88%	18780	17427	93%	
May	537596	480209	89%	18584	17573	95%	

Jun	530278	466107	88%	18111	16757	93%	
July	534074	481211	90%	18712	17409	93%	
Aug	531055	478953	90%	18834	15900	84%	
Sept	529904	482574	91%	19010	18269	96%	2 (ORF)
Average	545349.58	487999.42	89.50%	18830.67	17480.58	92.83%	21

Active Surveillance

Annual serological testing in high risk areas

Annual Serological Testing was done in diptanks considered to be “High Risk”. These are diptanks along the eastern frontier with Mozambique where the Sanitary Cordon Fence has areas of possible permeability due to natural geographic structures. These diptank areas are as shown in Table 24 and Figure 10 below.

Table 24: Table showing Diptanks in PPR high risk areas

Diptank Number	Diptank Name	Subregion	Tenure	Goat population	Sheep population
216	Majembeni	Lomahasha	SNL	995	8
224	Mhlumeni	Siteki II	SNL	480	0
234	Sitsatsaweni	Siteki II	SNL	924	37
274	Ncephu	Tikhuba	SNL	854	15
305	Nkonjane	Tikhuba	SNL	562	20
Total				3815	80

SNL → Swazi Nation Land (Communal Lands)

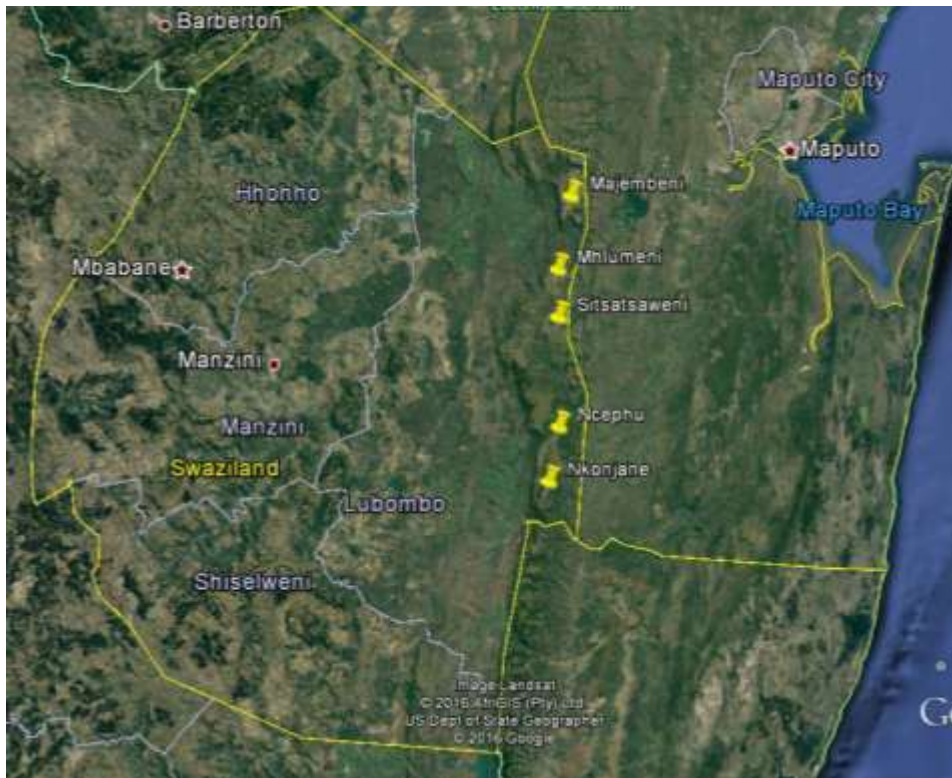


Figure 10: Map showing Diptanks in PPR high Risk Areas

Findings

Year 2020

In the year 2020, One hundred and forty (140) blood samples were randomly collected from the diptanks shown in Table 24) and sent to Botswana National Veterinary Laboratory in Gaborone for testing. The sample size was sufficient to provide 95% probability of detecting evidence of PPR if it were present at a prevalence of 10% of animals in each diptank. At the time of submission of re-confirmation for freedom in the year 2020 the results were not yet out.

Botswana National Laboratory analysed the samples from 10/12/2020 to 11/12/2020 using the PPR ELISA. One hundred and thirty three (133) samples tested negative for PPR antibodies, two (2) samples were doubtful for PPR antibodies and four (4) samples were positive for PPR antibodies. One tube was empty.

Table 25: table showing PPR serologically positive and suspicious samples in the year 2020

Results	Diptank	Kraal #	Age	sex	Colour
Positive	Ncephe	19	Adult	Female	
Positive	Nkonjane	216	Adult	Female	White & Black
Positive	Mhlumeni	57	Adult	Male	White
Suspicious	Sitsatsaweni	51	Adult	Male	

Suspicious	Majembeni	43	Young	Female	White
Positive	Majembeni	57	Young	Female	White

The six (6) animals which tested positive or suspicious for PPR antibodies were resampled on 20/01/2021 and samples sent to Onderstepoort Veterinary Institute (OVI) in the Republic of South Africa for testing on the 26/01/2021. They were tested on the 02/02/2021 using the PPRV Competition ELISA and were found negative for antibodies against PPR virus.

Year 2021

In the year 2021, One hundred and forty two (142) blood samples were randomly collected from the diptanks shown in Table 24) and tested at the Central Veterinary Laboratory (CVL) in Manzini. The sample size was sufficient to provide 95% probability of detecting evidence of PPR if it were present at a prevalence of 10% of animals in each diptank.

The samples were tested on 15/10/2021 using the PPR Blocking ELISA. They all tested negative for PPR antibodies.

Serological testing of all goats & sheep repatriated from Mozambique

Eswatini has a problem with livestock rustling. Animals are stolen to Mozambique and South Africa. Some of the stolen animals are recovered by the Royal Eswatini Police in collaboration with Law Enforcement Agencies in Mozambique or South Africa. These recovered animals are then repatriated to the country and are placed in Maphiveni Quarantine for 30 days and those coming from Mozambique tested serologically for PPR.

In the period of October 2020 to September 2021, no animals were repatriated from neighboring countries.

Imports of small ruminants

The country does not import live goats or sheep from any PPR infected countries or zones. Most of the live animal imports are from the Republic of South Africa with a possibility of importing from PPR free zones of Namibia or Botswana. Importation of sheep and goats is also affected by import restrictions imposed by FMD Regulations. As such importations from South Africa were affected by the ongoing FMD outbreak.

When South Africa lost its FMD free status without vaccination in January 2019, import requirements for cloven hoofed animals were completely banned and then reopened with modification in import requirements for live animals (with regards to FMD). The complete ban of imports was again instituted in November 2019, when another outbreak occurred in the suspended FMD free zone. The ban was subsequently lifted for the importation of “less risky products” which included all processed products

and remained in place for high risk commodities like live animals. Importation of high risk commodities including live animals was re-instated later in the year 2020.

In June 2021, following the outbreak of FMD in KwaZulu Natal, high risk commodities including live animals were once again banned from entering or transiting through Eswatini .The ban was adjusted with the changing FMD situation in KwaZulu-Natal province in October 2021 and lifted for cloven hoofed animals except for those originating from KwaZulu Natal and Limpopo provinces as well as from all the known RSA FMD zones.

In this regard, small ruminants imported as of October 2020 to September 2021 and the areas they were imported from are as shown in Table 26 below.

Table 26: Table showing number of small ruminants imported between October 2020 and September 2021

Year	Month	Species	Quantity	Province	Country
2020	Dec	Goats	13	North West	RSA
2021	Jan	Goats	11	North West	RSA
2021	Feb	Goats	18	Gauteng	RSA
2021	Feb	Goats	37	North West	RSA
2021	Feb	Sheep	11	Gauteng	RSA
2021	May	Sheep	6	Free State	RSA

Meetings /workshops

The Department of Veterinary and Livestock Services under the Ministry of Agriculture is in charge of all animal health issues. The Department for the purposes of animal disease controls divides the country into four (4) technical regions, namely Hhohho, Lubombo, Manzini and Shiselweni. These regions are headed by Regional Veterinary Officers who are veterinarians assisted by Senior Animal Health Inspectors. Each region has at least one Government Veterinary Clinic which is operated by government veterinarians and its cost subsidized by Government. There are also Private Veterinary Clinics located throughout the country. The Private Vets also have an obligation to report disease occurrences to Government.

The four (4) regions are further subdivided into 28 subregions headed by Animal Health Inspectors. The subregions are then divided into Diptank Areas (834 in total as at December 2020) which are controlled by Veterinary Assistants assisted by Diptank Assistant (DTA) Diptank Committees. The Diptank Areas are serviced by a diptank (plunge or spray) in which cattle, sheep and goats are required by law to be registered and presented for dipping and inspection every seven (7) days in summer or fourteen (14) days in winter except in the highveld where it is 14 days in summer and 28 days in winter. In high risk diptanks (in the eastern part of the country bordering Mozambique) each diptank is controlled by two Veterinary Assistants (VA), to facilitate closer inspections of the animals. The diptank system forms the basis for all animal health programs including awareness activities.

In June 2021, in the Shiselweni region, a number of meetings on disease awareness including PPR were conducted in several diptanks namely, Mkhondo (665), Maphumzane (265), Mozane (704), Matimatima (669), Makholweni (169) and Ncotshane (728). The purpose of the campaigns was to educate and sensitize farmers about FMD, Newcastle disease, Avian influenza, PPR and CBPP. The farmers were urged to stop cross-border livestock movement or contacts on the border line because this act could put the country at risk of these diseases.

In August 2021, 11 dip tanks, namely, Mgubudla (593), Logoba (448), Croydon (402), Gwababa (583), Madlabazi (877), Mbanana (95), Mavela (573), Somntsewu(552), Mbane (842), Eteteni (833), and Magwaza(826) under the Manzini region had awareness and sensitization campaigns. The objective of the campaigns were to teach farmers about animal health especially on priority diseases including PPR, FMD and Avian Influenza and to remind farmers about the importance of dipping, branding and ear tagging and the use of livestock movement permits.

The Hhohho region hosted a continuous education exercise in all sub-regions, whereby the Animals Health Inspectors together with Veterinary Assistants were lectured on FMD, PPR, CBPP, biosecurity measures, and the importance of these diseases in the country. This exercise also looked into the Contingency plan for FMD and PPR and officers were informed of their various roles and responsibilities as stated by the Plans.

AVIAN INFLUENZA

The National Veterinary Services received laboratory equipment from the Government of Turkey under the TIKa Project to enhance its capacity to test for poultry diseases. A total of 1284 samples were collected from 3 regions; Hhohho, Manzini and Shiselweni. Ninety five percent (95%) of the samples were collected from the Manzini region and 4% collected from Hhohho region. Eighty eight percent (88%) of the samples were collected from broilers and 11% collected from free range chickens. The rest were collected from layers. The samples were collected and tested between July and December 2021. They were tested by the Central Veterinary Laboratory in Manzini. None of the samples were positive for antibodies against Avian Influenza virus.

TRYPANOSOMIASIS & TSETSE FLY

In the 1940s the southern part of Eswatini was invaded by *Glossina Pallidipes* whilst the east was infested with *Glossina Austeni*. The flies were eradicated in the 50s and only two pockets remained in the Mhlumeni and Palata areas close to Mozambique. A survey conducted in 2008 showed that, only the Mhlumeni pocket remained. The pocket is in Mlawula Nature Reserve and consists of *Glossina austeni*. *Trypanosoma Congolense* was diagnosed in one animal from Mhlumeni (224) diptank and serological examinations picked up reactors from Mhlumeni (224) and Majembeni (216) diptanks. Genetic typing of the flies showed that the flies were not related to the *G.austeni* flies found in KwaZulu Natal, South Africa.

Parasitological Surveys were conducted in 2016, 2017, 2018, 2019 and 2020 with negative results. The objectives of the Surveys were to determine the presence or absence of trypanosoma in areas considered to be highly suitable for tsetse fly infestation. These included areas extending from Lavumisa in the south to Lomasha in the North along the country's eastern frontier. In 2017, however, due to

shortage of resources the surveillance activities were restricted to diptanks which were quarantined in 2016 for illegal importation of cattle within the areas considered to be highly suitable for tsetse fly infestation. These diptank areas in addition to be in potentially tsetse infested areas had the highest probability of introducing trypanosomiasis and tsetse fly in the country from neighbouring infested countries. These included areas extending from where Usuthu River enters the Republic of South Africa in the south to Lomahasha in the North along the country's eastern frontier. Mkhaya Diptank in Siphofaneni was included in 2018 due to the introduction of new buffaloes from Zambia.

Entomological survey using H-traps was also resumed at Mlawula Siphiso Valley on 10/04/2019. The purpose of the survey was to collect tsetse flies for genetic typing and comparisons with flies from Mozambique, as well as for the determination of their infective status. A total of 106 *G.austerni* flies were collected in the year and were sent to Onderstepoort Veterinary Institute for genetic analysis. On January 2020, a second batch of flies was sent to Onderstepoort Veterinary Institute for analysis. The flies were then sent to the International Atomic Energy Agency (IAEA) in Austria to be included in the DNA bank.

Surveillance activities in 2021

Entomology survey

The Entomological surveys which were started in 10/04/2019 at Mlawula were discontinued in 20/03/2020. Flies collected in 2019 and 2020 were analyzed at the International Atomic Energy Agency (IAEA) in Austria as part of a worldwide study to determine the prevalence of Trypanosome infection, tsetse microbiota (*Sodalis*, *Wolbachia* and *Spiroplasma* infection) and the Salivary gland Hypertrophy virus in tsetse flies. No trypanosome and or *Sodalis* infection were detected from the Eswatini flies.

Parasitology survey

A parasitological survey was done along the country's eastern frontier targeting diptanks along the Lavumisa to Lomahasha Corridor. Habitat Suitability Maps developed by Dicko H.A; RAF/5/059-05 03 (H.Ahmadou, RAF/5/059-05 03) indicated that these areas are potentially suitable areas for tsetse infestation. Diptanks targeted for sampling are as shown in Figure 11 below.

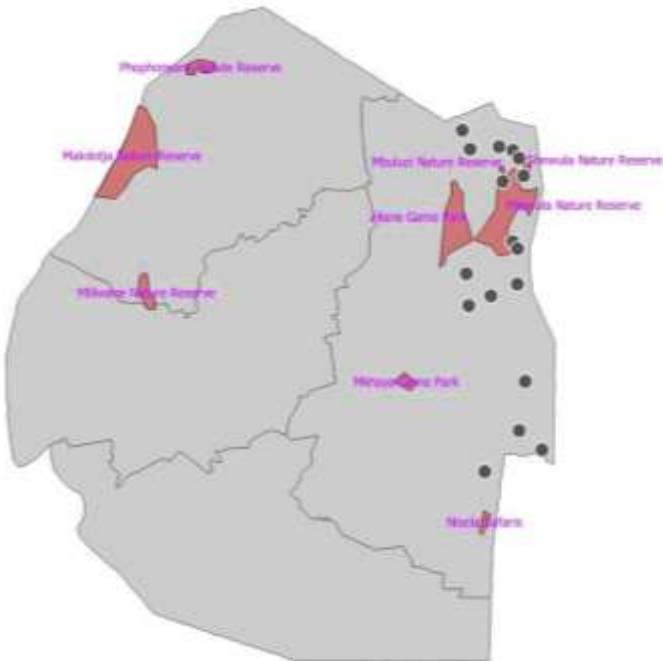


Figure 11: Map showing diptank involved in Tryps survey for 2021

The survey targeted all cattle regardless of sex or age in the diptanks. A total of 552 whole blood samples were collected from cattle for the survey and 543 (others were haemolysed or clotted) were tested. The sample size was sufficient to provide 95% probability of detecting the parasite if it were present at a prevalence of 10% of animals in each diptank. All samples were tested using the Buffy Coat Smear and Giemsa stain at the Central Veterinary Laboratory in Manzini. PCV was also done for all samples.

No parasites were seen in any of the samples and a majority of the PCV were all in the normal range.

TICK BORNE DISEASES

Since 1926, as part of the East Coast Fever (ECF) eradication campaign, livestock owners have been required by Law to submit organs (spleen, lymph node and rib) of all cattle that have died to Veterinary Officials. ECF was eradicated in March 1960, and the practice continued as part of a Tick Borne Disease Surveillance Program. These organs are used to make Smear Slides (smears) for the detection of Tick Borne Parasites. However, in recent years due to financial constraints there has been a shortage of slides for making the smears and a lot of cattle deaths are now not accompanied by the slides.

In 2021, a total of 8 081 submissions from dead animals were made to the Smear Laboratory in Manzini. Seventy three percent (73%) had Smear Slides and of these 23% were broken and hence not examined. Manzini and Shiselweni regions contributed 29% and 38% respectively to the submissions whilst Hhohho and Lubombo contributed 16% each. Figure 12 shows the total number of submissions made to the Smear Laboratory by each region in the years 2016 and 2021. The accompanying table shows the total number of Submissions with Smear slides (Smears) and without Smears that were made by each region in 2021.

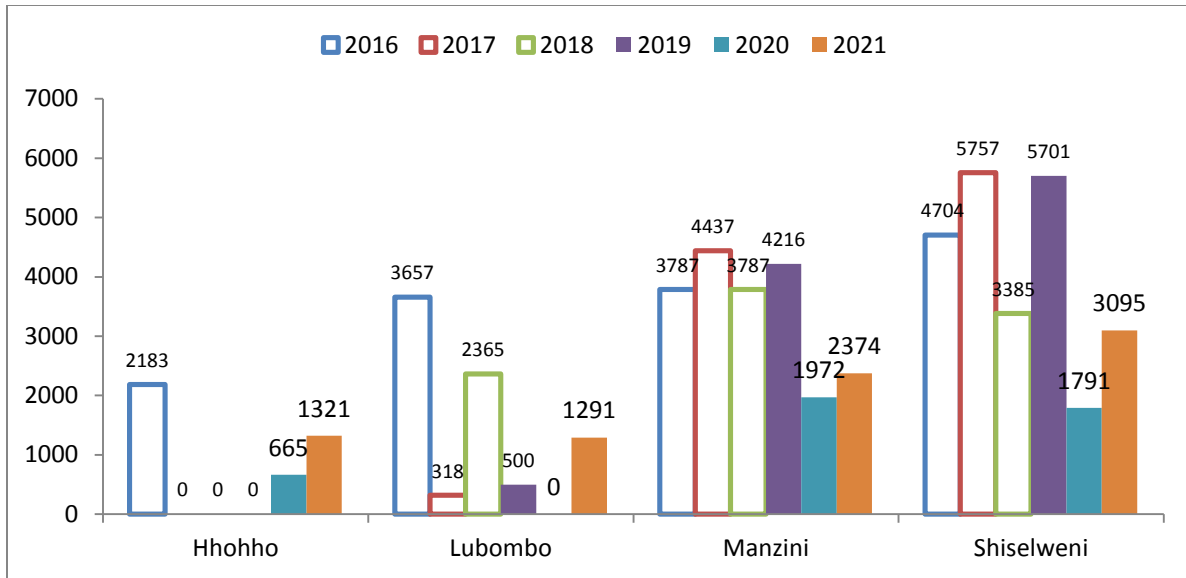


Figure 12: Graph showing total number of submissions made to the Smear Lab per region in 2016 – 2021

Region	NO SMEAR		SMEAR			Total
	Killed	Dead	Killed	Dead	Broken	
Hhohho	162	149	444	306	260	1321
Lubombo	108	146	263	494	280	1291
Manzini	388	398	612	592	384	2374
Shiselo	451	347	997	878	422	3095
Total	1109	1040	2316	2270	1346	8081

Of the 6 370 Smear Slides examined, a total of 52 slides were positive for *Anaplasma* and 168 were positive for *Babesia*. This is suggestive of a common occurrence of *Babesia* in cattle than *Anaplasma*. A similar scenario has been observed in the past 5 years.

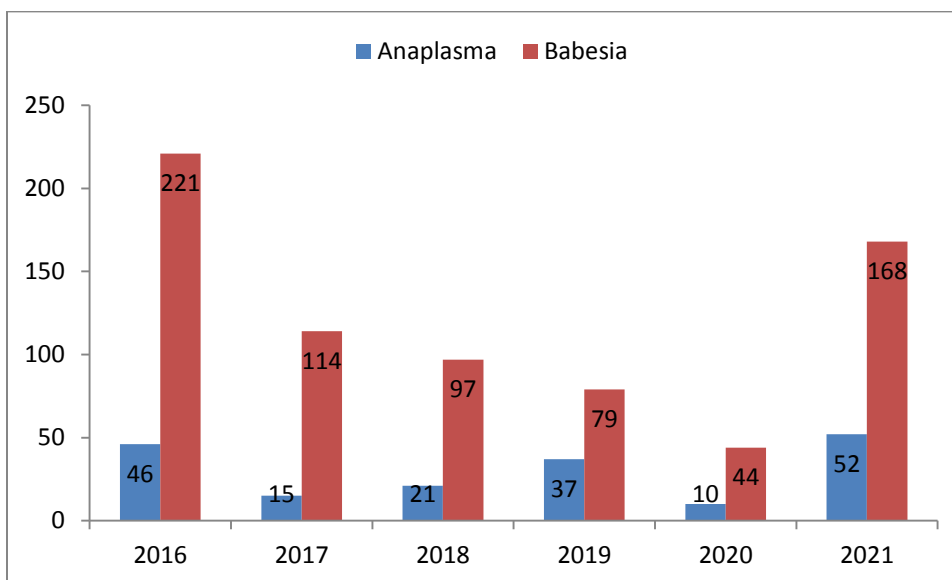


Figure 13: Graph showing total number of slides positive for Anaplasma and Babesia in 2016-2021

BOVINE SPONGIFORM ENCEPHALOPATHY (BSE)

Bovine Spongiform Encephalopathy (BSE) was officially defined as a notifiable disease in November 1999 by the Director of Veterinary Services order. The feeding of ruminant protein to ruminants was prohibited and the reporting of suspect cases of BSE and Scrape became compulsory.

The country's BSE Surveillance Program includes sampling and testing of 'fallen' stock. All cattle that die showing CNS signs (and negative for rabies or heartwater), those that are found dead, those that are sick at slaughter houses and those found dead before slaughter or on arrival have their brains taken for testing. A maximum of 10 brain samples is expected for the whole country in a year. A total of 13 heads were submitted from SG1 to the Central Veterinary Laboratory for testing for BSE as per the Annual Surveillance. Feedmills and feedlots are inspected regularly to ensure that no TSE contaminated material is used in the preparation of feeds and to ensure against contamination during storage.

Table 27: Number of samples submitted for BSE testing in the Central Vet Lab

Year	# of brains submitted	Source
2017	7	SG1
2018	8	SG1
2019	12	SG1
2020	5	SG1
2021	13	SG1

BRUCELLA AND BOVINE TB

Bovine brucellosis and Caprine brucellosis are specified diseases. Special regulations to both diseases are covered in Regulations 48 & 47A of the Animal Diseases Act 7/1965. The overall objective of the Department of Veterinary Services on brucellosis is detection, control and eventually, eradication.

Surveillance of Bovine brucellosis consists of Annual Serological Testing of dairy herds which are conducted between June and July and on occurrence of abortions in Beef herds. All cows and 18 months heifers are bled and tested serologically using RBT and or CFT. Surveillance for Caprine brucellosis is passive and general.

In the year, 11 diptanks were tested for Brucellosis. The Manzini and Lubombo regions had the most submission (5 diptanks each) and Hhohoo had 1 diptank submitting. There were no submissions from Shiselweni region. A total of 109 samples were tested by the Central Veterinary Laboratory for Bovine brucellosis and 36 found positive on RBT.

SALMONELLA

A total of 639 samples collected by the Food Hygiene Laboratory were tested for Salmonella at the Food Hygiene Laboratory and Deltamune Laboratory in South Africa. 399 were from SG1 abattoir and derived from cattle and 239 were derived from chickens collected from various abattoirs around the country. A total of 62 were collected from SG2 abattoir as part of surveillance in fulfillment of their export obligations and the remaining 177 were collected as part of the Antimicrobial Resistant surveillance. All samples were compliant with minimum specification set by the Commission Regulation 2073/2005. Salmonella serovars *Shwarzengrund* and *idikan* were isolated from samples from SG1.

DOURINE

Dourine is a parasitic venereal disease of equines caused by the flagellate protozoan *Trypanosoma equiperdum*.

Surveillance for dourine is through routine serological testing of intact horses as a requisite for export. Blood samples are collected and sent to Onderstepoort Veterinary Institute (OVI) for testing. Table 28 shows the number of horses tested in the years 2016 to 2021. None of the horses were positive for dourine.

Table 28: Table showing the number of horses tested for dourine in the years 2016-2019

Year	Number tested
2016	17
2017	65
2018	45
2019	34
2020	8
2021	1

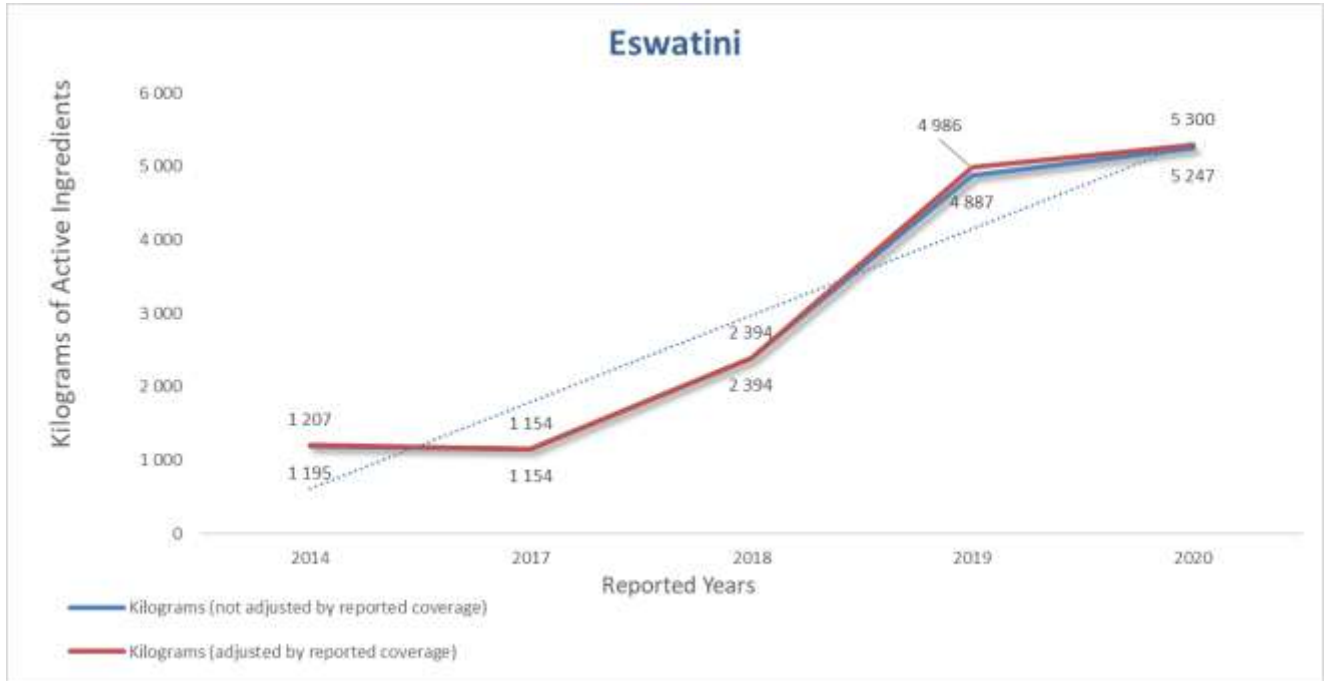
ANTI-MICROBIAL USAGE AND ANTI-MICROBIAL CONSUMPTION

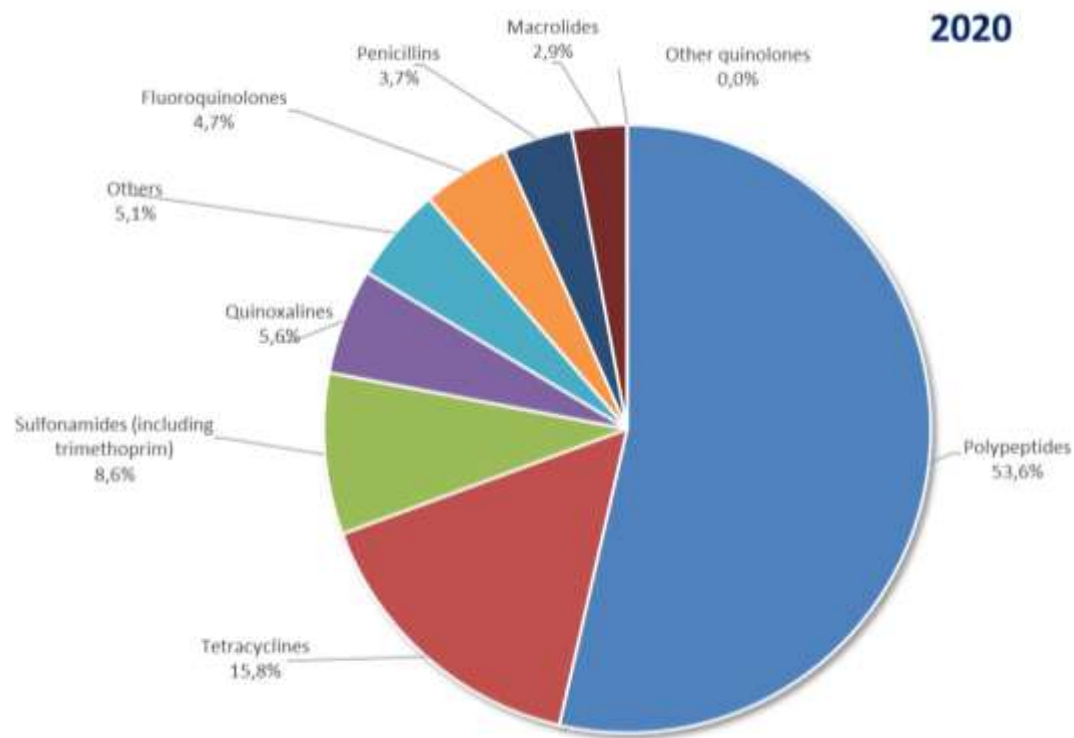
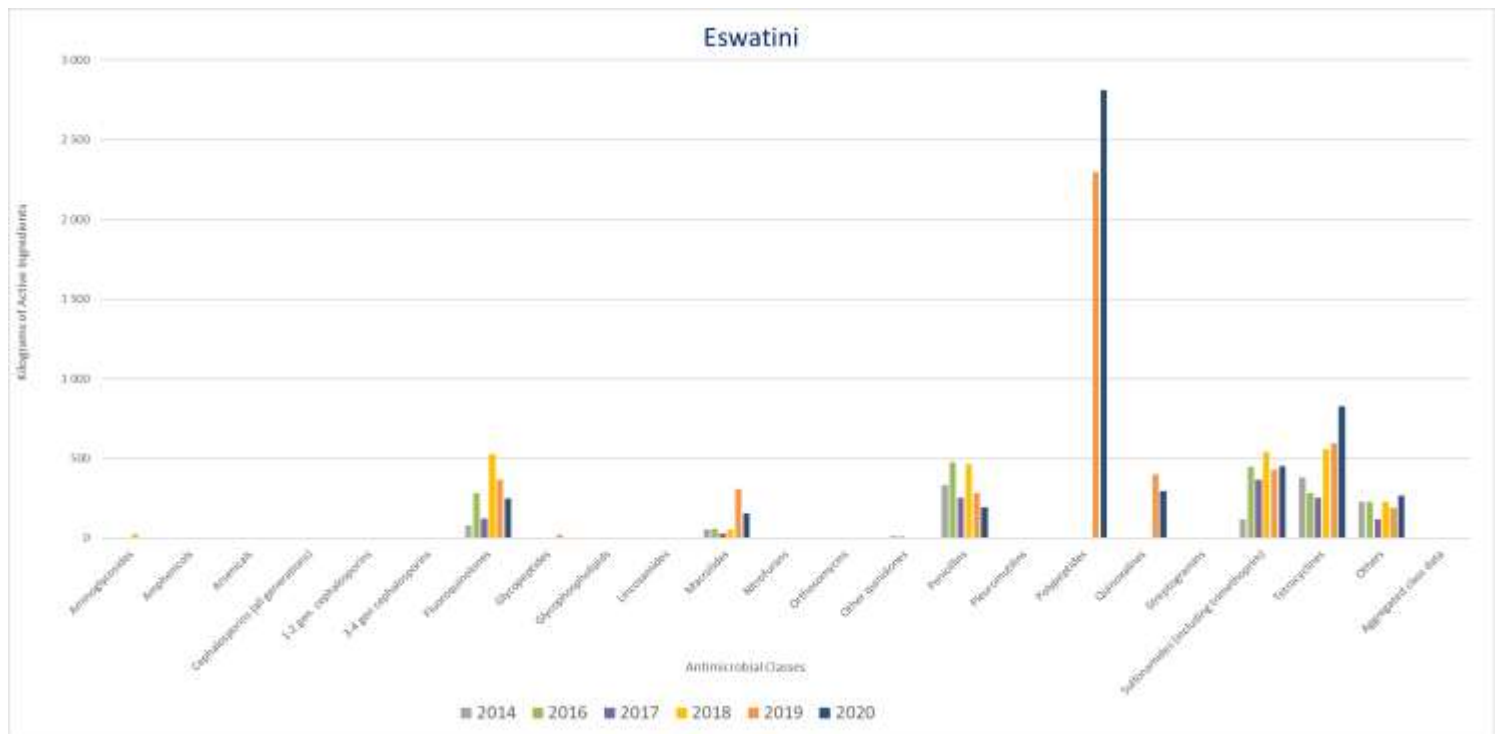
In the framework of the Global Action Plan on Antimicrobial Resistance (AMR), the World Organisation for Animal Health (OIE), supported by FAO and WHO within the tripartite collaboration, is developing a global database on antimicrobial agents intended for use in animals. The database is designed to monitor the type and use of antimicrobial products. Member countries are expected to submit data on antimicrobial usage or consumption to the OIE annually. Data submission can be through 3 options;

1. Report on overall usage per class of antimicrobial
2. Report usage quantities at species level
3. Report usage per species and per route of administration.

The Kingdom of Eswatini has been reporting on antimicrobial consumption using option 1, “overall usage per class of antimicrobial”, since 2014. Import data is collected from legally importing Veterinary Drugs Establishments. Aquatic food-producing animals are not covered in the data collection.

As in the year 2019, polypeptides were the most imported antimicrobials accounting for 53.6% of all imports. These are mostly used in poultry feed. The analysis and graphs presented below are courtesy of the OIE.





ANTI-MICROBIAL RESISTANCE

Introduction

Under the Fleming Fund Project, the National Veterinary Services conducted an active surveillance on antimicrobial resistance (AMR) in bacteria carried by healthy broilers and layers that may contribute to AMR in humans. The surveillance had two components targeting both live animals (broilers and layers) and food of animal origin intended for consumption (broiler carcasses) at the level of processing. The focus was on commercial and semi-commercial production systems.

The Central Veterinary laboratory (CVL) was responsible for surveillance in live animals (broilers and layers) and the Food Hygiene Laboratory (FHL) dealt with food (broiler carcasses). The catchment area for the active AMR surveillance in live poultry was supposed to be the whole country divided into veterinary regions. Unfortunately, an outbreak of Avian Influenza in the Republic of South Africa resulted in a shortage of hatching eggs and day-old-chicks in the country and not enough samples could be tested.

The target bacteria for the surveillance were *Salmonella* and *Campylobacter* because of their zoonotic potential, *E.coli*, and *Enterococci* species as indicator species providing information on the potential reservoir of antimicrobial resistance genes which may be transferred to pathogenic bacteria. The antimicrobial agents used for susceptibility testing were those of public health importance.

Findings

On the whole, the Central Veterinary Laboratory (CVL) was able to get isolates from 53 (cloacal swabs, boot swabs, caeca) samples where, *E.coli* was isolated in 13 samples, *Enterococcus* isolated in 22 samples, *Salmonella* isolated in 10 samples and *Campylobacter* isolated in 8 samples. The Food and Hygiene Laboratory (FHL) was able to get 80 *E.coli*, 104 *Enterococcus*, 49 *Campylobacter* and 46 *Salmonella* isolates. *Enterococcus* was mostly resistant to Quinupristin-dalfopristin, *Campylobacter* mostly resistant to Ciprofloxacin and *E.coli* mostly resistant to Tetracyclines.

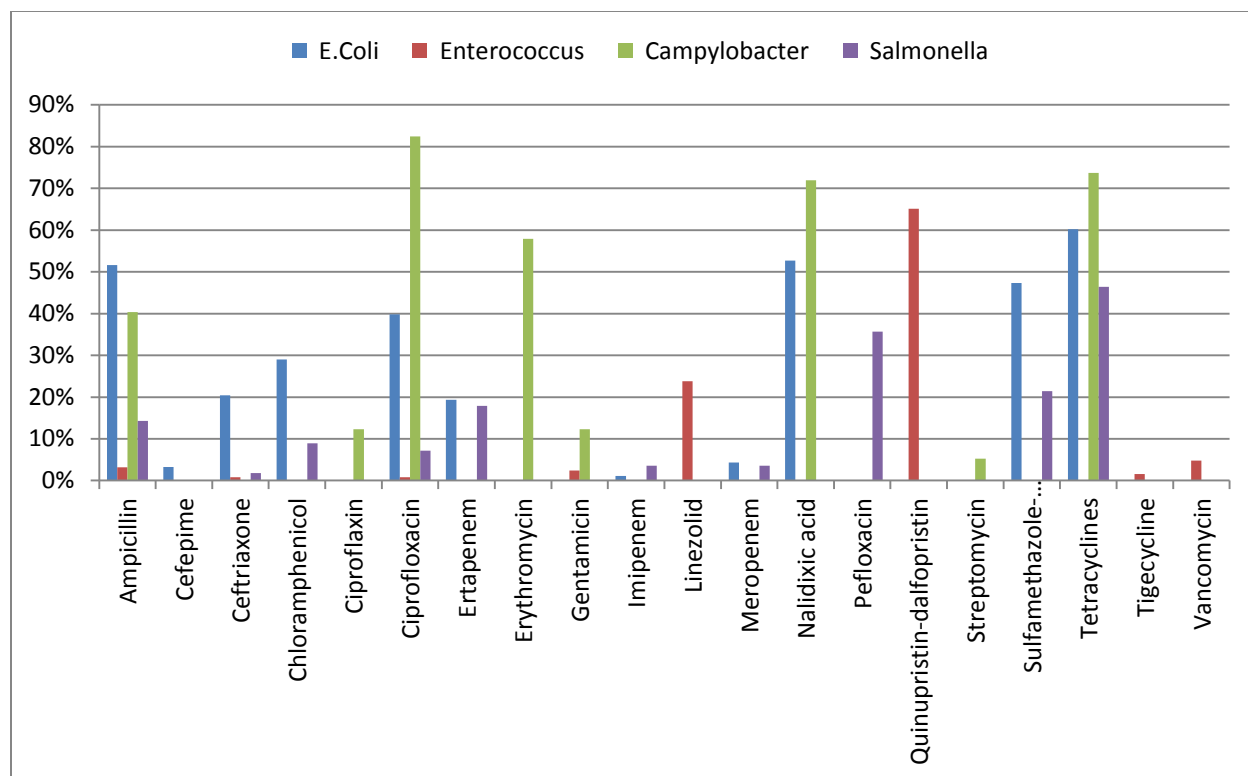


Figure 14: Graph showing % bacterial isolates resistance to various antibiotics

Table 29: Number of samples found to be resistant to various antibiotic from live poultry

Antibiotic	E.Coli (13 samples)	Enterococcus (22 samples)	Campylobacter (8 samples)	Salmonella (10 samples)
Ampicillin	6	1	7	1
Ceftriaxone		1		
Chloramphenicol	1			1
Ciproflaxin			7	
Ciprofloxacin	7	1	5	2
Erythromycin			2	
Gentamicin		1		
Imipenem	1			
Linezolid		6		
Meropenem	2			
Nalidixic acid	4		6	
Pefloxacin				1
Quinupristin-dalfopristin		19		
Sulfamethazole-Trimethoprim	6			1
Tetracyclines	11		8	2
Tigecycline		1		

Table 30: Number of samples found to be resistant to various antibiotics from poultry meat at abattoirs

Antibiotic	E.Coli (80 samples)	Enterococcus (104 samples)	Campylobacter (49 samples)	Salmonella (samples 46)
Ampicillin	42	3	16	7
Cefepime	3			
Ceftriaxone	19			1
Chloramphenicol	26			4
Ciproflaxin				
Ciprofloxacin	30		42	2
Ertapenem	18			10
Erythromycin			31	
Gentamicin		2	7	
Imipenem				2
Linezolid		24		
Meropenem	2			2
Nalidixic acid	45		35	
Pefloxacin				19
Quinupristin-dalfopristin		63		
Streptomycin			3	
Sulfamethazole-Trimethoprim	38			11
Tetracyclines	45		34	24
Tigecycline		1		
Vancomycin		6		

E. coli is a bacterium that frequently exchanges genetic information with other related bacteria. It therefore may exhibit characteristics based on the source of isolation (Agyare *et al*). A study carried out in the Netherlands showed that there is a high level of multidrug resistance of *E.coli* occurring in broilers (Agyare *et al*).

In the NVS survey, out of the 93 isolates, 56% were resistant to tetracyclines, 49% resistant to Nalidixic acid, 48% resistant to ampicillin, 44% resistant to Sulfamethazole-Trimethoprim and 37% resistant to ciprofloxacin.

Sixty five percent (65%) of the 126 *Enterococcus* isolates taken from live chickens and poultry meat were resistant to Quinupristin-dalfopristin. Of the 22 isolates from cloacal swabs, caeca and boot swabs, 86% were resistant and of the 104 isolated from meat, 61% were resistant. According to literature, resistance to this drug is linked to the use of an analogue drug, virginiamycin, in poultry production. In the United States virginiamycin is used to control clostridial diseases and for growth promotion (Hayes *et al*).

Twenty four percent (24%) of the *Enterococcus* isolates were resistant to linezolid. Although Linezolid is not used in food-producing animals, resistance in animals has been reported in the United States, Europe and Asia (Sunghyun Yoon *et al*). The exact mechanism of resistance has not been identified.

Resistance of *C. jejuni* and *C. coli* isolates to Fluoroquinolones, Tetracycline, and Erythromycin has been reported (Agyare et al). A study carried out in Kenya isolated *C. jejuni* and *C. coli* from feces and cloacal swabs of chicken. These isolates showed a high rate of resistance to nalidixic acid, tetracycline and ciprofloxacin of 77.4, 71.0 and 71.0%, respectively.

In the NVS survey, 82% of the 57 *Campylobacter* isolates taken from live chickens and poultry meat were resistant to ciprofloxacin. Seventy four (74%) were resistant to Tetracyclines, 72% resistant to Nalidixic acid, 58% resistant to Erythromycin and 40% resistant to Ampicillin. In veterinary medicines, ciprofloxacin is normally used for the treatment of respiratory, gastrointestinal and urinary tract infections.

Salmonella species are one of the commonest microbial contaminants in the poultry industry (Agyare et al). Forty six percent (46%) of *Salmonella* isolates taken from both live chickens and poultry meat were resistant to Tetracyclines, 36% were resistant to pefloxacin and 21% were resistant to Sulfamethazole-Trimethoprim. According to the country's 2019 Antimicrobial Consumption Report, Tetracyclines (12%) were the second most consumed antimicrobial followed by sulphonimides including trimethoprim (9%), fluoroquinolones (8%) and quinoxalines (8%).

RESPONSE TO THREATS

Illegal importation of cattle into Ndzaweni (388) and Majembeni (216) Diptanks

On the 11th November it was reported that 12 herds of Swazi cattle had been illegally moved into Ndzaweni (388) dip tank area, in Shewula, after being recovered in Changanalane area of Namaacha District in Mozambique. Working together with the Royal Eswatini Police Service, the cattle were transported to Maphiveni Quarantine Station on the 12th November 2020.

Ndzaweni dip tank area and its contact dip tank areas namely Majembeni (214) and Nduma (206) were placed under quarantine and movement restrictions. This was followed by surveillance activities which included mousing and inspection of cattle and small stock. Results of surveillance activities are as shown in the table below.

Table 31: Inspection results for the illegal importation at Ndzaweni (388) and Majembeni (216) diptanks

Date	Activity	Diptank Name	Cattle			Shoats			
			On Register	# inspected	% inspected	Activity	On Register	# inspected	% inspected
11/30/20	Inspection	Ndzaweni	805	739	92%	Inspection	1148	1097	96%
12/1/20	Inspection	Majembeni	658	557	85%	Inspection	1273	1234	97%
12/2/20	Inspection	Nduma	709	645	91%	Inspection	1608	1497	93%

12/14/20	Mouthing	Ndzaweni	808	698	86%	Inspection	1149	1088	95%
12/15/20	Mouthing	Majembeni	649	548	84%	Inspection	1325	1281	97%
12/16/20	Mouthing	Nduma	719	664	92%	Inspection	1607	1562	97%
1/11/21	Inspection	Ndzaweni	794	694	87%	Inspection	1129	1004	89%
1/19/21	Inspection	Majembeni	625	527	84%	Inspection	1310	1272	97%
1/6/21	Inspection	Nduma	726	676	93%	Inspection	1577	1488	94%
2/8/21	Inspection	Ndzaweni	793	668	84%	Inspection	1042	933	90%
2/16/21	Inspection	Majembeni	615	435	71%	Inspection	1276	1166	91%
2/10/21	Inspection	Nduma	736	615	84%	Inspection	1531	1405	92%

On the 17th December 2020 another herd of 12 cattle were reported to have been also illegally repatriated from Mozambique into Majembeni (214) Dip tank area. They were loaded and taken to Maphiveni Quarantine Station.

All cattle taken to Maphiveni Government Quarantine were inspected, mouthed and serologically tested at Ondesterpoort Veterinary Institute (OVI) in South Africa for FMD. All cattle tested negative on SPC ELISA for detection of antibodies against SAT 1, 2 & 3 FMD serotypes.

Illegal importation of cattle into Mhlumeni (224) Diptank

On the 11th January 2021, the Veterinary Assistant of Mhlumeni Diptank area reported that 3 herds of cattle had been illegally repatriated from Goba area, Mozambique into his dip tank area. Goba is about 10 km from Mhlumeni Border post. The cattle were loaded and transported to Maphiveni Government Quarantine Station on the 12th January 2021. Mhlumeni (224) Diptank area was then placed under quarantine and movement restrictions followed by surveillance through clinical inspections and examinations were done. None of the animals exhibited any clinical signs suspicious of FMD infection. The surveillance results are as shown in the table below.

Table 32: Inspection results for the illegal importation at Mhlumeni (224) diptank

Date	Activity done	Diptank name & number	Cattle			Shoats		
			On register	# inspected	% inspected	On register	# inspected	% inspected
1/14/21	Inspection	Mhlumeni (224)	726	689	95%	624	624	100%
1/21/21	Inspection	Mhlumeni (224)	721	681	94%	615	615	100%
1/28/21	Mouthing	Mhlumeni (224)	723	698	97%			
2/4/21	Inspection	Mhlumeni (224)	719	702	98%	596	594	99.7%

2/11/21	Mouthing	Mhlumeni (224)	719	694	97%			
2/18/21	Inspection	Mhlumeni (224)	719	694	97%	599	583	97%
2/25/21	Inspection	Mhlumeni (224)	718	700	97%			

The returned cattle were sampled and tested for FMD antibodies against SAT 1, 2 & 3 serotypes using the SPC ELISA at Onderstepoort Veterinary Institute and the results came back negative. The quarantine and movement restrictions at Mhlumeni Diptank area was lifted on the 26th February 2021.

Illegal importation of cattle into Mabhoko (139) diptank

Description of the event

On the 27th January 2021, a butchery owner at Stroma (101) diptank was informed that cattle that were ready for slaughter were on sale at Mpolonjeni area under diptank Mabhoko (139). When Mr. Malinga got to Mpolonjeni, he found 28 herd of cattle which did not look like Swazi cattle. They had non –Swazi brands marks and ear tags. Whilst still at Mpolonjeni, officers from the stock theft unit of the Royal Eswatini Police Services arrived and they were in the company of South African Police. They collected the 28 animals to Fyves Dip Tank (TA100) where they got transport to ferry them back to South Africa.

Actions taken

1. Mabhoko dip tank (139) and all in-contact dip tanks, Mhawu (141) dip tank, Fyves (100), and Motshane (90) dip tank were immediately put under quarantine.
2. Mouthing of all cattle that were either salivating and or limping during the dipping sessions until the quarantine period was over.
3. Visual inspection of all cattle brought to the diptank for dipping.
4. Hold meetings with cattle and small stock owners in all dip tanks that were put under quarantine. Farmers were sensitized on FMD with special emphasis on the clinical signs of the disease and how to respond when there is a suspect case of FMD.

The surveillance results are as shown in the table below. None of the animals exhibited any clinical signs suspicious of FMD.

Table 33: Inspection results for the illegal importation at Mabhoko (139) diptank

Date	Dip Tank name	Cattle			Goat			Sheep		
		On Reg	# inspected	% inspected	On Reg.	# inspected	% inspected	On Reg.	# inspected	% inspected
15.2.21	Mabhoko (139) A	982	691	70%	48	40	83%	22	20	91%
16.2.21	Mabhoko (139) B	741	563	76%	69	57	83%	34	30	88%
8.2.21	Fyves (100),	1384	1024	74%	634	326	51%	70	61	87%

11.2.21	Mhawu (TA141),	1348	1098	81%	792	468	59%	253	250	99%
16.2.21	Motshane (TA90)	2113	1976	94%	600	589	98%	47	47	100%

Illegal importation of cattle into Matimatima (699) diptank

Six (6) head of cattle belonging to Matimatima (699) diptank were stolen and moved to the Republic of South Africa (RSA). Four of the animals were found at Ngongweni area in RSA. They were brought back illegally by the owner and were placed in isolation at the owners homestead. They were inspected and mouthed. They had no clinical signs or lesions pathognomic of FMD. Matimatima (699) diptank was placed in quarantine and visual inspections conducted in all cattle in the diptank. No animals limping or salivating animals were observed. The inspection results are as shown in Table 34 below.

Table 34: Inspection results for the quarantined diptanks, Matimatima (699)

Date	Diptank name & Number	On register	Inspected	% Inspected
31/03/2021	Matimatima (699)	819	777	95
14/04/2021	Matimatima (699)	815	757	93
28/04/2021	Matimatima (699)	809	774	96

Illegal importation of cattle into Shumi (23) diptank

History

On the 6th of March 2021, a brown and white Ox was stolen and driven into RSA with the intention of selling it to a butchery. The animal was a stray animal residing in Shumi (23) diptank. A swift search was conducted and the animal was found in the Tonga district of South Africa and illegally repatriated into the country on the 8th of March 2021. The incident was reported to the Veterinary Officer at Piggs Peak on the 12th of March 2021.

Actions taken

Diptank Shumi (23) and its contact dip tanks Nhlanguyavuka (957) and Zinyane (128) were put on quarantine. The farmer responsible for the animal under the supervision of the regional office isolated the ox in one of his fields, until it was moved to Maphiveni Government Quarantine. On the 18th of March 2021, a team consisting of the Veterinary Officer, Animal Health Inspector and Veterinary Assistants visited the dip tank for inspections. A random mouthing exercise was conducted, any limping animals were targeted for inspection, and no FMD suspects observed. A meeting was held with all farmers after dipping, and they were sensitized on the risks and implications of illegally bringing animals from RSA into the country.

During the quarantine period, visual inspections were conducted in the 3 diptanks as shown in Table 35 below. Inspection coverage of more than 90% was achieved. None of the animals exhibited any clinical signs suspicious of FMD.

Table 35: Inspection results for the quarantined diptanks, Shumi

Date	Diptank name & Number	Species	On register	Inspected	% Inspected
18-03-21	Shumi (23)	Cattle	1060	1028	97%
15-04-21	Shumi (23)	Cattle	1070	1041	97%
20-05-21	Shumi (23)	Cattle	1080	1048	97%
18-03-21	Zinyane (128)	Cattle	1055	993	94%
14-04-21	Zinyane (128)	Cattle	1111	1028	93%
20-05-21	Zinyane (128)	Cattle	1117	984	88%
16-03-21	Nhlanguyavuka (957)	Cattle	1293	1258	97%
20-04-21	Nhlanguyavuka (957)	Cattle	1290	1249	97%
18-05-21	Nhlanguyavuka (957)	Cattle	1283	1236	96%

Illegal importation of cattle at Lundzi (426) diptank

On the 6th June 2021, two cattle, a cow and a heifer were illegally imported into Eswatini from the Republic of South Africa. These animals had both their ear tags removed. While the police were searching for the rightful owner of the animals were kept at Lundzi (426) Dip Tank. The owner was found in the neighbouring diptank Mhawu (141). Both animals were then moved to Mhawu (141) dip tank on the 9th June 2021.

Lundzi (426) dip tank and its contact diptanks including Mhawu (141) and it's contact were placed on quarantine for 30 days. Surveillance and awareness activities were conducted in all the diptanks during the quarantine period. The inspection results are as shown in Table 36 below. No animals were seen with clinical signs suspicious of FMD infection.

Table 36: Inspection results for the illegal importation at Lundzi (426) diptank

Dip Tank	Date	Cattle			Goat			Sheep		
		On Reg.	# Inspected	% inspected	On Reg.	# inspected	% inspected	On Reg.	# inspected	% inspected
Lundzi (426)	22.6.21	1190	966	81%	552	449	81%	67	63	94%
Mpuluzi (435)	14.6.21	1368	1250	91%	645	610	95%	93	79	85%
Ntsakane (434)	23.6.21	1348	1126	84%	490	401	82%	100	94	94%
Mhawu (141)	8.07.21	1244	1032	83%	965	704	73%	243	173	71%
Fyves (100)	5.07.21	1300	960	74%	642	319	50%	55	45	82%

During the quarantine period, the following activities were also done:

1. Meetings with farmers to sensitized them about FMD and all the precautionary measures that should be taken to avoid introducing this disease into the country.
2. Replacement of the removed ear tags from the animals.

After 30 days, the quarantine ended for Mhawu (141) and Fyves (100) dip tanks but was extended for Lundzi (426), Ntsakane (434) and Mpuluzi (435) following another illegal importation of cattle into Mpuluzi (435) on the 24th June 2021.

Illegal importation of cattle at Mpuluzi (435) diptank

Two animals, a black inkone cow and a yellow heifer calf were illegally brought into Eswatini by their owner from the Republic of South Africa (RSA). The animals belonged to Mpuluzi (435) diptank. The animals were part of a bride price that was paid in RSA and were repossessed by the father of the groom following separation of the bride and groom.

On receiving the news of the illegal importation, the National Veterinary Services placed Mpuluzi (435) diptank and its contact dip tanks under quarantine. Surveillance and awareness activities were conducted in all the diptanks during the quarantine period. The inspection results are as shown in Table 37 below. No animals were seen with clinical signs suspicious of FMD infection.

Table 37: Inspection results for the illegal importation at Mpuluzi (435) diptank

Dip Tank	Date	Cattle			Goat			Sheep		
		On Reg	# inspected	% inspected	On Reg.	# inspected	% inspected	On Reg.	# inspected	% inspected
Lundzi (426)	20.7.21	1158	994	86%	470	407	87%	61	61	100%
Mpuluzi (435)	12.7.21	1363	1241	91%	573	542	95%	82	67	82%
Ntsakane (434)	21.7.21	1323	1052	80%	462	442	96%	102	101	99%

The illegally imported animals were removed from Mpuluzi to Maphiveni Quarantine Station and the owner charged with illegal importation of stock.

Illegal importation of cattle at Khwapheni (15) diptank

On the 4th June 2021, two cattle, a grey Nguni cow with a red and white heifer were illegally imported from RSA to Eswatini after being identified as Swazi animals because of the holes in their ears. Since the owner was not known, the animals were kept at Lundzi (426) dip tank. When the owner was eventually found after a week, they were found to have disappeared from where they were kept and were thought to have strayed into the Montigny forest. After searching the forests, the animals were found on the 24th June 2021. They were then taken to Khwapheni (15) Dip Tank kraal.

Quarantine

Lundzi (426) dip tank and its contact diptanks were placed on quarantine for 30 days. Surveillance and awareness activities were conducted in the diptanks during the quarantine period. The inspection results are as shown in Table 36 above. No animals were seen with clinical signs suspicious of FMD infection.

Khwapheni (15) dip tank together with all the dip tanks through which the cattle had passed were also placed on quarantine. Surveillance and awareness activities were conducted in the diptanks during the quarantine period. The inspection results are as shown in Table 38 below. No animals were seen with clinical signs suspicious of FMD infection.

Table 38: Inspection results for the illegal importation at Khwapheni (15) diptank

Dip Tank	Date	Cattle			Goat			Sheep		
		On Reg	# inspected	% inspected	On Reg.	# inspected	% inspected	On Reg.	# inspected	% inspected
Khwapheni(15)	20.7.21	486	354	73%	264	210	80%	18	18	100%
Maboteni (172)	26.7.21	576	477	83%	444	401	90%	53	53	100%
Siphocosini (110)	2.7.21	740	587	79%	867	731	84%	52	52	100%
Kirkhill (431)	16.7.21	48	48	100%	86	86	100%	43	43	100%

During the quarantine period, the following activities were also done:

1. Replacement of the lost ear tags.
2. Meetings in all the affected dip tanks where farmers were sensitized about FMD and all the precautionary measures that should be taken to avoid introducing this disease into the country

Illegal importation of cattle into Mawasha (3) Diptank

History

On the 1st of June 2021, a case of a cow was reported to the Veterinary Officer by the Veterinary Assistant in charge of Mawasha (3) dip tank. The animal was driven into South Africa by unknown people along the Matsamo cordon line towards Lufafa direction. In this section there are mountains acting as a natural barrier between the two countries. The cow was found about 10km into the South African side, and was illegally repatriated back into the country by the owner straight into his kraal at Mawasha (3) dip tank.

Actions taken

Mawasha (3) dip tank and its contact Engweni (871) diptank were placed on quarantine and the animal in question was transported to Maphiveni Government Quarantine. Inspection and mousing activities of cattle were then conducted in both diptanks. Animals were randomly selected and checked for FMD lesions in the mouth, interdigital space and teats for cows. No FMD suspects were picked and the inspection results are as indicated in the table below:

Table 39: Inspection results of cattle for the illegal importation at Mawasha (3) diptank

Date	Diptank name & #	On register	Dipped	% inspected
07-06-21	Mawasha (3)	714	619	87%

17-06-21	Engweni (871)	998	874	88%
21-06-21	Mawasha (3)	715	632	88%
24-06-21	Engweni (871)	1005	925	92%

Illegal importation of goats into Phophonyane (329) diptank

On the 5th October 2021 the Animal Health Inspector of Sithobela reported that a goat had been illegally imported from the Republic of South Africa (RSA) into Phophonyane (329) dip tank area. The goat was an adult male boer goat whose ear tag number was identified as JM 24 and reportedly sourced from Delmas, Gauteng Province. The goat was reportedly brought into the Kingdom of Eswatini on the 1st October 2021 through some informal crossing point without any import permits or health certificates accompanying it.

The Boer goat was taken to Maphiveni Quarantine Station on the 6th October 2021 and Phophonyane (329) dip tank including its contacts namely; Khundusane (226) and Mgudeni (332) diptanks were immediately placed under quarantine and movement restrictions. The farmer was prosecuted for illegal importation and paid E200.00 admission of guilt at Royal Eswatini Police Service, Siphofaneni.

The Boer goat was euthanized on the 19th October 2021 by lethal injection and disposed through burning at Maphiveni Quarantine Station as per the Destruction Order 2/2021.

Inspections were conducted at the dip tanks under quarantine and no suspected cases of transboundary diseases especially FMD or PPR were found in cattle and small stock.

Table 40: Surveillance activities following illegal importation of a Boer goat in Sithobela, October 2021

CATTLE						
Date	Activity	Diptank Name	T/A No:	On Register	Inspected	% Inspected
10/19/2021	Inspection	Khundusane	226	312	309	99%
11/2/2021	Inspection	Khundusane	226	317	315	99%
10/20/2021	Inspection	Phophonyane	329	905	857	95%
11/3/2021	Inspection	Phophonyane	329	902	852	94%
10/21/2021	Inspection	Mgudeni	332	339	333	98%
10/4/2021	Inspection	Mgudeni	332	342	332	97%

Sheep and goats						
Date	Activity	Diptank Name	T/A No:	On Register	Inspected	% inspection
10/19/2021	Inspection	Khundusane	226	682	670	98%
11/2/2021	Inspection	Khundusane	226	682	670	98%
10/20/2021	Inspection	Phophonyane	329	1907	1893	99%
11/3/2021	Inspection	Phophonyane	329	1907	1895	99%

10/21/2021	Inspection	Mgudeni	332	209	206	99%
10/4/2021	Inspection	Mgudeni	332	209	202	97%

MAINTENANCE OF SANITARY CORDON FENCES

Overall, the Sanitary Cordon Fences were not in good condition and were in need for repairs. Repairs could not be done due to the shortage of working material.

In the Hhohho regions five cordon camps; Mboma, Etsheni, Shumi, Zintatjana and Mananga were damaged due to Cyclone Eloise.

In the Lubombo region, cordon fences from Lomahasha to Usuthu areas needed repairs since there were in a bad state and cordon houses needed quick attention. The fences could not be attended to due to the shortages of working materials and the pausing of procurement processes in the first quarter of the Government year. Infrastructure such as roads to the camping houses needed attention and some camps were without water. There was also a shortage of staff.

In the Shiselweni region, the Cordon line was not in good state in some areas because of cross border smuggling into and out of Eswatini. Although repairs were done in some areas, a thorough overhaul is very important in this concern though procurement of working tools such as barbed and thin wires. The cordonline was very much troubled by livestock rustling where animals (cattle and goats) were stolen and driven into the Republic of South Africa (RSA) for sale. Three cattle and four goats were illegally brought into Eswatini from RSA without import permits. They were conveyed to Maphiveni Quarantine Station for monitoring of any obvious disease clinical signs or incubating disease. Cordon guards were sensitised to be vigilant to cross border rustling of livestock and prevent incursions so as to prevent the introduction of FMD in Eswatini since the disease was prevalent in the KwaZulu Natal Province. Other items smuggled into the country included Day old Chicks (9 cases), 106.1 kg red meat, offal and saw dust from the Republic of South Africa. The 9 cases of chicks came in batches of 400 and 500 one day chicks and were seized by the Ubutfo Eswatini Defence Force (UEDF). Other items brought illegally into the country were a motorbike and a truck smuggled from the Republic of South Africa.

TICK CONTROL

High tick load causes severe production losses in livestock and reduce disease resistance. Ticks are also carriers of a number of tick-borne diseases. In Eswatini, ticks are controlled through dipping. An acaricide is applied during strategic times of the year in order to control seasonal peaks in tick abundance. It is aimed mainly at adult ticks to decrease numbers to levels at which economic damage is less than the cost. The acaricide used is amitraz®, which is a non-systemic acaricide, insecticide and scabicide. The inspection of the animals during dipping is also used as an invaluable management and surveillance tool

A total of 845 diptank structures were in use in the year as shown Table 41. This was an increase of 11 diptanks from the total of 2020. Sixty six percent (66%) of the diptanks serviced communal areas and 19% were spray races.

Table 41: Total number of diptanks as at December 2021 (SLITS v1.0)

Row Labels	Hhohho	Lubombo	Manzini	Shiselweni	Grand Total
SNL	147	115	147	146	555
Plunge	147	115	145	146	553
Spray Race			2		2
TDL	25	95	107	63	290
No Dip			*1		1
Plunge	10	50	49	22	131
Spray Race	15	45	57	41	158
Grand Total	172	210	254	209	845

*Export abattoir

Cattle

Dipping progressed smoothly throughout the year with a regular supply of dipping acaracide to all public dipping tanks in the four regions. The presentation at dipping tanks remained at a reasonable level through 2021 in terms of operational animal intelligence and control. As in the year 2020, an attendance of at least 91 % was achieved for all regions except in the Hhohho region. Nine diptanks were placed under quarantine for “unsatisfactory dipping”. Unsatisfactory dipping can mean issues with diptank structure or un-cooperativeness of livestock owners.

A total of 172 cases were prosecuted for issues related to dipping. As in the year past three years, a majority of the cases were in the Lubombo region.

Table 42: Table showing cumulative totals of number of cattle on register and number dipped in 2021

Region	Cumulative totals for 12 months		Year 2021	% dipping coverage				
	Sum of Cattle on Register	Sum of Cattle Dipped		Year 2020	Year 2019	Year 2018	Year 2017	Year 2016
Hhohho	1709574	1484735	87%	87%	89%	89%	89%	90%
Lubombo	1710433	1603974	94%	94%	92%	93%	89%	85%
Manzini	2199230	1991950	91%	91%	92%	92%	92%	92%
Shiselweni	1668048	1547860	93%	94%	95%	95%	93%	91%
Grand Total	7287285	6628519	91%	91%	92%	92%	91%	90%

Sheep & goats

Sheep and goats are required by law to be presented at the diptanks weekly or monthly for dipping or inspection. This program serves both as a vector control program (ticks & mites) as well as a surveillance program. Other activities which include primary health care (vaccination, deworming etc) and movement controls are conducted during this period. In the year, an inspection percentage of 89% and

93% were achieved for the goats and sheep respectively. The inspection percentages were similar to those achieved in the past three years.

Table 43: Table showing cumulative totals of number of sheep & goats on register and number inspected/dipped in 2021

Region	Cumulative total for 12 months					
	GOATS			SHEEP		
	Sum Registered	Sum Inspected	% inspection	Sum Registered	Sum Inspected	% inspection
Hhohho	1206600	1038218	86%	62858	58713	93%
Lubombo	2083189	1858367	89%	39902	38303	96%
Manzini	1673558	1495984	89%	61679	55852	91%
Shiselweni	1570084	1424999	91%	61830	56722	92%
Grand Total	6533431	5817568	89%	226269	209590	93%

FIELD INSPECTIONS

Diptanks

To ensure that the dipping program runs smoothly and efficiently, Animal Health Inspectors (AHI) are required to inspect all diptanks regularly. Each AHI has to inspect at least 8 diptanks in a month but due to transport shortages the expected inspection has been reduced to at least 4 diptanks per month. Lubombo had the highest number of inspections in all the years as seen in Figure 15 below.

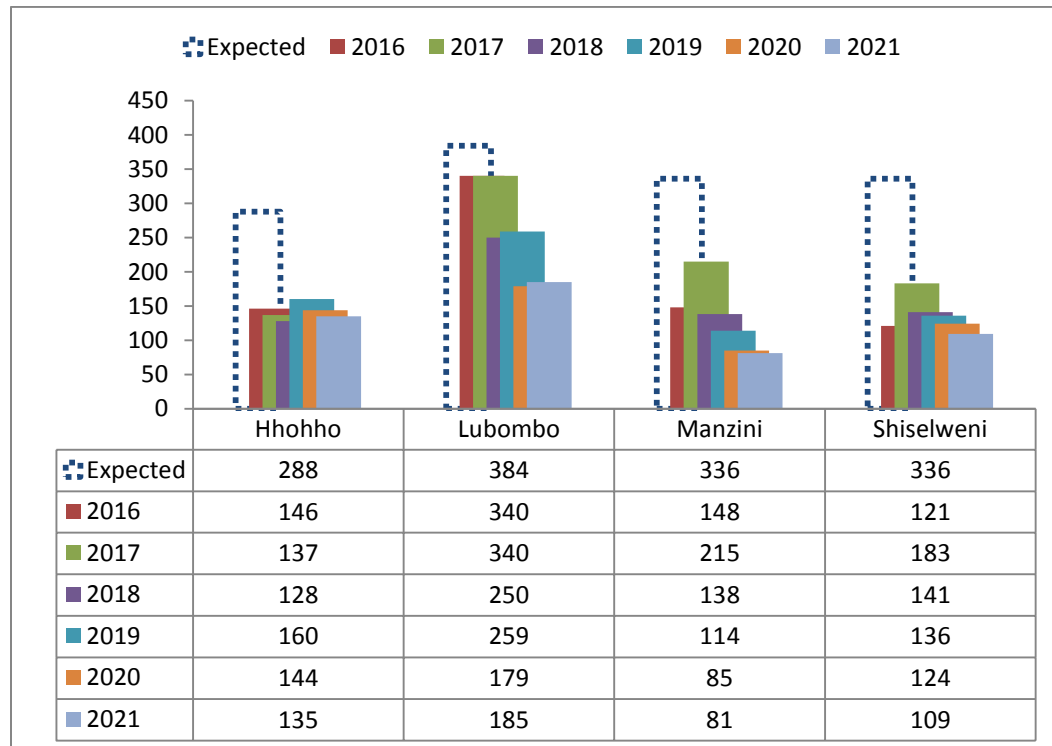


Figure 15: Total number of diptanks inspected (actual) Vs the number of diptanks expected to be inspected in the years 2016-2021 per region

Dairy Holdings

Small Scale Dairy Holdings are registered with the Department of Veterinary Services and the animals are exempted from being presented at the nearest diptank. They are however inspected regularly by the Veterinary Assistant (VA) in charge of that diptank area and by the Animal Health Inspector (AHI) when the diptank area is being inspected. The inspection by AHI covers records, animal welfare issues, drug use and storage, feed quality & types of ingredients used and animal identification and traceability.

As at December 2021, 633 Small Scale Dairy Holdings were registered in the country. Similarly to the past 3 years, a majority of the holdings were in the Hhohho and Manzini regions, with Manzini having more animals than Hhohho. Overall inspection coverage of 44% was achieved in the year, with Shiselweni having the highest inspection percentage and Manzini the lowest.

Table 44: Table showing the # of registered small scale dairy owners, # of dairy animals, and % of dairy herds inspected in 2020

Region	Owners registered	Animals registered	% inspection
Hhohho	244	811	40%
Lubombo	89	444	31%
Manzini	201	3258	5%
Shiselweni	99	670	100%
Grand Total	633	5183	44%

Small Scale Fattening Units

Small Scale Fattening Units (small scale feedlots) are registered with the Veterinary Services and the animals are exempted from being presented at the nearest diptank. They are however inspected regularly by the Veterinary Assistant (VA) in charge of that diptank area and the Animal Health Inspector when the diptank area is being inspected. The inspection covers records, animal welfare issues, drug use and storage, feed quality & types of ingredients used and animal identification and traceability.

As at December 2021, 260 Small Scale Fattening Units were registered in the country and 25 were operational without registration. A majority of the units were in the Manzini region. Overall inspection coverage of 53% was achieved in the year with Manzini region having the lowest coverage.

Table 45: Table showing the # of small scale fattening units in the country and the % inspection in 2021

Row Labels	# Registered	# Not registered	% Inspection
Hhohho	72	11	69
Lubombo	65	14	41
Manzini	84	0	4
Shiselweni	39	0	98
Grand Total	260	25	53

Veterinary Drugs Establishments

Establishments trading in veterinary drugs and medicinal substances are required by law to be registered and inspected regularly by the Veterinary Services. As at December 2021, 13 Veterinary Drug Establishments were registered and all were in the Hhohho region. Inspection coverage of 44% was achieved by the region in the year. The inspection covered all issues related to compliance with Legislation. One of the inspected Establishments was found to have unregistered veterinary medicines. Lubombo and Shiselweni had no registered establishments but managed to inspect all establishments. In the Shiselweni region, only two of the Establishments were found to have staff that has the requisite veterinary or pharmacy diploma needed for the application for registration.

Table 46: Table showing the # of Veterinary Drugs Establishments and the % inspected in 2021

Row Labels	# Registered	# Not registered	% Inspection
Hhohho	13	0	44
Lubombo	0	5	100
Manzini	0	0	0
Shiselweni	0	10	100

SWAZILAND LIVESTOCK INFORMATION AND TRACEABILITY SYSTEM

Eartags

All eartags used in the SLITS program are sourced from Allflex® Manufacturer through three local suppliers. Orders are placed through the SLITS office in the Veterinary Epidemiology Unit and cost of tags is borne by the cattle owners. All three suppliers; Farm Services, V&H Agrivet and Sibetsamoya Animal Feed were operational throughout the year.

A total of 1 055 Eartag Orders were processed through the three Allflex® Eartag Suppliers and 984 were received by end of year. There was one (1) order for a repeat Replacement Tag.

Table 47 shows the number of replacement tags applied to animals in the years 2017 to 2019. Animals can be replaced with the same lost number (a repeat) or a different number. In 2021, 671 tags were replaced for one reason or another. One of those replacements was through the use of a repeat number.

Table 47: Table showing number of replacement tags applied to cattle in 2017-2021

Year	Total Replacements	Replacement with original Tag
2017	254	48

2018	385	39
2019	317	0
2020	261	0
2021	671	1

Database (SLITS V1.0)

Issues

Various issues regarding the use of the SLITS v1.0 database were reported to the SLITS Office. In the year 2021, a total number of 4 Users requested resetting of their passwords by the SLITS Office. Two were Veterinary Assistants and the other two Animal Health Inspectors. One user was suspended from database for receiving animals that had not move to point of destination. There were 30 requests for the un-completion of Permits. Most of these permits were wrongly endorsed at either origin or destination diptank. Sixty nine (69) requests were made for the overriding of quarantine to allow animals to be moved out of a diptank for slaughter. Twenty six (26) requests were made to override the 14 days lapse before movement requirement. These were calves supposed to move with their dam and were less than 14 days old.

There were 28 requests for reversal of animal's death. Most of the animals were terminated because they were considered "missing" in their diptanks but then resurfaced.

Maintenance

The Department has a Service Level Agreement with Flexpro®, the database developer for the routine maintenance of the database. In 2021, the following database issues were sorted remotely by Flexpro;

1. Register calves using their mothers tag numbers and have them get temporary number.
2. Make "available tags" printable. Under Manage distribution of tags (gui/lit/cTagDistr.r).
3. Capture export permit details (gui/lit/uExpIssue.r) include name of issuing officer when permit is generated. I had to fix data and program to store the issuing officer's key.
4. Provide a function to show the total number of animals that have been killed and resurrected. I add a print program under the "Tagged Animals" function.
5. LIT-3100: Issue Stock Removal Permit (gui\lit\upmtIssue.r). Should automatically refuse to add animal which has not completed 14 days in permit with error message.

Network & Hardware

Issues

The SLITS network is mainly aligned to Government Computer Services (GCS) and SPTC Network Infrastructure which is the path way of the data to and from server. In Decembe2018, a new initiative of Microwave Technology was introduced by GCS and has since been installed in 16 Veterinary Offices, namely; Mbabane, Manzini, Nhlangano, Mankayane, Malandzela, Lobamba, Sitholela, Hluti, Mahlangatsha, Ntfonjeni, McIntyre, Mbulungwane, Tikhuba, Mliba, Lavumisa and Mpisi Training (VFTC). The network together with the server, time and again developed black out issues which were recorded in terms of their frequency in the year. The server was always up and down due to backup loads from logins and the dataline were on and off bringing operations to a standstill.

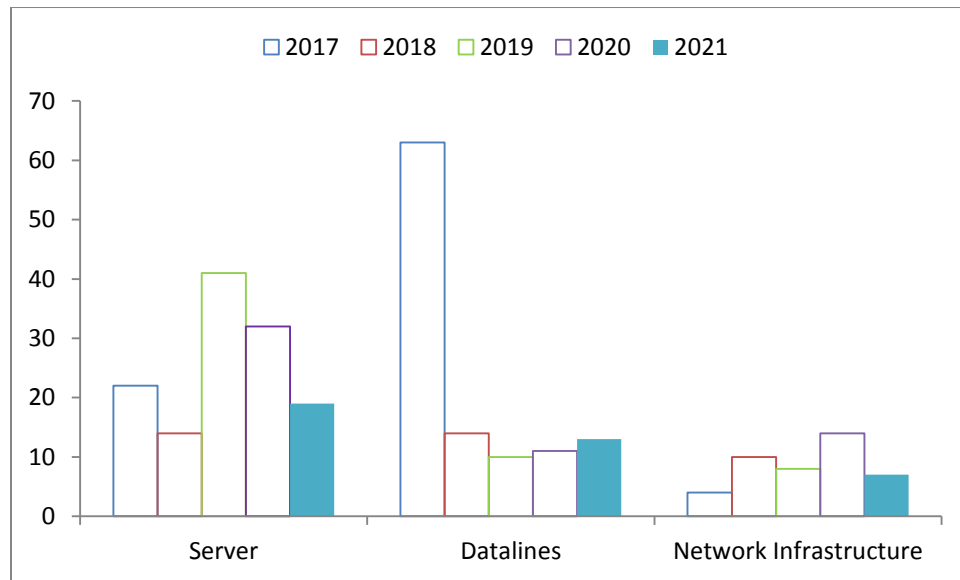


Figure 16: Graph showing frequency of occurrence of network issues in 2017 – 2021

As in the past 2 years, Server issues dominated in 2021 but at a lower frequency than in the past 2 years. The issues observed had to do with the accumulation of backup files and the subsequent unavailability of space in the harddrive. Dataline issues were the same as in the past two. Some of the offices connected to the Microwave technology were still using the SPTC datalines and in some offices datalines were done du to copper theft. Issues related to network Infrastructure decreased when compared to the past two years. Some equipment was replaced by the installation of the microwave technology.

Hardware

There were still issues with printers with the common problem being broken ports from the motherboards and broken fusers. Computer issues attended to in the year included fixing of faulty operating system, faulty USB ports, harddrives, network cards, faulty CMOS batteries and configuring printers.

Networking of offices

Lobamba office

In April 2021 the Lobamba subregional office relocated to a new site; the old Tinkhundla Building, from the Nkhanini offices where it had been operating from. Government Computer Services (GCS) had installed the Microwave network in the building but there was no LAN (local area network). In May 2021 the Lobamba subregion with the help of the SLITS office purchased the cabling material and installed these in the Tinkhundla building where six points were set up.



Luve office

The Luve subregional office, which was initially in an inter-Ministerial Compound was relocated to the Luve RDA and needed to be connected to the SLITS network. Equipment taken from the old Lobamba office (Cabinet and switch) was installed in the new site in July and August 2021 respectively. An application for a dataline was made and approved by SPTC. The data cable was however found to have been stolen towards the RDA and beyond. The network service provider reported that the theft happened during the June 2021 unrest. The office could not be connected to the SLITS network.

LIVESTOCK MOVEMENTS

It is required by law to apply for a Stock Removal Permit before moving animals (except for dogs, cats and poultry). Stock Removal Permits are issued electronically through SLITS v1.0 at Subregional Veterinary Offices and endorsed at Diptanks. Animals are moved from one diptank (permitted out) to another (permitted in).

A total of 70 369 Stock Removal Permits were issued in the year. Seventy five percent (75%) were issued for cattle and the rest for other species (sheep, goats & pigs). Almost all (99.5%) of the cattle permits were issued electronically using SLITS v1.0 and the remaining 0.5% were issued manually and then inputted into SLITS v1.0. Permits for other stock were all issued manually.

As in the previous years, a majority of the permits were issued in the Manzini region followed by the Lubombo region. In all regions, a majority of permits were issued for intra-regional movement.

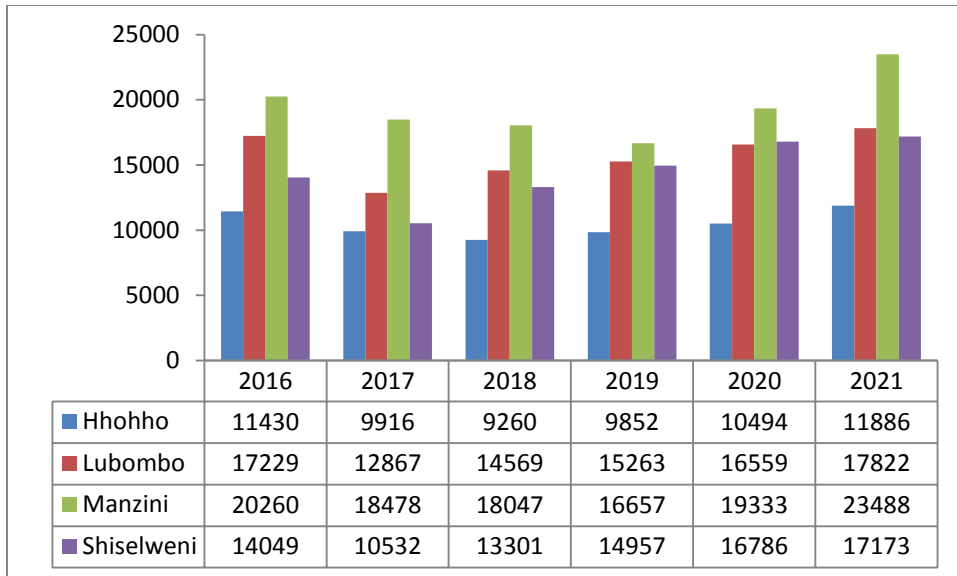


Figure 17: Total number of Stock Removal Permits issued per region in the years 2016-2021

A total of 77 780 cattle were permitted out (PO) of various diptanks around the country and 66 296 permitted in (PI). As in the past four years, a majority of animals were moved out (PO) of diptanks in all regions. Analysis of status of permits issued in SLITS v1.0 indicates that 71% of issued Stock Removal permits were reconciled by end of year as shown Figure 18 in below.

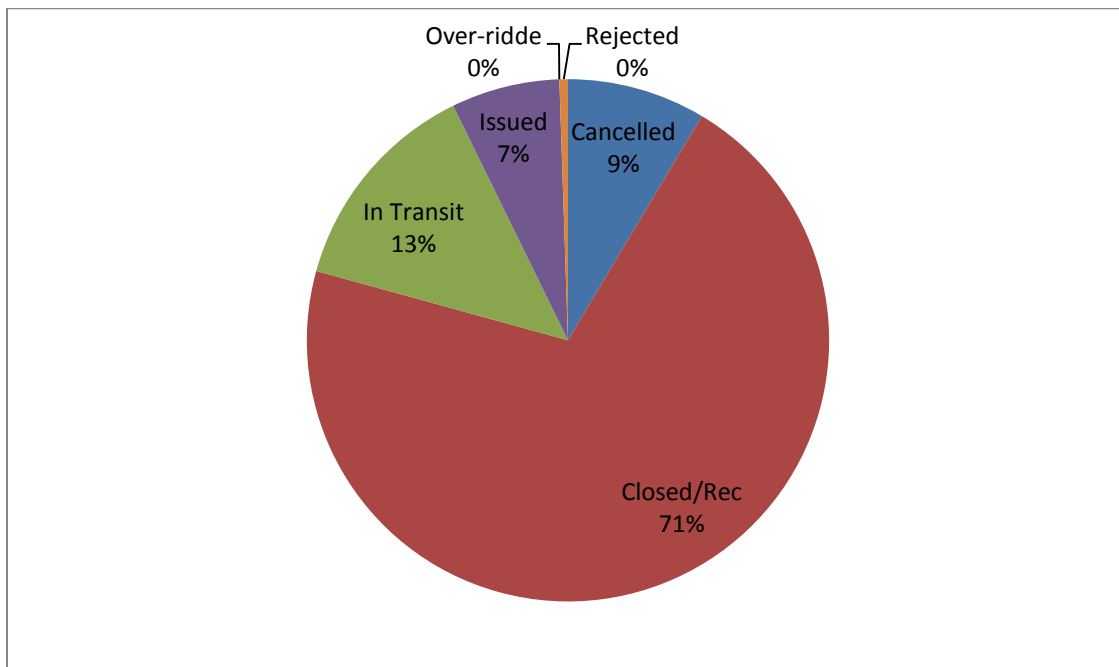


Figure 18: A chart showing the status of Stock Removal Permits issued in 2021

PROSECUTIONS

A total of 287 offences were recorded in the year and 74% convicted with payment of fines amounting to E 40,300.00. As in the past 5 years, failure to present animals for dipping (Reg 11&14) and moving of animals without a Stock Removal Permit (Reg 38) were the two highest offences committed. Dipping offences accounted for 60% of the offences committed in the year. In 2020, they accounted for 57%. About 7 livestock owners were charged for refusing to wear a mask in accordance with the Covid 19 Regulations and 3 were charged for being unruly and disturbing officers when doing they work. Table 48 shows the total number of offences (cases) and total number of cases convicted with payment of fines for each Regulation.

of cases per region

Table 48: Description of each Regulation and fines paid

Regulations	No of cases	No convicted	Sum of Fines (E)
Cooperation	3	3	480
Covid 19 Reg	7	4	230
LIA Reg 21	9	7	2780
LIA Reg 25	3	2	300
LIA Reg 29	1	1	120
LIA Reg 45	2	0	0
Reg 11	172	118	20430
Reg 13	2	2	240
Reg 16	5	5	780
Reg 18	4	2	240
Reg 21	1	1	500
Reg 23	7	7	2100
Reg 38	62	52	10780
Reg 42	5	4	1020
Reg 6(2)	1	1	300
VPH fines	3	3	5500
Grand Total	287	212	45800

Regulations	Hhohho	Lubombo	Manzini	Shiselweni
Cooperation			1	2
Covid				7
LIA Reg 21		5	2	2
LIA Reg 25				3
LIA Reg 29				1
LIA Reg 45			2	
Reg 11	37	90	9	36
Reg 13				2
Reg 16	1	1		3
Reg 18		1	1	2
Reg 21			1	
Reg 23				7
Reg 38	12	23	11	16
Reg 42		5		
Reg 6(2)				1
Grand Total	50	125	27	82

REVENUE COLLECTED

Total revenue generated by the Department of Veterinary Services from various services provided was E 1 413 907.00. The Regional Field Services generated revenue from clinical services, issuance of Import permits, health certifications, fines paid from prosecutions and quarantine services. The Veterinary Public Health Section, generated revenue from issuance of Import permits, health certifications and truck inspections. The Central Veterinary Laboratory generated revenue from issuance of Import permits, quarantine services and the production and distribution of Warts Vaccine. Headquarters generated revenue from issuance of import permits.

Section	Services	Prosecutions	Total
Headquarters	E 10.00		E 10.00
Hhohho	E 95,820.00	E 7,800.00	E 103,620.00
Lubombo	E 36,653.00	E 16,920.00	E 53,573.00
Manzini	E 101,945.00	E 3,540.00	E 105,485.00
Shiselweni	E 24,351.00	E 12,040.00	E 36,391.00
CVL	E 19,478.00		E 19,478.00
VPH	E 1,089,850.00	E 5,500.00	E 1,095,350.00
Total	E 1,368,107.00	E 45,800.00	E 1,413,907.00

	Revenue (E)
*Other services	813 857
Fines	45 800
Truck inspection	541 500
Warts vaccine	12 750
Total	1 413 907

*Clinical work, Imports, Health Certificates, Quarantine

CLINICAL WORK

By procedure

A total of 1 772 cases were attended to by Regional Veterinary Clinics in the year. As in the past three years, Hhohho region had the highest number of cases followed by Manzini region. As in previous years, medical cases were a majority of all clinical work done.

	Hhohho	Lubombo	Manzini	Shiselweni	Total
Medical	651	231	562	105	1549
Surgical	15	33	18	12	78
Obstetrics	1	11	15	0	27
Pregnancy Diagnosis	1	0	0	89	90
Euthanasia	7	1	5	1	14
Post Mortem	0	4	3	7	14
Total	675	280	603	214	1772

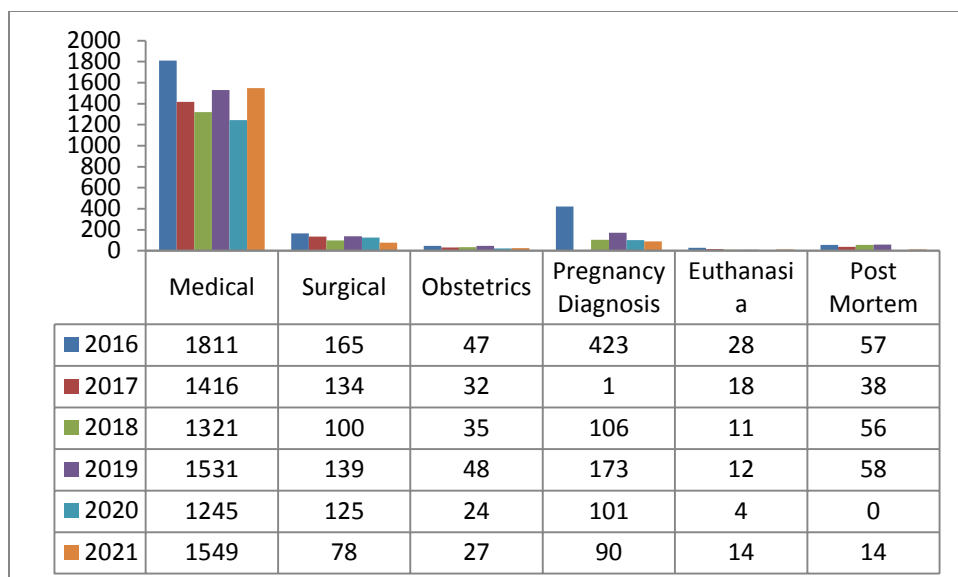


Figure 19: Graph showing number of cases attended to by regional clinics by treatment procedure for the years 2016-2021

By species

As in the past 4 years, the two most attended to species were the dog (84%) and cattle (10%). As in the year 2020, this was in contrast to the Central Laboratory testing where canine samples accounted for only 0.3% of samples analyzed in the year. Most of the bovine cases were seen in the Shiselweni region.

Species	Hhohho	Lubombo	Manzini	Shiselweni	Grand Total
Avian	0	0	13	5	18
Bovine	18	37	27	102	184
Canine	631	235	533	92	1491
Caprine	3	3	5	3	14
Equine	0	0	12	2	14
Feline	20	1	4	3	28
Ovine	0	0	5	0	5
Porcine	2	3	3	7	15

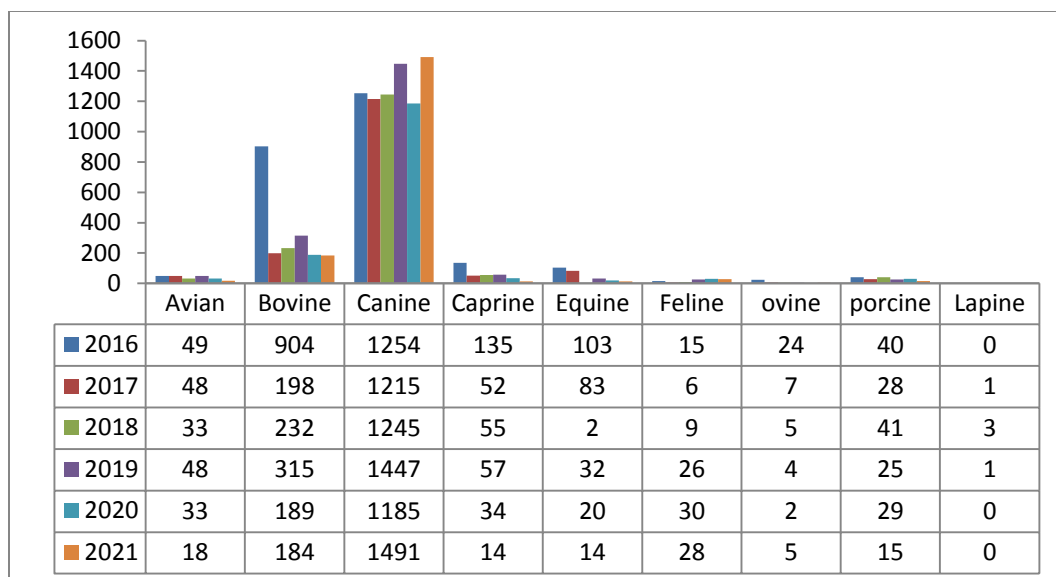


Figure 20: Graph showing number of cases attended to by regional clinics by species for the years 2016 - 2021

QUARANTINE SERVICES

When South Africa lost its FMD free status without vaccination in January 2019, import requirements for cloven hoofed animals and their products from South Africa to Eswatini were completely banned and then reopened with modification in import requirements for live animals. The complete ban of imports was again instituted in November 2019, when another outbreak occurred in the suspended FMD free zone. The ban was subsequently lifted for the importation of “less risky products” which included all processed products and remained in place for high risk commodities like live animals. Importation of high risk commodities including live animals was re-instated later in the year 2020.

In June 2021, following the outbreak of FMD in KwaZulu Natal, high risk commodities including live animals were once again banned from entering or transiting through Eswatini. The ban was adjusted with the changing FMD situation in KwaZulu-Natal province in October 2021 through Directive 7/2021, “*Response to FMD outbreak reported in Mtubatuba, KZN, SA; FMD Risk Management response*”. The ban on importation of cloven hoofed animals and their products was lifted except for those originating from KwaZulu Natal and Limpopo provinces as well as from all the known RSA FMD zones. Import conditions were modified in accordance with the provision of the OIE Terrestrial Animal Health Code, Article 8.8.12. The modifications included; a 30 days pre-export quarantine, all animals in pre-export quarantine to be subjected to a diagnostic virological and serological test for evidence of FMDV with negative results, results to be attached to the Health attestation and the official veterinarian to attest that the animals were born and bred outside KwaZulu Natal and Limpopo provinces and FMD controlled/restricted areas, were not vaccinated against FMD and the farm of origin was not within 30km from an area of FMD outbreak during the last 12 months. Pigs were to be imported only from officially approved compartments which are routinely tested for Foot and Mouth Disease, Porcine Reproductive and Respiratory Syndrome (PRRS), Classical Swine Fever and African swine fever with negative results.

Private quarantines

No private quarantines were approved in the year.

Government quarantines

Table 49 shows that a total of 202 animals were imported into Mpsi Government Quarantine from the Republic of South Africa. Seventy three (73) were cattle, 62 pigs, 61 goats and 6 sheep.

Table 49: Number of animals imported into Government quarantines in 2021

Quarantine	Species	# of animals	Country of origin	Province
Mpsi	Bovine	73	RSA	Mpumalanga & Eastern Cape
Mpsi	Caprine	61	RSA	Northwest & Gauteng
Mpsi	Ovine	6	RSA	Gauteng & Free State
Mpsi	Porcine	62	RSA	Gauteng & Mpumalanga
	Grand Total	202		

A total of 93 animals were quarantine at Maphiveni Government Quarantine in the year after being recovered from neighboring countries as shown in Table 50. Forty seven (47) were recovered from Mozambique and 46 recovered from South Africa. All of them were cattle except one (1) goat which was euthanized on arrival.

Table 50: Animals recovered from neighbouring countries and quarantined at Maphiveni quarantine in the 2021

Date	Species	Permitted In	Remarks
13.01.21	Bovine	3	repatriated from Mozambique belonging to Mhlumeni TA 224
12.02.21	Bovine	5	repatriated from RSA belonging to Ncotshane TA 728
12.02.21	Bovine	6	repatriated from RSA belonging to Ncotshane TA 728
13.01.21	Bovine	3	repatriated from Mozambique belonging to Mhlumeni TA 224
12.02.21	Bovine	5	repatriated from RSA belonging to Mdumela TA 195
12.02.21	Bovine	6	repatriated from RSA belonging to Ncotshane TA 728
16.05.21	Bovine	1	repatriated from RSA belonging to Shumi TA 023

02.06.21	Bovine	1	repatriated from RSA belonging to Engweni TA 871
06.10.21	Bovine	14	repatriated from Mozambique belonging to Mhlabubovu TA 257
06.10.21	Caprine	1	(Goat euthanized through (19.10.21) Animal Destruction order) it was illegally brought in from RSA.
17.11.21	Bovine	25	repatriated from Mozambique belonging to Mhlumeni TA 224.
07.12.21	Bovine	21	repatriated from RSA belonging to Mkhondvo TA 665
10.12.21	Bovine	2	repatriated from Mozambique belonging to Mhlumeni TA 224.

IMPORTS AND EXPORTS

Ports of entry

Table 51 and Table 52 show animals and animal products allowed entry (through designated ports of entry) into the country in the year. Some were allowed entry after queries which were sorted. The queries included absence of original import permit, broken seals and absence of health certificate. There is however a need to improve data capture at the ports of entry to ensure data consistency across all sections.

Table 51: Animals and products allowed entry through designated ports of entry in 2021

	Bags	Bales	Boxes	Bundles	Dozen	Kg	L	Straws	Unit	Grand Total
Animal feed	600					56603				57203
Animal medicine			350							350
Bales of hay		250								250
Beef						1034347.51				1034347.51
Beef body fat						245072.87				245072.87
Beef Offals						137560.67				137560.67
Beef tail						3000				3000
Beef Trimming						2103.68				2103.68
Black Rhino									1	1
Burgers						1000				1000
Casings						1200				1200
Cats									3	3
Cattle									82	82
Cheese						9903				9903
Chicken						1251247.12				1251247.12
Chicken cut						83600				83600
Chicken gizzards						12195				12195

Chicken skins						35280				35280
Chicken viennas						51218				51218
Chicken wings						2000				2000
Crabs						2779				2779
Dairy product						256817				256817
DOC									1201300	1201300
Dogs									14	14
Donkey									1	1
Drum thighs						2000				2000
Eggs					25946	205989				231935
Emasi						412071				412071
Fillet breasts						1000				1000
Fish						214151.5				214151.5
Fish (Live)									171	171
Fish canned						172790				172790
Fish Products						496807.015				496807.015
Goats									102	102
Grass		118580				82			5323	123985
Grass products									71	71
Hake						42868				42868
Ham						1000				1000
Hand craft									151	151
Hatching eggs					44536	978383			13810908	14833827
Hay		1908				500			1572	3980
Horse									1	1
Lamb carcass						164947.38				164947.38
Layers									17760	17760
Lean beef mince						1500				1500
Meat Pies						63429.59				63429.59
Milk						15400	30618			46018
Ox tail						1453.2				1453.2
Pigs									62	62
Polony						111374				111374
Pork Carcass						17958.8				17958.8
Pork chops						1000				1000
Pork Schnitzel						100				100
Prawns						1824.6				1824.6
Processed Chicken						358187.95				358187.95
Processed Meat						1436251.05				1436251.05

Processed Pork						263022.26				263022.26
Russians						1000				1000
Salami						1000				1000
Schnitzel						1000				1000
Semen								350		350
Sheep									21	21
Sheep meat						1303				1303
Steaklets						1000				1000
Thatching grass				21000						21000
Turkey						334062				334062
UHT milk						519695	1000			520695
Whole birds						2000				2000
Woosers						5000				5000
Yoghurt						26256				26256

Table 52: Animals and products allowed entry after queries through designated ports of entry in 2021

Species /product	Kg	Units	L
Processed meat	706		
Veterinary medicines	Unspecified		
DOC		40000	
Canned Fish	2988		
Processed chicken	240		
Canned Fish	29510.88		
Milk (UHT)			94500

The following animals and products were refused entry due to absence of import permits and or health certificates. Most were turned back or disallowed entry. Some were destroyed by fire. Most of the imports were from Mozambique

Table 53: Table showing animals and products not allowed entry due to various reasons in 2021

Row Labels	Dozen	Kg	Units	Grand Total
Antelope			1	1
Beef		23.49		23.49
Crabs		3		3
Fish		485		485
Frozen chicken		4		4
Guinea fowl			13	13
Live chickens			7	7
Minced meat		1.2		1.2

Mixed fowl		15000		15000
Mussels		13.5		13.5
Mutton		30		30
Pork		9.06		9.06
Prawns		882		882
Table eggs	5	3720	144	3869
Turkey Meat		2.906		2.906
Worse		8		8

Imports for immediate slaughter

Importation for Immediate Slaughter was banned after the FMD outbreak in South Africa.

In transit

Table 54 shows animals and animal products that transited through Eswatini from and to neighboring countries. Aquatic products transited the country from Mozambique to the Republic of South Africa.

Table 54: Table showing products transited through Eswatini from neighboring countries

Animals/products	Qty (Kg)	Country of origin	Country of Destination
Clams	50	Mozambique	RSA
Crabs	12775	Mozambique	RSA
Fish	100	Mozambique	RSA

Export Field Services

The Field Services certified for export in the year mostly chickens to Mozambique and Republic of South Africa (RSA). Broiler day old chicks were the most exported, followed by point of lay chickens. Companion animals that were moved between South Africa and Eswatini included dogs, cats and horses. The horses were mainly race horses. Some cats and dogs were exported to Italy and the USA and 6 900 pieces of wet salted hides were exported to RSA.

Table 55: Animals and products certified for export by the Regional Services in 2021

Row Labels	Italy	Mozambique	RSA	USA	Grand Total
Bovine Wet salted hides			6900		6900
Cats	2		29	3	34
Cattle			1		1
DOC		1350800	7000		1357800
Dogs			238	1	239
Environmental samples			48		48
Hatchery Samples			50		50

Horses			52		52
Hygiene samples			95		95
Pigs		14			14
POL		31000			31000
Poultry samples			2 permits		2
Poultry Specimen			23		23

DIAGNOSTIC LABORATORY

Submission

In the year, a total of 5344 samples were submitted to the Central Veterinary Laboratory (CVL) for processing. As in the past 5 years most of the samples were from Lubombo and Manzini regions. Most of the samples submitted were bovine and avian samples. These were mostly submitted for annual serological surveillance for FMD, PPR, CBPP, Trypanosomiasis and Avian Influenza.

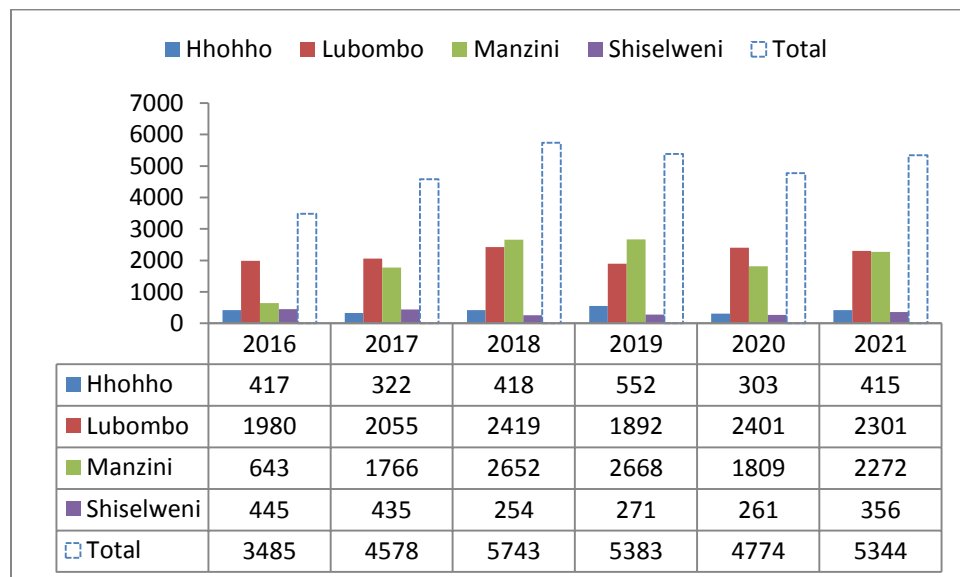


Figure 21: Graph showing total number of specimens submitted to the CVL by region in the years 2016-2021

Analysis

A total of 6150 samples were analyzed using various laboratory tests and or procedures. As in the past 2 years, the most commonly done procedure was separation, packaging & sealing for referral to other laboratories. This was done in 33 % of the samples. The Rose Bengal Test (RBT) for the diagnosis of Brucellosis and the Avian Influenza ELISA for the diagnosis of Avian Influenza were performed in 11% of the samples. FMD NSP ELISA for the diagnosis of FMD was done in 8% of the samples. Buffy coat smears for the examination of trypanosomiasis was done in 6% of the samples. Three percent (3%) of the samples were cultured for bacterial isolation and only 52% tested for antibiotic sensitivity. Entomology involved the identification of ticks.

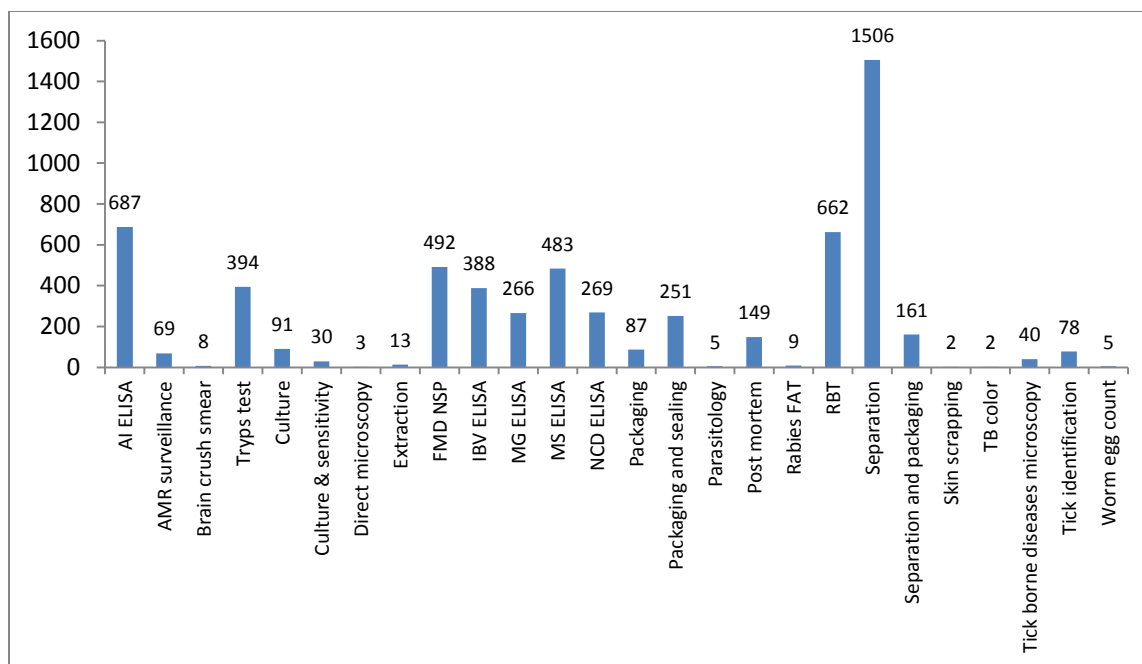


Figure 22: Graph showing total number of samples tested in 2021 and the laboratory Test used

By region

As in the past 2 years, a majority (26%) of samples from the Hhohho region were tested for brucellosis. Nineteen percent (19%) were for separation and referral for FMD and 8% were tested for FMD locally. In Lubombo a majority of the samples (36%) were for separation, packaging and referral for FMD, CBPP and PPR. Twenty four percent (24%) were tested for FMD locally, 21% were screened for Trypanosomiasis and 17% tested for Brucellosis. In Manzini, 28% were for separation, packaging and or sealing and 57% were tested for avian diseases which includes Avian Influenza and New castle Disease. In Shiselweni, 63% of the samples were for separation and referral for FMD and 23% were for brucellosis.

Rabies samples were only tested for the Manzini (56%) and Hhohho regions (44%).

By species

Samples tested in the year were derived from species as shown in Table 56. Bovine and avian samples accounted for the majority of samples tested. Sixty eight percent (68%) of bovine samples came from Lubombo region. As in the past 2 years, all (96%) of avian samples came from Manzini region.

Thirty four percent (34%) of the bovine samples were for separation and packaging for referral to other Labs and 26% were for brucellosis testing. Nineteen percent (19%) were tested for FMD locally and 16% screened for trypanosomiasis. Thirty one percent (31%) of the avian samples were for separation and packaging for referral to other Laboratories and 21% were tested for avian influenza locally.

Table 56: Table showing number of samples tested for each species and region in 2021

Species	Hhohho	Lubombo	Manzini	Shiselweni	Grand Total
Avian	89	14	3124	37	3264

Bovine	215	1733	250	337	2535
Buffalo		16			16
Canine	9		13		22
Caprine	5	119	27		151
Equine	6				6
Feline	5				5
Fish			22		22
Lapine			6		6
Ovine		3	10		13
Porcine	2	5	25		32
Ticks	78				78
Grand Total	409	1890	3477	374	6150

Referrals

Most of the referrals were to the NOSA and Onderstepoort Veterinary Institute (OVI) in the Republic of South Africa. As in the past 2 years, the majority of the samples were avian. The others were from bovine, buffalo, caprine, equine and feline. The bovine samples were mostly referred for CBPP testing and FMD. Some samples were sent to the Forensic Lab in Mbabane to rule out poisoning. Caprine samples were referred for the testing of PPR. Most of the avian samples were for microbiological examination and avian influenza screening. The equine samples were referred for dourine, AHS, and EEV.

Laboratory	Avian	Bovine	Buffalo	Caprine	Equine	Feline	Grand Total
BVI		37					37
Forensic lab-Mbabane		2					2
NOSA	595						595
OVI		78	8	2	11	3	102
Grand Total	595	117	8	2	11	3	736

Culture & Sensitivity

A total of 190 samples were submitted for culturing and bacterial isolation at the Central Veterinary Laboratory and only 52% were tested for antibiotic sensitivity. Samples submitted for culturing and bacterial isolation were derived from chickens (56%), cattle (21%), pigs (8%), fish (6%), goats (5%), Sheep (2%), and dogs (1%) and rabbits (1%). Contact plates (336) and water were collected from poultry houses and sent to referral labs for culture and sensitivity testing. There was also AMR surveillance in broiler and layer chicken under the Fleming Fund Project.

The most cultured organism was E.coli. Other organisms found were Campylobacter, Diplococcus, Enterococcus, Klebsiella, Pseudomonas, Staphylococcus and Streptococcus. Most of the cultured organisms were resistant to Ampicilin as shown in Table 57 below .Sensitivity results for AMR Surveillance are shown under the section AMR Surveillance above.

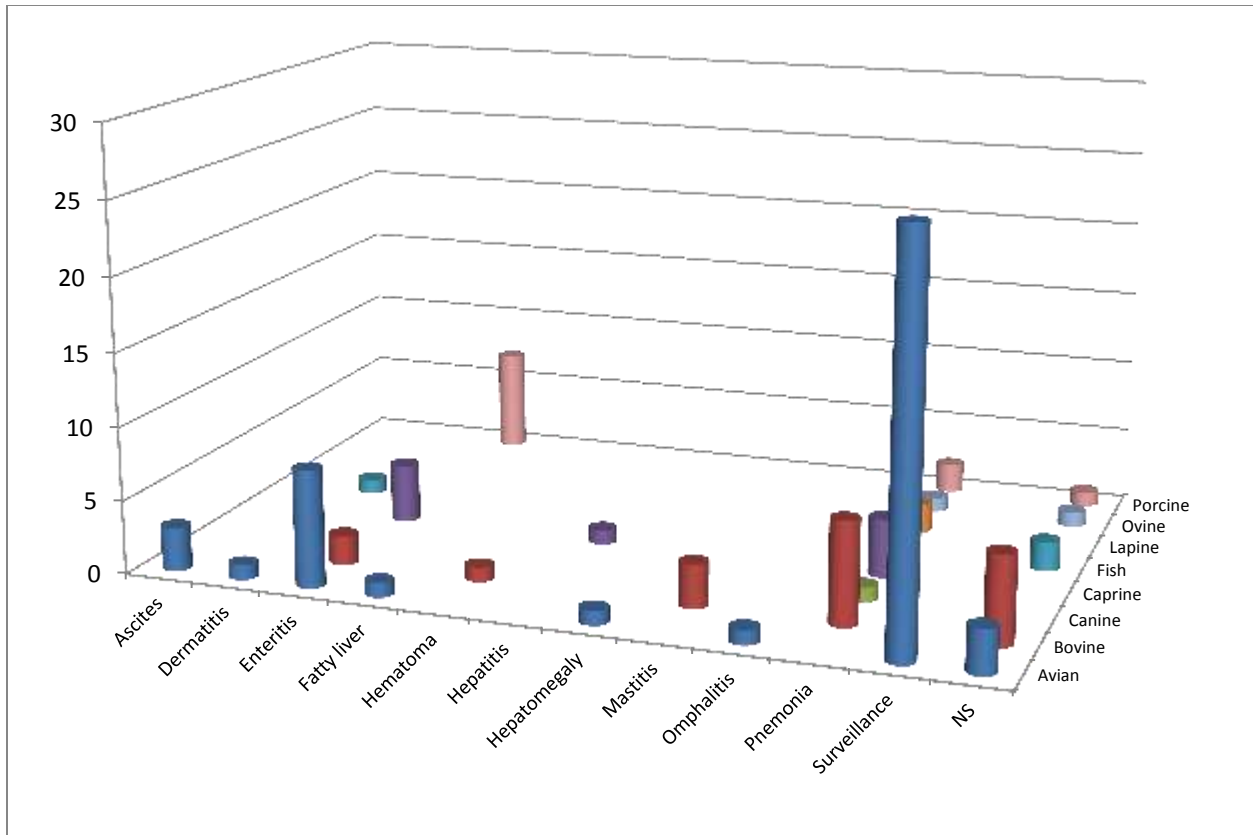


Figure 23: Graph showing # of samples for bacterial culture per species and condition (NS → not stated)

Table 57: Table showing isolates and the antibiotic they were resistant or susceptible to on AST

Species	Bovine	Caprine	Caprine	Caprine	Caprine	Avian	Ovine	Avian	Bovine	Bovine	Bovine	Bovine
Diagnosis	Enteritis	Enteritis	Enteritis	Pneumonia	Pneumonia	Culture	Pneumonia	Enteritis	Culture	Mastitis	Mastitis	Mastitis
Organism	E.Coli	E.Coli	E.Coli & Campylobacter	E.Coli	E.Coli	E.Coli	E.Coli	E.Coli	Enterococcus	Staphylococcus	Staphylococcus	Staphylococcus & Klebsiela
Ciproflaxin	R	S					S	S				
Gentamicin	S	S		S		S		S	S			
Cotrimoxazole	S											
Nalidixic acid	R	S			S		S	S				
Ampicillin		S	S	R			S	R	R			
Cefepime					S	S						
Tigercyclin					S							
Meropenem					S		S					
Sulfamethazol							S					
Linezolid			R						R			
Streptomycin		S								S	S	
Trimethoprim											S	S
Tetracycline											S	S
Quinupristin			R									

Vencomycin			s									
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ANIMAL HEALTH SITUATION

African Horse Sickness

Only one outbreak was reported in the Hhohho region affecting 4 horses. Since 2014 five serotypes of AHS virus have been identified in the country; serotype 2, 3, 4, 5 and 7.

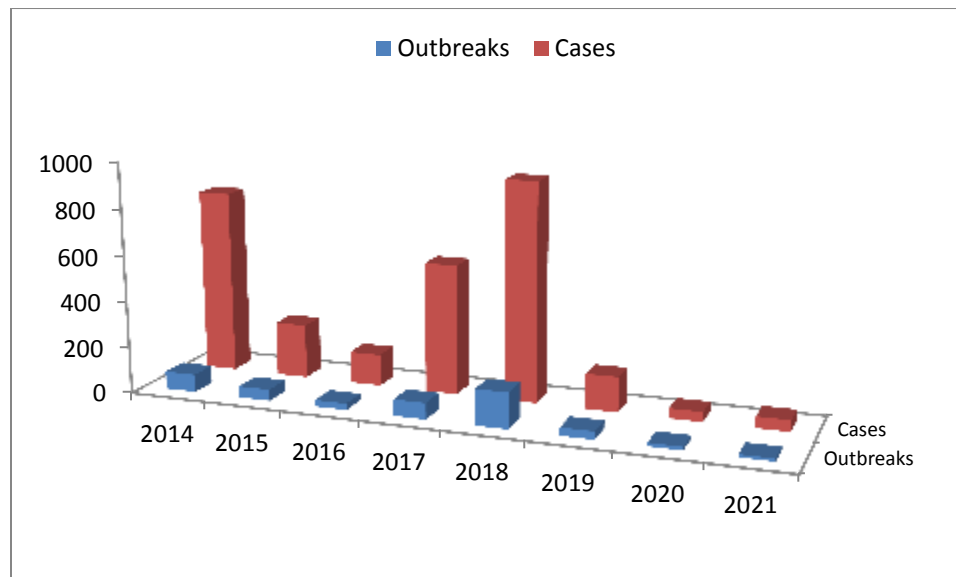
Table 58: Table showing the number of AHS cases observed in 2021

Region	# of diptanks affected	Sum of AtRisk	Sum of Cases	Sum of Deaths
Hhohho	1	34	4	0
Grand Total	1	34	4	0

Control measures instituted during the outbreak included, a forty day quarantine of affected and in-contact diptanks, vaccination of all horses in the affected diptanks with a Polyvalent Live Attenuated Vaccine and suspension of exportation of horses from quarantined areas.

Lumpy Skin Disease

Lumpy Skin Disease is now endemic in the country and occurs throughout the year. As in the past two years, there was a decrease in its occurrence as shown in Figure 24 below. No deaths were recorded. There is still a need to do a laboratory confirmation of the disease as all cases were diagnosed clinically.



of LSD outbreaks, cases & deaths

Year	# of outbreaks	# of cases	# of deaths
2014	77	801	32
2015	49	237	5
2016	28	138	0
2017	71	566	29
2018	156	948	21
2019	35	153	0
2020	15	43	0
2021	12	50	0

Figure 24: Total number of LSD foci of outbreaks & cases for the years 2014-2021

The disease was only reported in the Hhohho and Manzini regions and Hhohho had the highest number of cases. Control measures implemented included, movement restrictions and vaccination. Vaccine costs are borne by farmers; the Department only provides technical support. This normally results in poor vaccination coverage. A total of 36 957 cattle were vaccinated against LSD in the year.

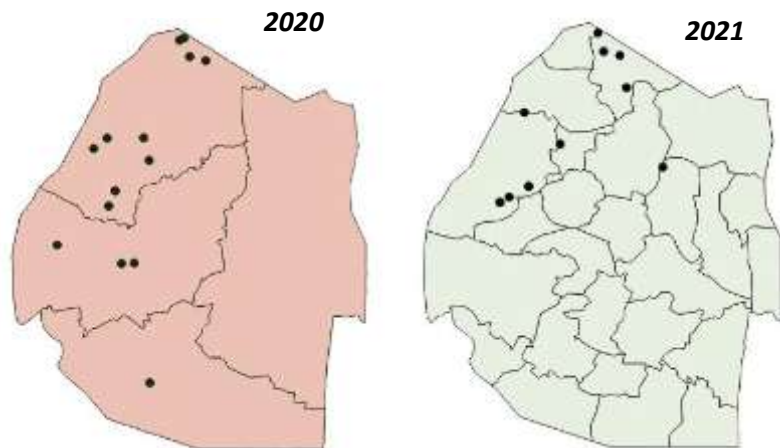


Figure 25: Maps showing foci of LSD outbreaks in 2020-2021

Avian Diseases

Avian diseases reported in 2021 with laboratory confirmation included Avian Infectious Bronchitis (IB), Avian mycoplasmosis, Fowl pox, endoparasites and Newcastle Disease. Most of the IB and NCD cases were diagnosed as part of differentials in the Avian Influenza Surveillance Program.

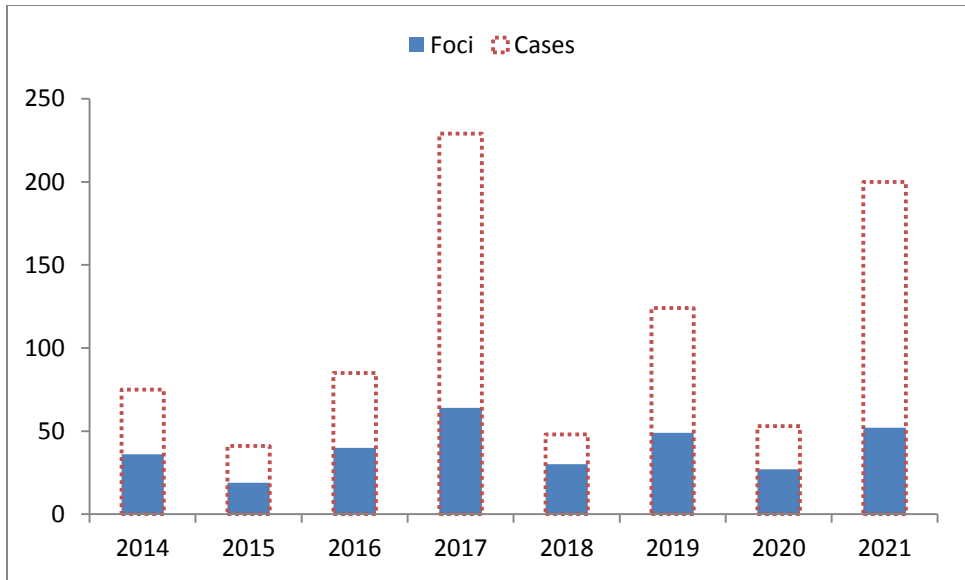
RefDiseaseID	Data	Hhohho	Lubombo	Manzini	Total
Avian infectious bronchitis	Foci of outbreaks	1		6	7
	Sum of Cases	9		278	287
	Sum of Deaths	9		146	155
Avian mycoplasmosis (M. gallisepticum)	Foci of outbreaks	2		1	3
	Sum of Cases	39		4	43
	Sum of Deaths	39		4	43
Fowl pox	Foci of outbreaks		1		1
	Sum of Cases		11		11
	Sum of Deaths		1		1
Newcastle disease Not typed	Foci of outbreaks	2		5	7
	Sum of Cases	39		58	97
	Sum of Deaths	39		56	95

Honey Bee Diseases

There were no reports of diseases or infestation of honey bees in the year. The occurrence of Small Hive Beetle (*Aethina tumida*), Large Hive Beetle, Varroa mite and capensis were last observed in 2018 and continued in 2019.

Blackleg

There was an increase in the number of cases compared to the past 3 years. The outbreaks occurred throughout the year and the majority of the outbreaks were in the Hhohho region. A similar scenario has been experienced for the past 5 years. There is however, a need to do laboratory confirmation of the disease as most of the diagnosis occurs clinically.



Number of diptanks and cattle affected by blackleg			
Year	Foci	Cases	Deaths
2014	36	75	12
2015	19	41	2
2016	40	85	22
2017	64	229	19
2018	30	48	19
2019	49	124	37
2020	27	53	25
2021	52	200	15

Figure 26: Graph showing number of Blackleg outbreaks and cases for the years 2014-2021

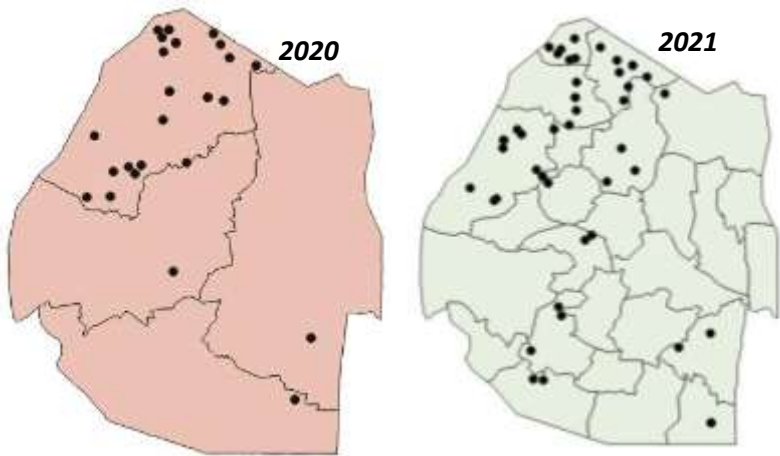


Figure 27: Maps showing foci of outbreaks of Blackleg for the years 2020-2021

Tick Borne Diseases

There was an increase in the occurrence of bovine anaplasmosis compared to 2020. Outbreaks of bovine babesiosis remained almost the same as in the past 3 years and were lower than those of anaplasmosis.

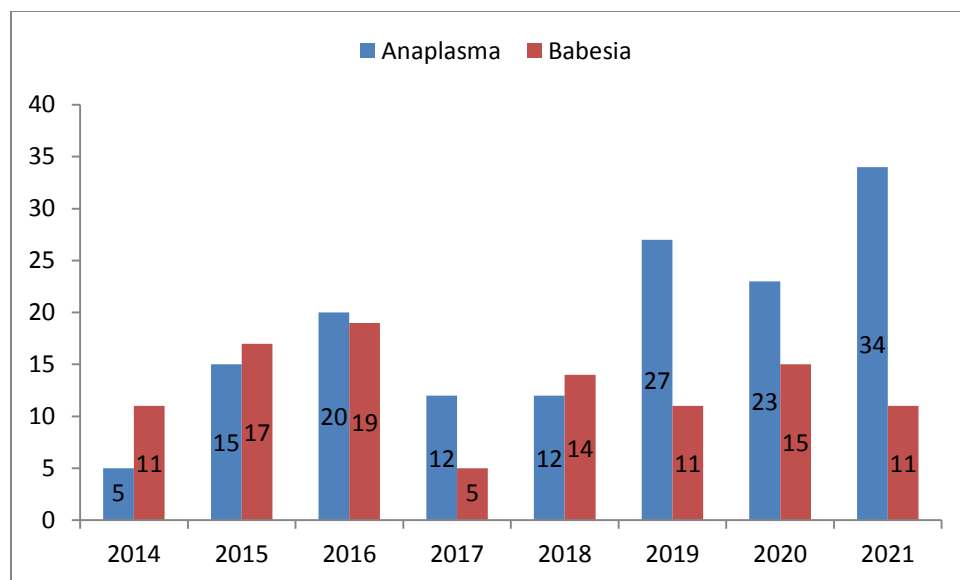


Figure 28: Graph showing number of outbreaks of bovine Babesiosis and Anaplasmosis in the years 2014-21

Bovine anaplasmosis was reported in all regions and bovine babesiosis reported in 3 regions. It was not reported in the Lubombo region. Both diseases occurred throughout the year with more cases reported for anaplasmosis. Most of the anaplasmosis cases were reported in the Shiselweni and Hhohho regions. Most of the cases were all diagnosed clinically. The two diseases are endemic.

Table 59: Number of babesiosis and anaplasmosis cases in 2021

RefDiseaseID	Data	Hhohho	Lubombo	Manzini	Shiselweni	Total
Bovine anaplasmosis	Outbreaks	19	2	1	12	34
	Sum of Cases	26	4	1	48	79
	Sum of Deaths	3	2	1	0	6
Bovine babesiosis	Outbreaks	7		2	2	11
	Sum of Cases	8		2	2	12
	Sum of Deaths	0		2	0	2

Control measures included compulsory dipping of cattle, treatment and active surveillance through smear examination of the spleen, lymph node and rib of all dead cattle in the country.

Heartwater

Twenty five (25) foci of outbreaks were reported in the year. These involved 61 animals with 17 deaths. The affected species were cattle, goats and sheep. Cattle accounted for 57% of all affected animals and sheep accounted for 30%.

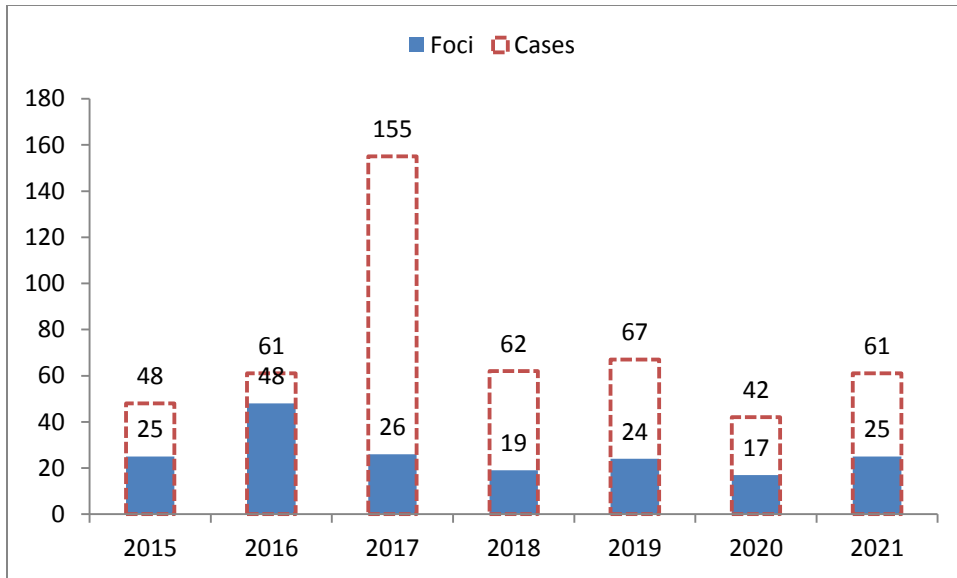


Figure 29: Graph showing total number of Heartwater outbreaks and cases for the years 2014 to 2021

The disease occurred throughout the year, affecting all regions. The majority of the outbreaks were reported in the Shiselweni (52%) region followed by Hhohho (20%) and Manzini (20%) regions. Only 41% of the cases were confirmed in the Lab. The rest were diagnosed clinically and at post mortem. Sheep cases accounted for 60% of those laboratory confirmed.

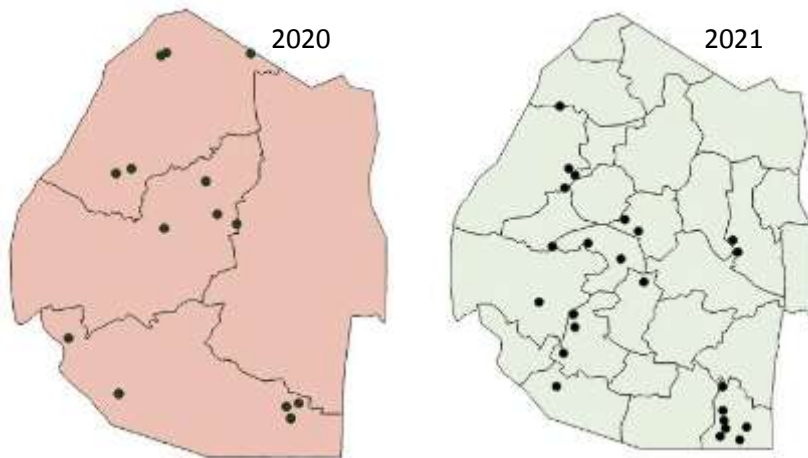


Figure 30: Maps showing heartwater outbreaks in 2020 and 2021

Bovine Brucellosis

There was a drop in the number of cases. Since 2016, brucellosis cases have been on an increase but the number of diptanks affected have remain constant (~20) throughout the years. However, a slight increase was observed in 2019 and 2020.

The drop in cases might be due to the decrease in the number of samples tested in the Laboratory. In the year, there was a shortage of testing reagents.

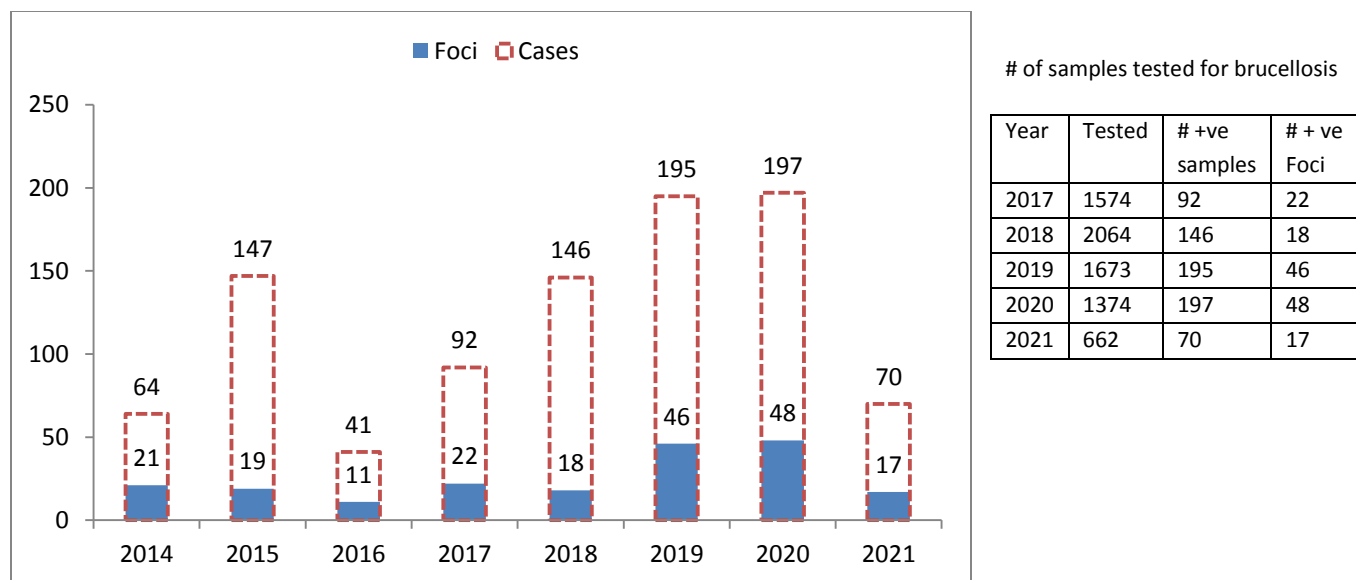


Figure 31: Graph showing total number of Brucellosis outbreaks and cases for the years 2014-2021

All regions were affected with Hhohho and Lubombo regions recording the highest number of cases (25). The Manzini and Shiselweni regions had 18 and 2 cases respectively.

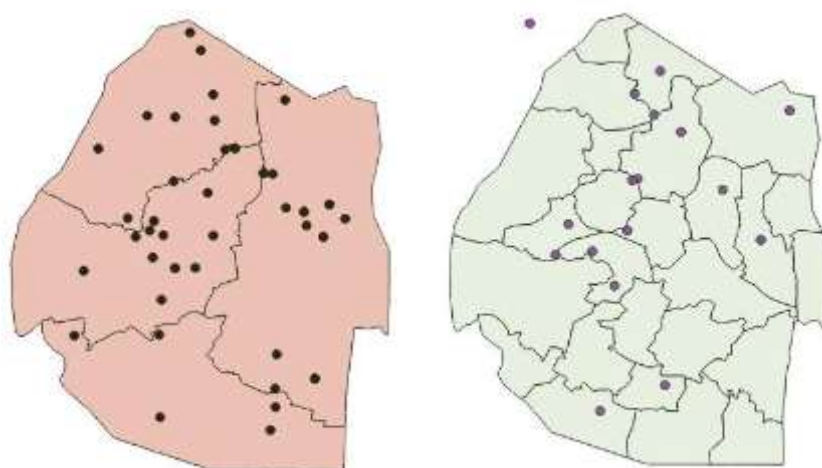


Figure 32: Maps showing foci of Brucella outbreaks in 2020-2021

Control of Bovine brucellosis is based on vaccination, testing, isolation of infected, restriction of movement and destruction of infected animals. The Control Program has been frustrated over the years by budgetary constraints and the lack of a Compensation Policy. A total of 2 273 animals were vaccinated against Contagious abortion in the year.

Bovine Tuberculosis

There was an increase in the number of positive cases picked at the export abattoir compared to the past 2 years as seen in Figure 33 below. The TB cases were picked throughout the year and from animals originating from all 4 regions. A total of 116 cases were picked at postmortem with most cases seen from animals from the Manzini (48), Lubombo (34) and Shiselweni (27) regions.

Two goat carcasses were condemned for TB at SGL6.

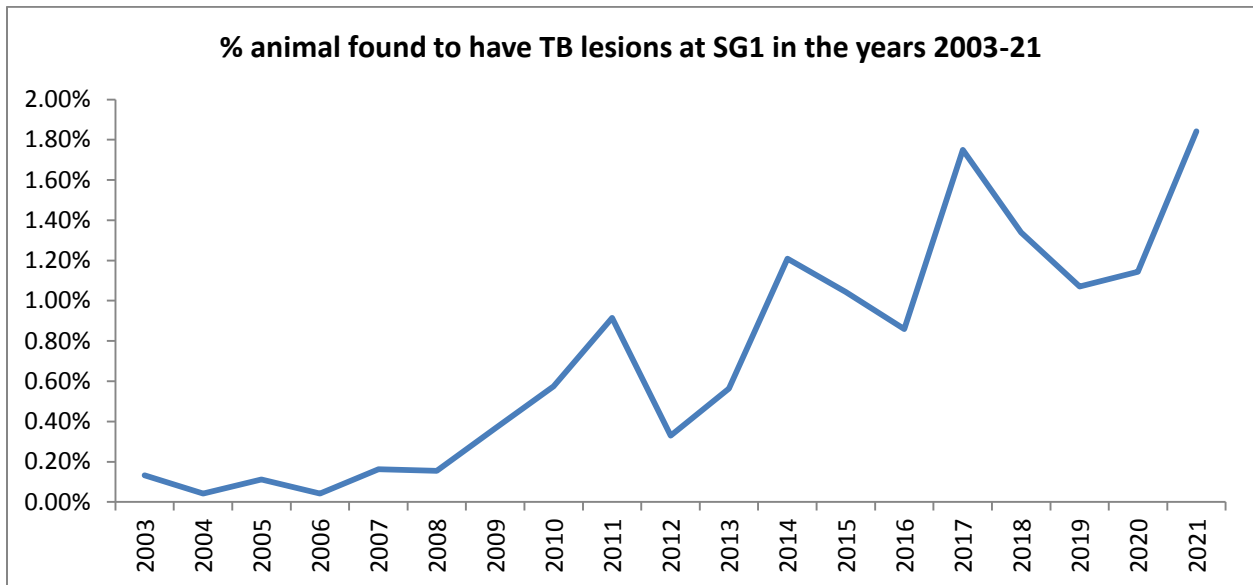


Figure 33: Graph showing % of animals found to have TB lesions at SGI in the years 2003-2021

As in the past 3 years, the diptank prevalence of Bovine TB was estimated at ~5% based on abattoir post mortem inspections. There is still a need to implement the TB Control Strategy as recommended by the TB Working Group formed in 2016. The Control Strategy included; improving TB Surveillance through active follow-ups of all cases picked up by the Abattoir Surveillance, introducing serological testing in beef herds and collaboration with the Ministry of Health and other Stakeholders through the “One Health” Approach.

The diptank with the highest number of cases was Mafutseni (432) in the Manzini region with 25 cases, followed by McNabs (425) and Vimmy Ridge (733) with 10 cases each. Vimmy Ridge (733) diptank is in the Shiselweni region. Overall, the Manzini region had 48 cases picked from 14 diptanks, the Lubombo region had 34 cases picked from 16 diptanks, the Shiselweni region had 27 cases picked from 11 diptanks, and the Hhohho region had 7 cases picked from 5 diptanks.

SLITS v1.0 was used to trace the origin of each positive case.

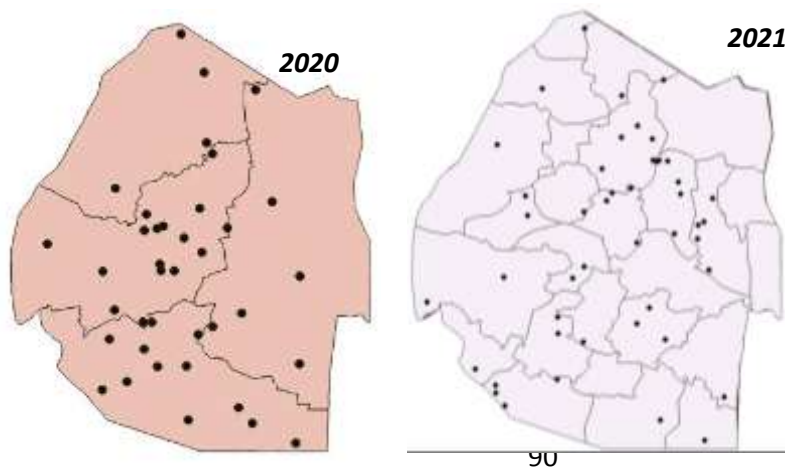


Figure 34: Maps showing diptanks that had at least one TB +ve case at post mortem inspection at SG1 for the years 2020-21

Cysticercosis and Hydatidosis

Cysticercosis and Hydatidosis are zoonotic diseases caused by larval stages of tapeworms, *Taenia saginata* and *Echinococcus granulosus*. *T.saginata* is found in the small intestine of humans whilst *E.granulosus* occurs in dogs. Cattle are affected through grazing in pastures contaminated with human or dog excreta. Humans and dogs are affected as a result of eating raw or undercooked meat which contains the effective larvae.

A total of 372 cattle were found to have cysticercosis and 150 found to have Hydatidosis at SG1. The percentage rate of occurrence was the same as in the past 5 years but a bit lower for hydatidosis. Cysticercosis is still more common than hydatidosis. As in the past 5 years, cysticercus was found mostly in the head but also in the heart and tongue. The hydatid cysts, as in the past 4 years, were mostly found in the lungs.

Table 60: table showing number of animals affected by cysticercosis and hydatidosis at SG1

Year	Sum of Number Affected with Cysticercosis	Sum of Number Affected with Hydatidosis	% affected with Cysticercosis	% affected with hydatidosis
2014	242	90	11	4
2015	672	331	11	5
2016	620	259	8	3
2017	383	255	8	5
2018	294	187	8	5
2019	380	118	8	2
2020	448	174	7	3
2021	372	150	6	2

Cysticercosis and hydatidosis was picked from animals coming from all 4 regions. It should be noted that no animals from the eastern part of the Lubombo region in the Protection Zone are allowed to go directly for slaughter at SG1. The number of cases in the Diptanks ranged from 1 to 53 for cysticercus and 1 to 12 for hydatidosis. Both SNL (Swazi Nation Land) and TDL (Title Deed Land) diptanks were affected. Based on abattoir post mortem inspections results, the diptank prevalence for Bovine cysticercosis was estimated at 19% and at 12% for hydatidosis. The diptank with the highest number of hydatid and cysticercosis cases was Mafutseni (432) diptank. McNabs (425), Siphofaneni (285), Greyling (811) and Thunzini (201) diptanks all had more than 10 cysticercosis cases.

SLITS v1.0 was used to trace the origin of each positive case.

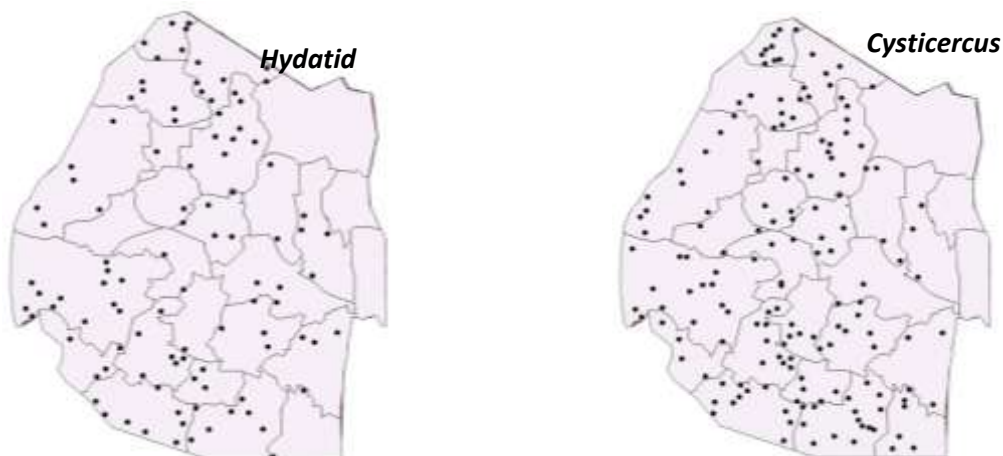


Figure 35: Maps showing diptanks which had at least 1 case of *C.bovis* & *Hydatid* cyst in 2021

Rabies

Rabies made its first appearance in the kingdom of Eswatini in 1954 and was confined to dogs. In 1975, the first case of bovine rabies was diagnosed and since then bovine cases increased as the disease became endemic. In 1986, 9 cases of rabies were diagnosed and this was considered to be a relatively high occurrence of the disease and was a cause for concern. By 2000, rabies cases were approaching 100 laboratory confirmed cases in a year and dogs accounted for 60% of the cases. Since 2010, however, rabies cases have been on a decline. In 2016, 3 rabies cases were reported, however budgetary shortfalls led to poor annual vaccination coverage and the resultant increase in the number of recorded cases in 2017. Eleven cases were to be recorded. The annual vaccination coverage then improved to 73% in 2017 and only 3 cases were experienced in 2018. Vaccination coverage further improved to 76 % in 2018 and 3 cases were reported in 2019. These occurred in 3 regions except Shiselweni and involved dogs. In 2020, there were 5 foci of outbreaks involving 6 cases. Three of the outbreaks occurred in the Hhohho region and two in the Manzini region. Five dogs and 1 cattle were affected and the cases were experienced in the period of January to July. Vaccination coverage of 81% was achieved in the year.

In 2021, there were no reported cases of rabies.

Table 61: Number of samples which tested positive for rabies in the Laboratory

Year	# of samples tested for rabies	# of samples which tested positive	% positive
2017	23	11	48
2018	16	3	19
2019	14	3	21
2020	10	6	60
2021	9	0	0

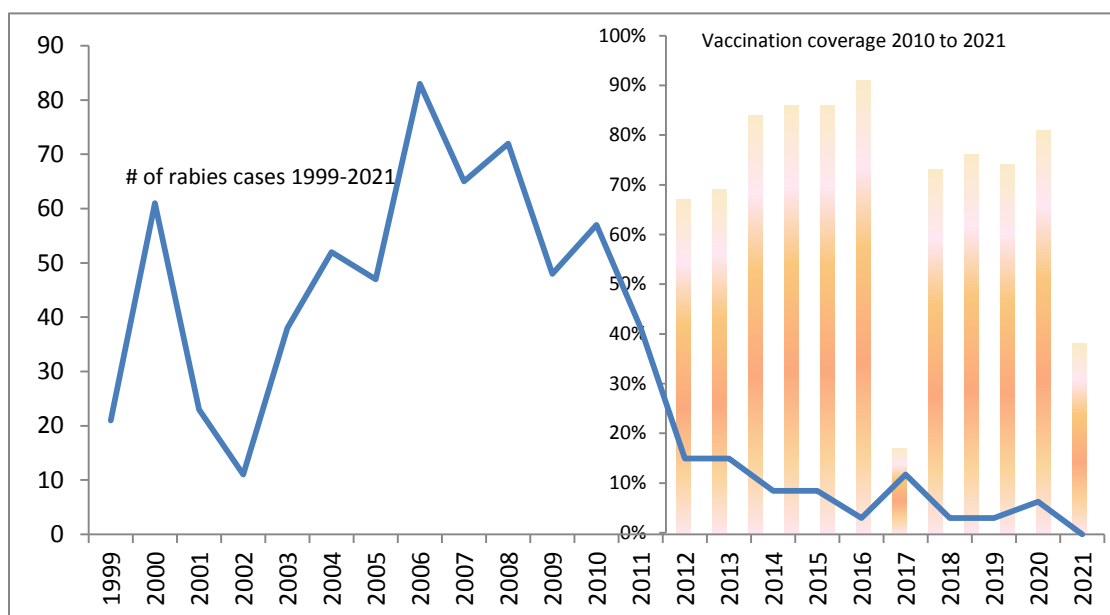


Figure 36: Graph showing total number of Rabies cases between 1999 -2021 and vaccination coverage for the years 2010-2021

A total of 893 dog bite victims were referred to hospitals for treatment in the year. In 70% of the cases, rabies was indicated due to lack of vaccination history for the dog. As in past years, a majority of dog bites occurred in major towns. Approximately 75% of the bites were recorded in Manzini, Mbabane, Nhlanguano and Siteki. Manzini, Mbabane and Nhlanguano had the majority of dog bite cases followed by. Determining the actual number of human cases is still elusive.

Infectious Papillomatosis

Bovine warts are widespread in the country. It has been affecting all age groups. Control is normally achieved through the use of an autogenous vaccine. This is created from pieces of warty tissue from the affected animals. The vaccine is produced by the Central Veterinary Laboratory in Manzini. Warts for vaccine development are acquired from the cattle owners. A total of 81 diptanks requested for the Warts Vaccine in the year.

Table 62: Table showing number of diptanks that requested warts vaccine per region in the years 2016 - 2021

Region	2016	2017	2018	2019	2020	2021
Hhohho	35	25	19	19	21	17
Lubombo	30	10	17	13	21	19
Manzini	97	43	36	36	33	38
Shiselweni	29	9	12	13	8	7

Endoparasites

Endoparasitism is important because it affects animal productivity as well as health. Some endoparasites have zoonotic potential. Parasites infection is diagnosed by either fecal egg count or postmortem examination in the event of death.

Postmortem examination at various abattoirs picked up cases of *Fasciola hepatica*, *Stilesia hepatica*, Nodula worms and *Ascaris suum*. The Central Veterinary Laboratory picked up cases of fasciola in sheep, and ascaris in chickens.

As part of primary health care in the diptanks, Veterinary Assistants advise livestock owners to deworm their animals for the improvement of their health, production and productivity. Table 63 shows the total number of animals treated for internal parasites in 2021.

Table 63: Table showing total number of animals per species that were treated for internal parasites in 2021

Row Labels	Sum of Cattle	Sum of Goats	Sum of Sheep	Sum of Pigs	Sum of Dogs
Hhohho	11684	3905	2060	220	375
Lubombo	17269	5367	60	1469	0
Manzini	17941	1053	36	33	112
Shiselweni	9640	1276	104	38	47
Grand Total	56534	11601	2260	1760	534

Vaccinations

Most infectious diseases in the country are controlled through vaccination. For most of the diseases, farmers bear the cost of the vaccine whilst government provides technical support. Government wholly funds Bovine brucellosis and rabies vaccinations. Vaccination is prohibited for diseases like FMD, CBPP, PPR, RVF and Avian Influenza. The commercial sector of the poultry and pig industry, have Vaccination Programs against diseases such as NCD, IB, IBD, Parvovirus and other production diseases. Table 64 shows the number of animals vaccinated in diptanks in 2021.

Table 64: Table showing total number of animals vaccinated for various diseases in 2021

Disease	Species	Number vaccinated
Anthrax	Cattle	3 049
Blackleg	Cattle	25 971
Botulism	Cattle	20 515
Bovine brucellosis	Cattle	2 273
Lumpy skin disease	Cattle	24 071
Pulpy Kidney	Goats	906
Rabies	Dogs	37 964
	Cattle	707
	Horses	56

Bovine Brucellosis

There is a compulsory annual vaccination of all female calves. Heifers between the age of 4 and 8 months are given a single inoculation of S19 Brucella Vaccine. Vaccination occurs in January to March for the first phase and October to December for the 2nd phase and is carried out by Veterinary Assistants. Vaccine cost for public diptanks is borne by government. Private diptanks bear their own costs of vaccination. Over the years, the campaign has been frustrated by shortage of resources. The percentage vaccination coverage for the country was estimated at 3%.

Rabies

Dogs are vaccinated with inactivated tissue culture vaccine in September. Vaccinated dogs are given a rabies vaccination certificate. The Program is usually frustrated by the lack of visible identification of vaccinated dogs but has been enhanced by the improvement of rabies awareness and sensitization programs undertaken by the Department annually. In recent years, the vaccination campaign has been frustrated by transport shortages which were exacerbated by Covid 19 response activities. In 2016, the Annual Vaccination Campaign was restricted to areas reported to have had rabies outbreaks in the year. This was due to the inability of the Department to procure vaccines because of budgetary shortfalls. In 2017, the vaccine coverage was improved to 73% with Hhohho and Shiselweni region achieving and surpassing the target vaccination coverage level of 70%. In 2018, the coverage was further improved to 76% with all regions except Hhohho achieving the target vaccination coverage. In 2019 vaccination coverage of 74% was achieved. All regions except Manzini achieved the target vaccination coverage. In 2020, vaccination coverage of 81% was achieved. The denominator used was from the 'working population' as opposed to Annual Census.

In 2021, 37 964 dogs were vaccinated by the end of the year and the vaccination coverage was 38%. The vaccination campaign was started late due to shortages of working equipment and was not completed by the end of year.

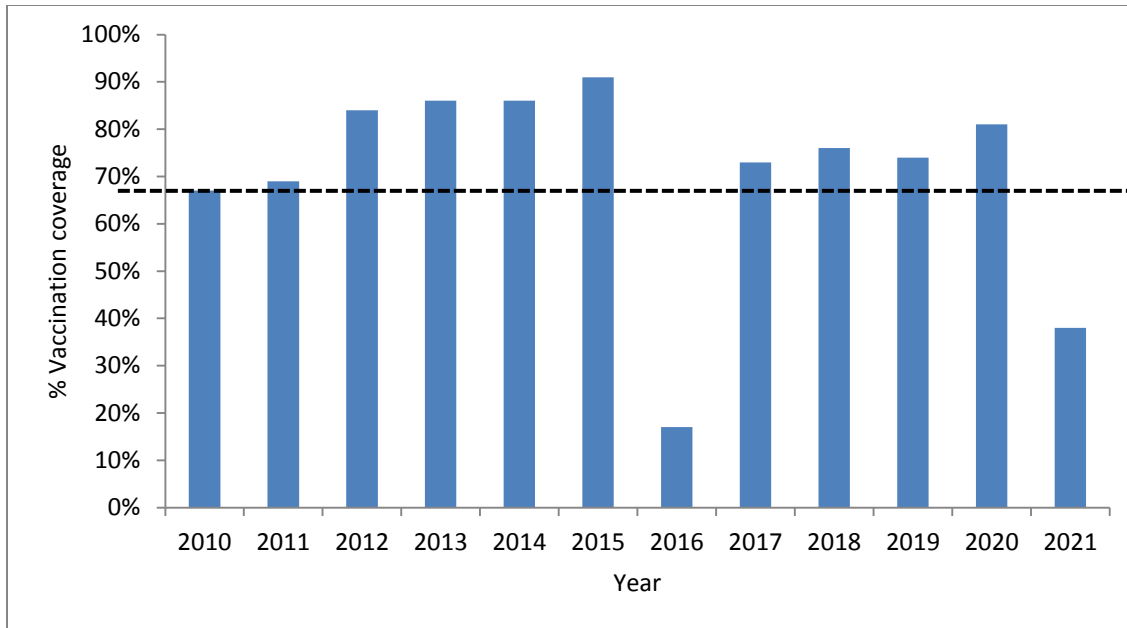
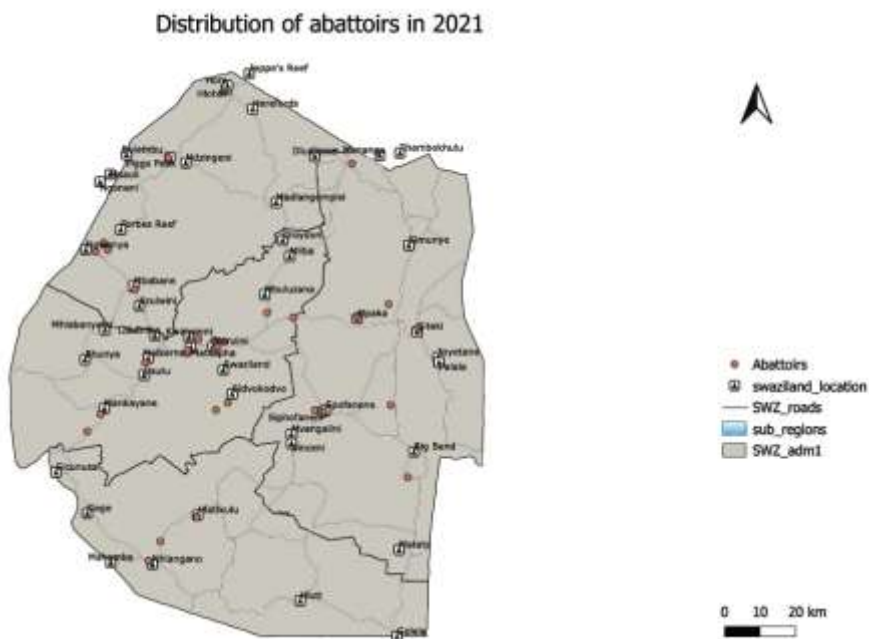


Figure 37: Graph showing rabies vaccination coverage for the years 2010 - 2021

VETERINARY PUBLIC HEALTH

Meat Inspection

As at December 2020, there were a total of 48 registered abattoirs of which 19 were for poultry, 7 for bovine, 5 for porcine and the rest for mixed species (cattle, goats, sheep, game and pigs). Three abattoirs were approved for export (2 for poultry and 1 beef).



SG1 Slaughters

A total of 6 298 cattle were slaughtered at SG1, Export abattoir in the year. This marked a slight increase from the total slaughtered in 2020. As in the previous 4 years more than half (59%) of the animals were sourced from Swazi National Land (Various kraals) and the rest (41%) from Title Deed Land (TDL ranches). Cows accounted for 10% (648) of the animals slaughtered and 52% (335) of them were in calf. There was one Emergency slaughter and two animals were death before slaughter. The two were trampled to death by others and the emergency slaughter animal had a fracture.

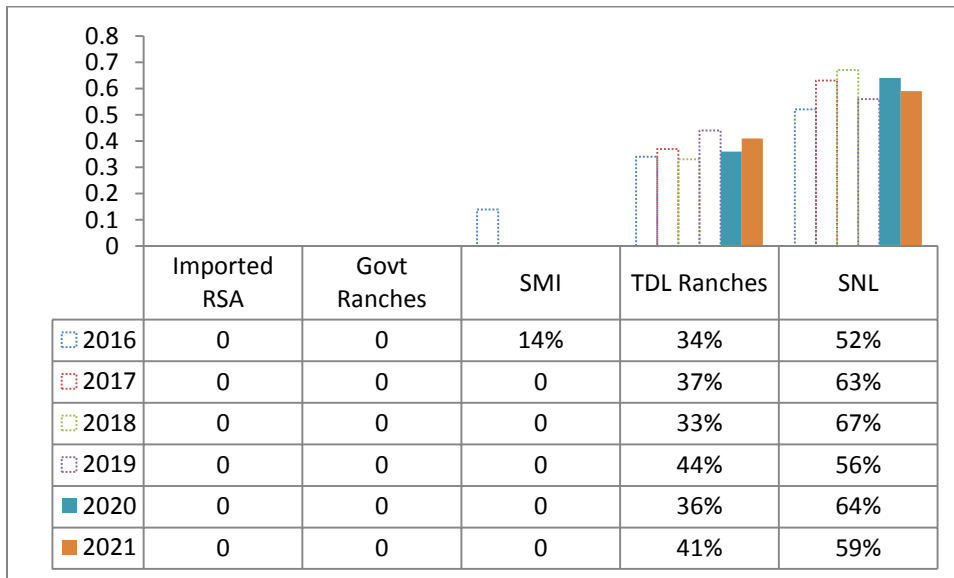


Figure 38: Sources of cattle slaughtered at SG1, in the years 2016-2021 by percentage of total slaughter

As in the past 4 years, a majority of animals slaughtered were male, mostly bullocks and bulls. Both TDL ranches and communal areas supplied mostly bullocks.

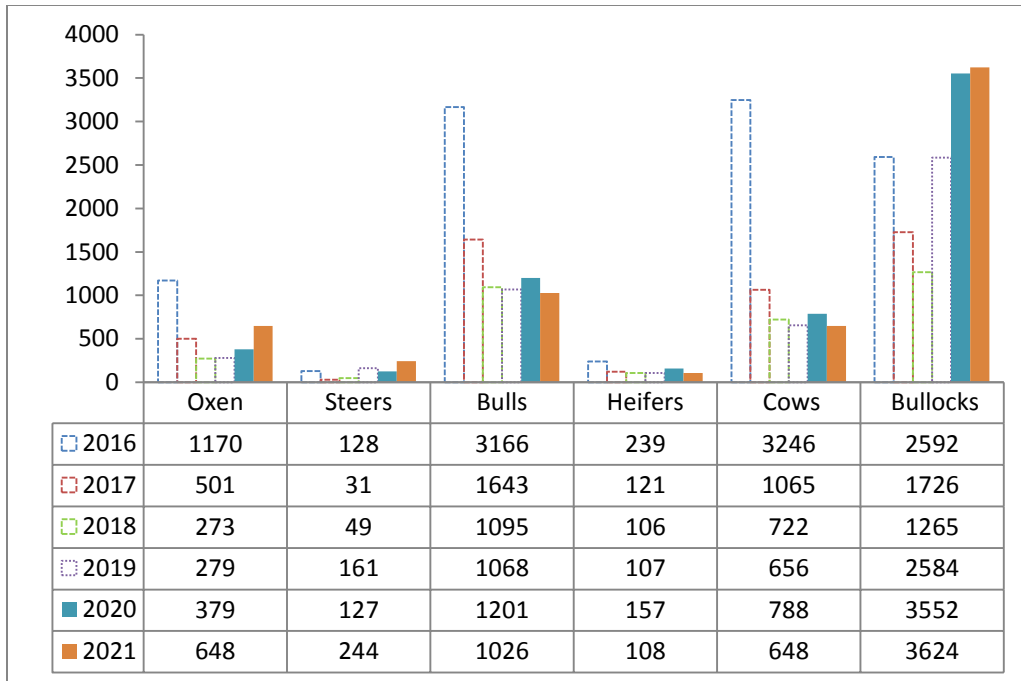


Figure 39: Classes of cattle slaughtered at SG1, Export abattoir for the years 2016-2021

Condemnation

Carcass

A total of 127.5 carcasses were condemned due to various reasons. The majority (91%) were condemned because of Bovine Tuberculosis. One carcass was condemned for a ph exceeding 6.5 which is indicative of septicaemia or disease condition. Half a carcass was condemned for bruising and 2 animals were trampled to death by others. Emergency slaughter had to be done on one animal which had a fracture.

Bruising	½	0.5
Cattle dead before slaughter		2
Detained For Diagnosis		1
Emergency slaughter		1
High ph		1
Generalized C.bovis		1
Oedema / emaciation		4
Pyæmia		1
Tuberculosis		116
Grand Total		127.5

A total of 379 carcasses underwent freezing treatment for localized *Cysticercus bovis*.

Organs

A total of 6 287 organs were condemned for various reasons as seen in Table 65. Emphysema was the highest reason for condemnation, followed by contamination and peritonitis. As in the past 5 years, lungs and livers were the most condemned organs. As in the past 3 years, the lungs were mostly condemned for emphysema, the livers for peritonitis.

Table 65: A table showing number of organs condemned at SG1 and reasons for condemnation

Lesion	Heads	Heart	Intestine	Kidneys	Liver	Lungs	Spleen	Stomach	Tails	Tongue	Total
Abscess	13		0		106	8	8	74	0	7	216
Actinobacillosis										1	1
Actinomycosis	14										14
Bruises	1										1
C. bovis	275	31								16	322
Cirrhosis					8						8
Congestion					12	56					68
Contamination	28	68	344	24	122	233	65	130	42	28	1084
Cysts		0		12							12
Emphysema						1168					1168
Endocarditis		1									1
Enteritis			7								7
Fatty degeneration					0						0
Haematoma							3				3
Hydatid cyst					1	150					151
Hydronephrosis				43							43
Liver fluke					171						171
Melanosis					1	62					63
Nephritis				52							52
Pericarditis		28									28
Peritonitis					707		66	141			914
Pimply gut			308								308
Pleuritis						213					213
Pneumonia						39					39
Stilesia					192						192
Stones				0							0
TB	116	116	116	116	116	116	116	116	116	116	1160
Angioma					48						48
Grand Total	447	244	775	247	1484	2045	258	461	158	168	6287

Other abattoirs

In the year 2021, a total of 11 563 218 chickens were slaughtered by the two Poultry Export Abattoirs. Only 46 748.53 kg poultry meat was exported to RSA. The rest was consumed locally.

A total of 8 657 pigs, 597 goats and 119 sheep and 398 game animals were slaughtered and inspected in various abattoirs in the year. Table 66 shows the total number of animals slaughtered and inspected by the VPH section in the year 2021.

Table 66: Total number of animals slaughtered and inspected by VPH Section in the year 2021

Abattoir	Avian	Bovine	Caprine	Ovine	Porcine	Game
SGL9		1664	153	48	887	398
SGL6			36		2096	
SGL24		43	42			
SGL12		313	310	11	70	
SGL7		233	56	1		
Mswane slaughter slab		2				
SGL26		75				
SGL35					5604	
SGL8						
SGL49		611		59		
SG2	6820038					
SG5	4743180					
Grand Total	11563218	2941	597	119	8657	398

Condemnation

SGL6

A total of 96 slaughters for pigs were conducted at SGL6 and 985 organs condemned. The most condemned organs were lungs (771) followed kidneys (82), livers (71), and hearts (61). The lungs were mostly condemned for emphysema and congestion. The kidneys were mostly condemned for congestion and hydronephrosis.

A total of 10 slaughters for goats were conducted and 27 organs condemned. The most condemned organ was the liver. Two carcasses were condemned for TB.

Table 67: Table showing PM lesions observed at SGL6

Row Labels	Caprine	Porcine	Grand Total
Abscess		2	2
Congestion	4	377	381
Contamination		22	22
Emphysema	2	344	346
Hydatidosis	6	0	6
Hydronephrosis		33	33
Milk spot		32	32
Nephritis		9	9

Nephrosis		3	3
Pericarditis		56	56
Peritonitis	2	19	21
Pleuritis		76	76
Pneumonia		12	12
Stilesia	11		11
TB	2		2
Grand Total	27	985	1012

SGL35

A total of 1 722 organs were condemned at SGL35. A majority (54%) of them were condemned because of congestion. The most condemned organs were the lungs.

Table 68: Table showing PM lesions observed at SGL35

Row Labels	Porcine	Grand Total
Abscess	24	24
Angioma	1	1
Cirrhosis	2	2
Congestion	922	922
Contamination	203	203
Emphysema	97	97
Endocarditis	12	12
Haematoma	53	53
Hydronephrosis	19	19
Nephritis	1	1
Pericarditis	74	74
Peritonitis	91	91
Pleuritis	13	13
Pneumonia	209	209
Pus Contamination	1	1
Grand Total	1722	1722

SG2 & SG5

A total of 53 288 chickens were condemned for different reasons. 43% were dead on arrival and the rest were condemned for emaciation, over scalding and poor quality.

Reason	SG2	SG5	Total
Dead on arrival	15744	7389	23133
Emaciation, over scalding and poor quality	14278	15877	30155
Total	30022	23266	53288

Food Hygiene Laboratory

The Food Hygiene Laboratory located in the Manzini Veterinary Complex in Manzini started operating in July 2017 and was commissioned on March 2019. The lab performs laboratory testing (Bacteriology, Water Testing and Inhibitory Testing) for food safety purposes. It is currently operated by one Senior Laboratory Technologist assisted by a laboratory technologist and a laboratory assistant. Some tests especially for SGI are also processed by the Meat Hygiene Laboratory situated at SGI in Matsapha.

A total of 9 193 samples were collected from various sources and establishments as shown in Table 69 and a total of 11 675 tests were performed by either the Food Hygiene Lab and or Referral Labs. A majority of the samples were for Hygiene Monitoring. Samples collected from SGI were from 70 slaughters and from SGL6 106 slaughters of which 96 were for pigs and 10 for goats.

Table 69: Table showing number of samples taken and analyzed by the Food Hygiene Lab in 2021

Row Labels	Sum of No. of Samples Taken	Sum of No. of Tests Done
BSE	13	13
BSE Testing	13	13
Hygiene	2848	4500
Environment by Exposure plates	193	193
Equipment/Tools (swabs)	1473	1503
Personnel (thumbs prints)	1182	2804
Lactalis	267	315
Test for inhibitory Substance	267	315
Meat	1497	1519
E. Coli	44	44
Enterobacteriaceae	43	43
Enterococcus	89	89
Listeria	26	26
Other- TVC	6	12
pH Test Carcass	1	1
Salmonella	97	97
Shelf life Testing	23	38
Staphylococcus aureus	8	8
Test for inhibitory Substance	1029	1029
Total Bacteria Count	1	1
Tuberculosis	130	131
Other	6	6
Other	1	1
Other- Soap effectiveness	1	1
Shelf life -Wors (Chakalaka) Batches	4	4
Poultry	273	318

AST	79	79
Campylobacter	84	84
Salmonella	1	1
Test for inhibitory Substance	109	154
Referrals	2166	2792
Deltamune – from SG2	395	595
Deltamune -from SG1	1759	2179
SWC-from SG1	11	10
Deltamune – from SG5	1	8
Residue	30	30
Kidney	5	5
Kidney Fat	2	2
Liver	7	7
Muscles	4	4
Serum	3	3
Urine	9	9
Tallow	2	2
Anthrax	1	1
Clostridia	1	1
Water	2091	2180
Examination of water	1407	1496
Hand washing Temperature	684	684
Grand Total	9193	11675

Meat samples included carcass swabs which were tested for Salmonella, carcass pieces tested for Total Bacterial Count and Kidney & muscles tested for inhibitory substances which include Tetracyclines, Penicillin and Streptomycin. Meat samples were also collected for TB confirmation and residue monitoring. Hygiene monitoring samples included personnel contact swabs, equipment (knives & tables) swabs and exposure plates. Water samples were tested for level of chlorination, presence of dirt, total bacterial count, turbidity and other physical properties.

Referral Laboratories used by the Food Hygiene Lab included Deltammune (NOSA) in the Republic of South Africa for Total Bacterial Count, Eswatini Water Service Corporation (SWSC) for basic chemistry (salts and heavy metals), ALS Environmental Limited for extensive Chemical residue analysis in water and Fera Science Limited for Residues in meat, urine and feed.

Most of the meat samples were compliant with the minimum specification set by the Commission Regulation 2073/2005. Throughout the year, personnel & equipment hygiene monitoring results deviated from the 100% compliance. Close monitoring for compliance and adherence to proper hand washing and cleaning procedures are required to maintain high levels of hygiene.

Residue testing

Cattle

The competent authority of Eswatini represented by the Directorate of Veterinary and Livestock Services is mandated to ensure that the consumer is protected against harmful residues of veterinary medicines. The directorate operates a statutory program, which implements the relevant EU legislation and provisions including Council Directive 96/23/EC. Currently, the program covers only fresh red meat exported to the EU.

Samples for residue testing are collected from farms and slaughterhouses unannounced and at random. As in the past years, samples were only taken from animals in the export abattoir (SG1) and from Feedlots and Small Scale Fattening Units (Field). The number of samples tested is determined using the cs_vet-med residues control template plan as set out in Annex IV of Council Directive 96/23/EC. These samples are a fixed proportion of the total number of animals that are forecasted to be slaughtered in the export abattoir in the coming year based from slaughters of the previous year.

A total of 30 samples were submitted to FERA Science Limited for residue testing in 2020. Eighty percent (80%) of the samples were collected from the export abattoir (SG1) and the rest from the field. All the samples were compliant with the set Minimum Residue Level (MRL) in CR (EC) 466/2001, CR (EEC) 2377/90 and CD 86/363/EEC. Details on the type of residue tested for are as shown in Annex 1.

Table 70: Number of samples tested for drug residues from cattle

Row Labels	Farm	SG1	Grand Total
Kidney	0	5	5
Kidney fat	0	2	2
Liver	0	7	7
Muscle	0	4	4
Serum	1	2	3
Urine	5	4	9
Grand Total	6	24	30

Chickens

In the year, residue testing for antibiotics was only done from samples collected from SG2 abattoir. The samples were sent to Deltamune (NOSA) laboratory in South Africa. They were all compliant with the set Minimum Residue Level as directed by CODEX Standard on residue limits. A total of 30 samples were tested for different antibiotics as shown in Table 71 below.

Table 71: Antibiotics tested in residue testing in chickens

Antibiotic tested
Ciprofloxacin
chlortetracycline

Doxycycline
Enrofloxacin
Lincomycin
Norfloxacin
Olaquinox Metabolite
Oxytetracycline
Sulfadimidine
Sulfadiazine
Sulfamethoxazole
Tetracycline
Tiamulin
Trimethoprim
Tylosin

Inhibitory Substances

Inhibitory testing is an important part of any testing regime. Samples are tested to ensure there are no inhibitors such as antibiotics which may be used in the treatment of animals. These substances are monitored in milk, meat and other products used for human consumption.

Milk and tissue samples were tested for inhibitory substances which included Tetracyclines, Penicillin and Streptomycin. A total of 1405 samples were tested and all were negative for inhibitory substances. Table 72 shows the number of samples submitted for testing to the Food Hygiene Laboratory.

Table 72: Table showing number of samples submitted for Inhibitory Substances at Food Hygiene Lab

Sample	Species	Qty
Milk	Cattle	267
Meat	Cattle	1023
Pork	Pigs	6
Poultry	Chicken	109
Total		1405
Source	Species	Qty
SG1	Cattle	1020
SGL25	Cattle	3
SGL6	Pigs	6
SG4	Cattle (Milk)	267
SG2	Chicken	32
SG5	Chicken	58
SGL17	Chicken	19
Total		1405

Imports VPH

In carrying out its mandate of ensuring high level of consumer protection with regard to food safety, the VPH unit regulated the importation of food of animal origin from countries as listed in Table 73. Most of the products imported from countries other than South Africa are imported via South Africa.

Table 73: Table showing countries from which various products were imported from in 2021

Product & country of origin	Quantity	Product & country of origin	Quantity	Product	Quantity
Beef	1,099,564.44	Dairy	23,292,333.00	Beef	1,099,564.44
Argentina	19,460.00	Austria	900.00	Beef Fat	575,454.49
Australia	8,365.00	Belgium	24,525.00	Beef Red Offal	560,426.16
Namibia	8,136.00	Denmark	100.00	Beef Trimmings	2,177.00
RSA	1,044,237.44	France	32,440.00	Casing	181,334.00
Uruguay	19,366.00	Germany	95.00	Chicken Portions	13,274.00
Beef Fat	575,454.49	Malaysia	13,568.00	Chicken Products	217,705.00
Argentina	117,244.00	Netherlands	15,000.00	Dairy	23,292,333.00
Brazil	69,163.00	New Zealand	27,475.00	Fish	1,714,407.03
Canada	33,478.00	Poland	650,598.00	Lamb	124,690.30
France	2,980.00	RSA	22,527,632.00	MDM	1,635,796.00
New Zealand	24,415.00	Fish	1,714,407.03	Pet food	817,495.86
RSA	186,811.49	Canada	47,960.00	Processed beef	70,799.00
UK	9,654.00	China	7,400.00	Processed Chicken	1,234,216.99
Uruguay	16,509.00	Mozambique	440.00	Processed meats	719,630.83
USA	115,200.00	Namibia	25,000.00	Processed Pork	328,888.06
Beef Red Offal	560,426.16	RSA	1,628,607.03	Turkey	411,435.00
Argentina	33,311.00	USA	5,000.00		
Australia	29,898.00	Lamb	124,690.30		
Brazil	5,850.00	RSA	124,690.30		
France	23,260.00	MDM	1,635,796.00		
Ireland	16,704.00	Argentina	27,210.00		

Namibia	4,140.00	Brazil	1,581,016.00
New Zealand	18,059.00	RSA	970.00
RSA	166,619.16	UK	24,000.00
UK	17,116.00	USA	2,600.00
Uruguay	17,530.00	Pet food	817,495.86
USA	227,939.00	RSA	817,495.86
Beef Trimmings	2,177.00	Processed beef	70,799.00
Uruguay	2,177.00	RSA	70,799.00
Casing	181,334.00	Processed Chicken	1,234,216.99
Brazil	780.00	RSA	1,234,216.99
China	176,924.00	Processed meats	719,630.83
Netherlands	3,630.00	Namibia	2,257.00
Chicken Portions	13,274.00	RSA	717,373.83
Argentina	9,900.00	Processed Pork	328,888.06
USA	3,374.00	RSA	328,888.06
Chicken Products	217,705.00	Turkey	411,435.00
Brazil	217,705.00	Argentina	3,000.00
		Brazil	231,398.00
		Canada	62,485.00
		USA	114,552.00

Exports VPH

The VPH section as directed by the Veterinary Public Health Act 17/2013 is responsible for the application of sanitary procedures with respect to food of animal origin. In the year, the section certified for exportation to European and regional countries the products as shown in Table 74 below. Beef exports to the EU were resumed in 01/11/2018 after their suspension in late August 2017 due to the unexpected importation of buffaloes from Zambia. A total of 513 194.54 kg deboned beef was exported to Norway. Dairy products were exported to Botswana, Mozambique and South Africa.

Table 74: Table showing products certified for export by the VPH section in Kg or L

Product	Destination				Total
	Norway	Botswana	Mozambique	RSA	

Animal feeds			44220.83	71266.6	115487.43
Boerewors			67960.81	44126.6	112087.41
Chilled primal	136313.42		3547		139860.42
Dairy yoghurt		43960	206000	40	250000
Dairy Juice		19440	129000	22267.25	170707.25
Dairy Juice & yoghurt		46090	67000		113090
Frozen primal	376881.12				376881.12
Hides			27060	85060	112120
Hides(Face Masks)				10300	10300
Juice		9830	29000		38830
Poultry SPP				46748.53	46748.53
Tallow				30400	30400
Grand Total	513194.54	119320	573788.64	310208.98	1516512.16

INFORMATION AND COMMUNICATION

Library Services

The Library has been closed throughout the year since July 2021, due to Covid 19 lockdown restrictions.

Radio Program

As part of its livestock owner/keeper outreach program, the National Veterinary Services has a Radio Program that is broadcasted every Saturday morning. In this program Livestock owners/ keepers are taught and informed about the different Regulatory Programs done by the department. They are also equipped with good livestock management skills and educated on prophylactic treatments as well as notifiable diseases. Table 75 shows the Radio Programs that were done in the year.

Table 75: Table showing Radio Programs and discussions in the year 2021

Date	Topic
02.01.2021	Fowl pox in indigenous chickens
09.01.2021	Mange in pigs
16.01.2021	Goat Production
23.03.2021	Calf Nutrition
30.01.2021	Milk fever in Dairy cows
06.02.2021	Gall Sickness Disease
20.02.2021	Small Hive Beetle in Honey Bees
27.02.2021	Prerequisites for a feedlot establishment
06.03.2021	Baling of fodder
13.03.2021	Black quarter disease
20.03.2021	Livestock marketing
27.03.2021	Winter Brooding

03.04.2021	Pig Vaccination program
10.04.2021	Formulation of energy (Rumevite block)
24.04.2021	Fowl pox disease in indigenous chickens
27.04.2021	Avian influenza outbreak in RSA and awareness to Swazi stock owners
01.05.2021	Cattle branding
08.05.2021	Speech delivered by the Honorable Minister for Agriculture Jabulani Mabuza during the official the opening of Maphumzane TA 265.
15.05.2021	Speech delivered by the Honorable Minister for Agriculture Jabulani Mabuza opening of Maphumzane TA 265 continued.
22.05.2021	Eartag procurement and eartaging of cattle by Diptank committee of Lahleni diptank.
29.05.2021	Management of piglets
05.06.2021	Bull Loan Scheme
08.06.2021	FMD awareness (Live program)
12.06.2021	Supplementary Feeding
19.06.2021	Cattle eartaging by Hhohho Farmers
26.06.2021	FMD awareness
26.06.2021	Feeding of dry sows
03.07.2021	Cattle eartaging by Hhohho famers.
10.07.2021	Feeding dry sows
13.07.2021	Pre-farrowing management (Live Program)
24.07.2021	Livestock census
27.07.2021	Farrowing management (Live Program)
31.07.2021	Management of pregnant sows
07.08.2021	Cattle eartaging by Hhohho Farmers from Ngubhela Diptank
14.08.2021	Goats management
17.08.2021	FMD and Avian Influenza awareness Live program
21.08.2021	Abattoir Establishment by Swazi
24.08.2021	Broiler Feeding live program
28.08.2021	Winter supplements of stock
04.09. 2021	Rabies disease sensitization
11.09. 2021	Winter supplements
18.09. 2021	Government Sisa Ranches
21.09. 2021	Rabies sensitization (Live program)
25.09. 2021	Dairy projects at Ntandweni
02.10. 2021	Eartaging processes
09.10. 2021	Feeding lactating sow
16.10. 2021	Summer vaccinations
23.10. 2021	Weaning stress management Extension Services Mrs. T. Shabangu (farmer)
30.09. 2021	Pulpy kidney disease in goats

06.11. 2021	Summer vaccinations for Livestock
13.11. 2021	Vaccination of goats against Pulpy kidney disease
20.11. 2021	Antimicrobial Resistance awareness
27.11. 2021	Livestock Business
04.12. 2021	Livestock businesses
11.12. 2021	Application of stock removal permits and endorsement processes
18.12. 2021	Malindza Dairy projects by M. Dlamini (Dairy Board) & Vet Services
25.12. 2021	Xmas special programs by Program Presenters for the different Ministries.

Annex

Annex 1: Results of Regulatory Programme for Control of Residues in food of cattle origin

GROUP OF SUBSTANCES TO BE MONITORED	COMPOUND or MARKER RESIDUE	MATRIX ANALYSED	NUMBER OF SAMPLES TAKEN ON FARM		LEVEL OF ACTION (i.e. concentration above which a result is deemed non-compliant) [µg/Kg]	NUMBER OF NON COMPLIANT RESULTS (ABOVE LEVEL OF ACTION)	NUMBER OF SAMPLES TAKEN AT SLAUGHTER		LEVEL OF ACTION (i.e. concentration above which a result is deemed non-compliant) [µg/Kg]	NUMBER OF NON COMPLIANT RESULTS (ABOVE LEVEL OF ACTION)
			PLANNED	TESTED			PLANNED	TESTED		
A1. STILBENES	Diethylstilbestrol	Urine	1	3	0.5	NONE	1	2	0.5	NONE
	Dienestrol	Urine	1	3	1	NONE	1	2	1	NONE
	Hexestrol	Urine	1	3	1	NONE	1	2	1	NONE
	Taleranol	Urine	1	3	1	NONE	1	2	1	NONE
	Zeranol	Urine	1	3	1	NONE	1	2	1	NONE
A2. THYROSTATS	Tapazole	urine	2	2	5	NONE	2	2	5	NONE
	Mythylthiourasil	Urine	2	2	5	NONE	2	2	5	NONE
	Propylthiourasil	Urine	2	2	5	NONE	2	2	5	NONE
	Phynylthiourasil	Urine	2	2	5	NONE	2	2	5	NONE
	Thiouracil	Urine	2	2	10	NONE	2	2	10	NONE
A3. SYNTHETIC STEROIDS (WITH ANDROGENIC, GESTAGENIC OR ESTROGENIC ACTIVITY)	Testosterone	serum	1	1	0.25	NONE	1	1	0.25	NONE
	Oestradiol	serum	1	1	0.25	NONE	1	1	0.25	NONE
	Chloramidone acetate	serum	1	1	0.15	NONE	1	1	0.15	NONE
	Medoxyprogesterone	serum	1	1	0.15	NONE	1	1	0.15	NONE
	Megestrol	serum	1	1	0.15	NONE	1	1	0.15	NONE
	Melengesterol	serum	1	1	0.15	NONE	1	1	0.15	NONE
A4. RESORCYLIC ACID LACTONES	Zeranol	Urine	1	3	1	NONE	1	2	1	NONE
	Taleranol	urine	1	3	1	NONE	1	2	1	NONE
A5. BETA AGONISTS	bromobuterol	urine	1	1	0.1	NONE	1	1	0.1	NONE
	clenbuterol	urine	1	1	0.1	NONE	1	1	0.1	NONE
	clenpenterol	urine	1	1	0.25	NONE	1	1	0.25	NONE
	clenproperol	urine	1	1	0.25	NONE	1	1	0.25	NONE
	cimaterol	urine	1	1	0.25	NONE	1	1	0.25	NONE
	hydroxymethylclenbuterol	urine	1	1	0.1	NONE	1	1	0.1	NONE
	isoxsuprine	urine	1	1	0.1	NONE	1	1	0.1	NONE
	mabuterol	urine	1	1	0.1	NONE	1	1	0.1	NONE
	ractopamine	urine	1	1	0.5	NONE	1	1	0.5	NONE
	ritodrine	urine	1	1	0.25	NONE	1	1	0.25	NONE
	salbutamol	urine	1	1	0.5	NONE	1	1	0.5	NONE

	salmeterol	urine	1	1	0.5	NONE	1	1	0.5	NONE
	tulobuterol	urine	1	1	0.1	NONE	1	1	0.1	NONE
	zilpaterol	urine	1	1	0.5	NONE	1	1	0.5	NONE
A6. CHLORAMPHENICOL	Chloramphenicol	Muscle					1	1	0.15	NONE
A6. OTHERS NITROIMIDAZOLE	Dimetidazole -OH	Muscle					1	1	1.5	NONE
	metronidazole-OH	Muscle					1	1	1.5	NONE
	lpronidazole -OH	Muscle					1	1	1.5	NONE
	Ronidazole	Muscle					1	1	1.5	NONE
GROUP OF SUBSTANCES TO BE MONITORED	COMPOUND or MARKER RESIDUE	MATRIX ANALYSED	NUMBER OF SAMPLES TAKEN ON FARM		LEVEL OF ACTION (i.e. concentration above which a result is deemed non-compliant) [µg/Kg]	NUMBER OF NON COMPLIANT RESULTS (ABOVE LEVEL OF ACTION)	NUMBER OF SAMPLES TAKEN AT SLAUGHTER		LEVEL OF ACTION (i.e. concentration above which a result is deemed non-compliant) [µg/Kg]	NUMBER OF NON COMPLIANT RESULTS (ABOVE LEVEL OF ACTION)
			PLANNED	TESTED			PLANNED	TESTED		
A6. OTHERS NITROFURANS	AHD	muscle					1	1	0.5	NONE
	AMOZ	muscle					1	1	0.5	NONE
	AOZ	muscle					1	1	0.5	NONE
	SEM (semicarbazide)	muscle					1	1	0.5	NONE
GROUP OF SUBSTANCES TO BE MONITORED	COMPOUND or MARKER RESIDUE	MATRIX ANALYSED	NUMBER OF SAMPLES		LEVEL OF ACTION (i.e. concentration above which a result is deemed non-compliant) [µg/Kg]	NUMBER OF NON COMPLIANT RESULTS (ABOVE LEVEL OF ACTION)				
			PLANNED	TESTED						
B1. ANTIBACTERIAL SUBSTANCES	Sulphonamides	kidney	4	4		NONE				
	penicillins	kidney	4	4		NONE				
	Tetracyclines	kidney	4	4		NONE				
	quinolones	kidney	4	4		NONE				
Screening test	Aminoglycosides	kidney	4	4		NONE				
	cephalosporins	kidney	4	4		NONE				
	Macrolides	kidney	4	4		NONE				
Confirmatory test	Sulphonamides									
	Sulfachloropyridazine	kidney	4	4	50	NONE				
	Sulfadiazine	kidney	4	4	50	NONE				
	Sulfadimethoxine	kidney	4	4	50	NONE				
	Sulfadimidine/sulfamethazine	kidney	4	4	50	NONE				
	Sulfadoxine	kidney	4	4	50	NONE				
	Sulfamerazine	kidney	4	4	50	NONE				
	Sulfamethizole	kidney	4	4	50	NONE				

Sulfamethoxypyridazine	kidney	4	4	50	NONE
Sulfamonomethoxine	kidney	4	4	50	NONE
Sulfapyridine	kidney	4	4	50	NONE
Sulfaquinoxaline	kidney	4	4	50	NONE
Sulfathiazole	kidney	4	4	50	NONE
Sulfisoxazole	kidney	4	4	50	NONE
Sulfaguanadine	kidney	4	4	50	NONE
Sulfamethoxazole	kidney	4	4	50	NONE
Sulfamoxole	kidney	4	4	50	NONE
Sulfanilamide	kidney	4	4	50	NONE
penicillins					
ampicillin	kidney	4	4	12.5	NONE
amoxicillin	kidney	4	4	12.5	NONE
cloxacillin	kidney	4	4	150	NONE
oxacillin	kidney	4	4	75	NONE
Penicillin G	kidney	4	4	12.5	NONE
Penicillin V	kidney	4	4	12.5	NONE
dicloxacillin	kidney	4	4	75	NONE
Tetracyclines					
chlortetracycline	kidney	4	4	50	NONE
epi chlortetracycline	kidney	4	4	50	NONE
oxytetracycline	kidney	4	4	50	NONE
epi-oxytetracycline	kidney	4	4	50	NONE
tetracycline	kidney	4	4	50	NONE
epi-tetracycline	kidney	4	4	50	NONE
doxycycline	kidney	4	4	50	NONE
Quinolones					
ciprofloxacin	kidney	4	4	25	NONE
enrofloxacin	kidney	4	4	25	NONE
danofloxacin	kidney	4	4	25	NONE
diffloxacin	kidney	4	4	75	NONE
flumequine	kidney	4	4	100	NONE
marbofloxacin	kidney	4	4	25	NONE
nalidixic acid	kidney	4	4	25	NONE
nofloxacin	kidney	4	4	25	NONE
oxolinic acid	kidney	4	4	25	NONE
sarafloxacin	kidney	4	4	15	NONE
Aminoglycosides					
apramycin	kidney	4	4	1000	NONE
streptomycin	kidney	4	4	500	NONE
dihydrostreptomycin	kidney	4	4	500	NONE
gentamycin	kidney	4	4	375	NONE
josamycin	kidney	4	4	23.5	NONE
kanamycin	kidney	4	4	1250	NONE

	neomycin	kidney	4	4	2500	NONE
	paromomycin	kidney	4	4	750	NONE
	spectinomycin	kidney	4	4	500	NONE
	cephalosporins					
	cefalexin	kidney	4	4	100	NONE
	cefalonium	kidney	4	4	100	NONE
	cefoperazone	kidney	4	4	50	NONE
	cefquinome	kidney	4	4	100	NONE
	cefazolin	kidney	4	4	25	NONE
	cefapirin	kidney	4	4	25	NONE
	ceftiofur	kidney	4	4	10	NONE
	Macrolides					
	erythromycin	kidney	4	4	100	NONE
	tylosin	kidney	4	4	50	NONE
	tilmicosin	kidney	4	4	25	NONE
	spiramycin	kidney	4	4	50	NONE
	3-0-acetyltylosin	kidney	4	4	12.5	NONE
	Dapson	kidney	4	4	10	NONE
	Gamithromycin	kidney	4	4	50	NONE
	Lincomycin	kidney	4	4	50	NONE
	Pirlimycin	kidney	4	4	50	NONE
	Spiramycin	kidney	4	4	50	NONE
	Tildipirosin	kidney	4	4	200	NONE
	Tulthromycin	kidney	4	4	750	NONE
	Tylvalosin	kidney	4	4	12.5	NONE
	Virginiamycin	kidney	4	4	50	NONE
B2a. ANTHELMINTICS						
	levamisole	liver	1	1	5	NONE
	albendazole	liver	1	1	12.5	NONE
	albendazole sulfone	liver	1	1	12.5	NONE
	albendazole sulfoxide	liver	1	1	12.5	NONE
	albendazole -2- aminosulfone	liver	1	1	12.5	NONE
	fenbendazole	liver	1	1	12.5	NONE
	oxfendazole	liver	1	1	12.5	NONE
	oxfenbedazole sulphone	liver	1	1	12.5	NONE
	oxibendazole	liver	1	1	12.5	NONE
	thiabendazole	liver	1	1	12.5	NONE
	5-hydroxythiabendazole	liver	1	1	12.5	NONE
	triclabendazole	liver	1	1	12.5	NONE
	triclabendazole sulfophe	liver	1	1	12.5	NONE
	triclabendazole sulfoxide	liver	1	1	12.5	NONE
	Avermectins					
	Abamectin	Liver	1	1	10	NONE
	Doramectin	Liver	1	1	50	NONE

	Emamectin	Liver	1	1	50	NONE
	Eprinomectin	Liver	1	1	50	NONE
	Ivermectin	Liver	1	1	50	NONE
	moxidectin	Liver	1	1	50	NONE
B2b. ANTICOCCIDIALS	monensin	Liver	1	1	4	NONE
	salinomycin	Liver	1	1	2.5	NONE
	lasalocid	Liver	1	1	25	NONE
	narasin	Liver	1	1	25	NONE
B2c. CARBAMATES	carbaryl	Liver	1	1	10	NONE
	Methomyl	Liver	1	1	10	NONE
	Methiocarb	Liver	1	1	10	NONE
B2c. PYRETHROIDS	Cypermethrin	Liver	1	1	10	NONE
	Permethrin	Liver	1	1	10	NONE
	Deltamethrin	Liver	1	1	10	NONE
	flumethrin	Liver	1	1	10	NONE
	Methiocarb sulfone	Liver	1	1	10	NONE
	Methiocarb sulfoxide	Liver	1	1	10	NONE
B2d. SEDATIVES	xylazine	Liver	1	1	12.5	NONE
	chlpromazine	Liver	1	1	2.5	NONE
	propionylpromazine	Liver	1	1	12.5	NONE
	azaperone	Liver	1	1	6.25	NONE
	acepromazine	Liver	1	1	12.5	NONE
	Azaperol	Liver	1	1	6.25	NONE
	carazolol	Liver	1	1	2.5	NONE
B2e. NON STEROIDAL ANTI-INFLAMMATORY DRUGS	caprofen	Liver	1	1	500	NONE
	flunixin	Liver	1	1	15	NONE
	meloxicam	Liver	1	1	32.5	NONE
	diclofenac	Liver	1	1	5	NONE
	vedaprofen	Liver	1	1	50	NONE
	tolfenamic acid	Liver	1	1	50	NONE
	naproxen	Liver	1	1	5	NONE
	phenylbutazone	Liver	1	1	2.5	NONE
	ibuprofen	Liver	1	1	5	NONE
	ketoprofen	Liver	1	1	5	NONE
	Niflumic acid	Liver	1	1	5	NONE
	Oxyphenylbutazone	Liver	1	1	2.5	NONE
B2f. OTHER PHARMACOLOGICALLY ACTIVE SUBSTANCES	Amitraz	Liver	1	1	10	NONE
	DMF	Liver	1	1	10	NONE
	DMPF	Liver	1	1	10	NONE

GROUP OF SUBSTANCES TO BE MONITORED	COMPOUND or MARKER RESIDUE	MATRIX ANALYSED	NUMBER OF SAMPLES		LEVEL OF ACTION (i.e. concentration above which a result is deemed non-compliant) [µg/Kg]	NUMBER OF NON COMPLIANT RESULTS (ABOVE DECISION LIMIT)
			PLANNED	TESTED		
	Chlorinated hydrocarbons					
B3a. ORGANOCHLORINE COMPOUNDS INCLUDING PCBS	aldrin	Kidney Fat	1	1	10	NONE
	deldrin	Kidney Fat	1	1	10	NONE
	ddt (total)	Kidney Fat	1	1	500	NONE
	endosulfan s	Kidney Fat	1	1	50	NONE
	alpha-endosulfan	Kidney Fat	1	1	50	NONE
	beta-endosulfan	Kidney Fat	1	1	50	NONE
	hch-alpha	Kidney Fat	1	1	5	NONE
	hch-beta	Kidney Fat	1	1	5	NONE
	hcb	Kidney Fat	1	1	10	NONE
	lindane	Kidney Fat	1	1	10	NONE
	pcb 101	Kidney Fat	1	1	4.5	NONE
	pcb 118	Kidney Fat	1	1	4.5	NONE
	pcb 138	Kidney Fat	1	1	4.5	NONE
	pcb 153	Kidney Fat	1	1	4.5	NONE
	pcb 180	Kidney Fat	1	1	4.5	NONE
	pcb 28	Kidney Fat	1	1	4.5	NONE
pcb 52	Kidney Fat	1	1	4.5	NONE	
B3b. ORGANOPHOSPHORUS COMPOUNDS	chlorfenvinphos	Kidney Fat	1	1	10	NONE
	chlorpyriphos	Kidney Fat	1	1	50	NONE
	diazinon	Kidney Fat	1	1	5	NONE
	dichlorvos	Kidney Fat	1	1	10	NONE
	malathion	Kidney Fat	1	1	10	NONE
	Malaoxon	Kidney Fat	1	1	10	NONE
	propetamphos	Kidney Fat	1	1	5	NONE
B3c. CHEMICAL ELEMENTS						
	lead	kidney	1	1	500	NONE
	cadmium	kidney	1	1	1000	NONE
B3d. MYCOTOXINS	Aflatoxin B1	Muscle	1	1	0.2	NONE
	Aflatoxin B2	Muscle	1	1	0.2	NONE
	Aflatoxin G1	Muscle	1	1	0.2	NONE
	Aflatoxin G2	Muscle	1	1	0.2	NONE

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Reports

1: RESPONSE TO SUSPECTED FOOT AND MOUTH DISEASE OUTBREAK: GANGAKHULU DIP TANK (883)

Date: 15 October 2021

INTRODUCTION

On Saturday 7th August 2021 the Department of Veterinary Services initiated an intensive investigation into a suspected outbreak of Foot and Mouth Disease at Mnyokane (Sigodzi), Gangakhulu Dip Tank Area (TA # 883), Mbabane Veterinary Subregion, Hhohho Region in the north western part of the country (Figure 42). A farmer reported to his Veterinary Assistant that one of his animals was salivating. The salivation was reported to have started on 2nd August 2021. Upon mousing, ulcers were discovered on the tongue. The Veterinary Assistant promptly reported the matter to the Regional Veterinary Officer, who then visited the farmer for further investigation and taking of blood samples.



Figure 40: Suspect animal at Gangakhulu Diptank (883)



INVESTIGATIONS

The suspect animal with eartag number 883-1372 belonged to kraal number 883/136 which had a total number of 18 animals. One animal with eartag number 402-3722 was reported to have been introduced into the kraal from Croydon diptank (TA # 402) in June 2021.

On observation of the animals in the kraal, they all looked calm with no signs of restlessness or salivation, except for the suspect case. The suspect animal was salivating profusely and had an ulcer on the tongue (Figure 40). It had no hoof lesions. The other 17 animals in the kraal had no oral or feet lesions suspicious of FMD. Three animals with tag numbers, 402-3722, 883-1384 and a brown calf had what was suspected to have been healed lesions between the interdigital



spaces of the hooves (Figure 41). Blood samples were collected from the suspect case and the three animals with suspected healed hoof lesions.

Figure 41: Animals suspected of having healed lesions

The blood samples were sent to the Central Veterinary Laboratory in Manzini to be tested using the NSP ELISA. The kraal was placed on isolation. The animals were confined within the homestead and not allowed to mix with neighbouring animals. They were provided with hay and drinking water. Gangakhulu Diptank (883) was placed under quarantine.

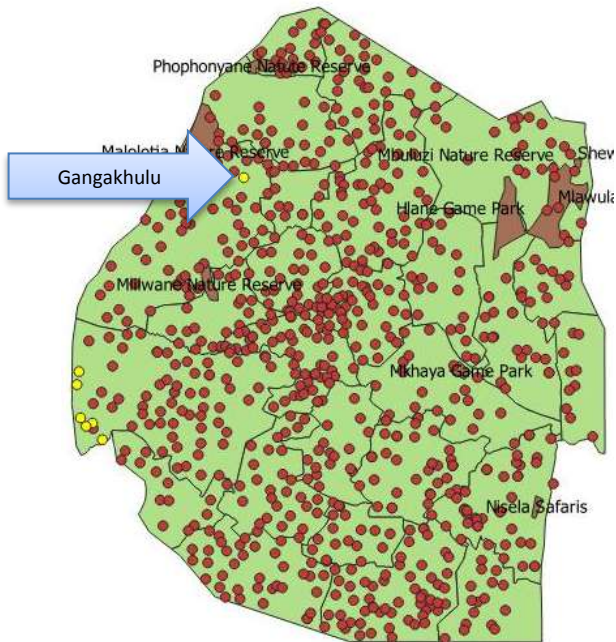


Figure 42: Map showing location of Gangakhulu diptank

1ST LABORATORY FINDINGS (CVL results)

Blood samples were collected on the 7th August 2021 and tested by the Central Veterinary Laboratory (CVL) on the 8th August 2021 using the NSP ELISA. Two of the samples tested positive and these were animal 883-1372 (the suspect case) and animal 883-1384. Results in *Att 1: 1st results CVL attached.*

On receipt of the results, all diptanks in the Mbabane, Piggs Peak and Malandzela subregions were placed on quarantine (Figure 43). Livestock owners in the Gangakhulu diptank (883), local community leaders, Minister of Agriculture, neighbouring countries, SADC Secretariat and OIE Subregional Representative were notified of a possible FMD suspect case. Exports of all cloven hoofed animals and their products were suspended. Botswana Vaccine Institute (BVI) was engaged to assist with the investigation and confirmation of disease.

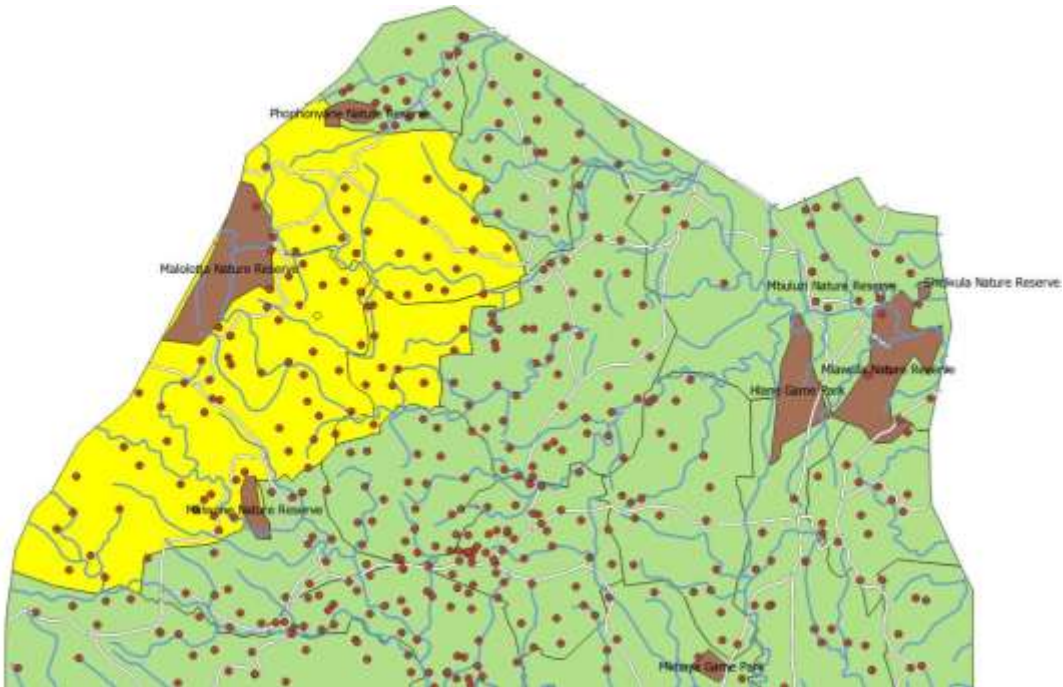


Figure 43: Map showing subregions placed under quarantine.

FURTHER INVESTIGATION

The affected kraal (883/136) was visited again on the 9th and 10th August 2021 to assess progress of the suspected FMD and to also collect more laboratory samples. Physical inspection and mouthing showed no evidence of spread of the suspected FMD to the other 17 animals in the kraal. Only the suspect animal was still salivating and had an unhealed ulcer on the tongue. On the 10th August 2021, the inspection and mouthing was extended to 80 other animals from neighbouring homesteads/kraals. None of the animals inspected had clinical signs or oral and or feet lesions suspicious of FMD. Blood samples were collected from the 18 animals in the affected kraal (kraal 883/136) and from 10 other animals from neighbouring kraals. The 10 animals were randomly selected from the 80 animals inspected. Epithelial tissue and probang samples were collected from the ulcer of the suspect animal (883-1372) and epithelial tissue collected from two other animals (402-3722 and 235-1108) who had what looked like healed ulcers.

2nd LABORATORY FINDINGS (CVL results)

The blood samples were tested by the Central Veterinary Laboratory (CVL) on the 11th August 2021 in Manzini using the NSP ELISA and all were negative except two. Animals 883-1372 and 883-1384 who tested positive in the first test were positive the second time. Results in *Att 2 : 2nd results CVL* attached.

On the 12th August 2021, the 28 blood samples and the tissue samples were sent to the two OIE Reference Laboratories ; Onderstepoort Veterinary Institute (OVI) in South Africa and Botswana Veterinary Institute (BVI) in Botswana for confirmation and possibly typing.

INVESTIGATION WITH BVI EXPERT

On 17th August 2021, Dr Mokganedi Mokopasetso from Botswana Veterinary Institute arrived in the country to give technical field support to the investigation team. On the 18th August 2021, he joined the Field Investigation Team in the inspection and mouthing of Tshebovu diptank (892) as well as the suspect kraal at Gangakhulu diptank (883). A total of 829 (80% coverage) animals were inspected and mouthed at Tshebovu diptank (892) and none had clinical signs or mouth and feet lesions suspicious of FMD. At the suspect kraal at Gangakhulu diptank (883), all 17 animals still had no FMD clinical signs and or oral and feet lesions. Only the suspect animal still had an ulcer on the tongue and was still salivating.



Figure 44: Mouthing at Tshebovu Diptank (892) with Dr Mokopasetso from BVI

From the field investigations, it was concluded that the clinical picture did not fit with the epidemiology of FMD. Although the lesions on the suspect animal were almost typical FMD lesions but there was involvement of deep muscle tissue of the tongue which is not a usual finding of FMD cases. In addition, more animals were expected to have been showing clinical signs and or lesions characteristic of FMD in the suspect kraal by that period.

SUSPECT KRAAL 883/136

Kraal 883/136 is registered under Gangakhulu Diptank Area (883) and had 18 animals at the as at August 2021. The animals are kraaled at night and graze extensively during the day. The history of the kraal indicated that, all animals were born in that kraal (or diptank area) except 6

which had been permitted in from other diptanks. The most recent animal to have been permitted in was animal 402-3722 which had been moved from Croydon Diptank (402) in June 2021. This particular animal had no clinical signs or mouth and feet lesions suspicious of FMD and tested negative on NSP ELISA. The kraal also had a pig which was housed. On physical inspection, it showed no signs characteristic of FMD.

TRACE BACKS AND TRACE FORWARDS

In the absence of clinical signs from the other animals, the suspect case (animal 883-1372) was taken as the 1st animal to be infected in the kraal (kraal 883/136). The lesion observed in the animal was estimated to be 4 days old. The animal was reported to have been salivating since 03/08/2021 and inspection was done 07/08/2021. The earliest possible date of infection was estimated to be 19 July 2021 and the latest possible date of infection 02 August 2021. Therefore, infection was most likely to have occurred between 27 July and 01 August 2021. With this timeline, the animal was most likely to have been infective between 2 - 5 August 2021. Therefore, more animals were expected to exhibit clinical signs of FMD by 17-20 August 2021.

Using the Swaziland Livestock Information and Traceability System (SLITS), all Stock Removal Permits moving animals into Gangakhulu Diptank (883) in the period June - July 2021 and out of Gangakhulu (883) in the period June - August 2021 were assessed. Stock Removal Permits were issued to move animals from Gangakhulu diptank (883) to Logoba (448), Mgubudla (593), Gobholo (103), Mnisi (55) and Ekudzeni (05) diptanks. Animals were moved into Gangakhulu (883) from Gelegele (872), Lomagengane (107), Kenswick (342), Graggemore (334), Enkube (868), Luntsantsama (93) and Makhubeni (921) diptanks.

Inspections were carried out in these diptanks and no animal was seen exhibiting any clinical signs typical of FMD infection. More attention was given to the kraals that received or moved animals from or to Gangakhulu diptank (883). Further inspections were done for animals seen or reported limping. Most of the limping was due to trauma. Inspection coverage is as shown in table 1 below. In all diptanks inspected, farmers were reminded about their obligation to report diseases to the Veterinary Services and were taught about FMD symptoms and clinical signs.

Table 76: Inspection results of trace backs and forwards

Date	Diptank name & number	Subregion	Region	Number on register	Number inspected	% coverage
31/08/2021	Logoba (448)	Manzini	Manzini	390	333	85%
18/08/2021	Mgubudla (593)	Ngculwini	Manzini	1100	950	86%
30/08/2021	Gobholo (103)	Mbabane	Hhohho	776	669	86%
09/09/2021	Mnisi (55)	Mbabane	Hhohho	832	537	65%
02/09/2021	Ekudzeni (05)	Malandzela	Hhohho	378	354	94%
18/08/2021	Gelegele (872)	Piggs Peak	Hhohho	586	548	94%
17/08/2021	Lomagengane (107)	Sithobela	Lubombo	393	386	98%

15/09/2021	Kenswick (342)	Sithobela	Lubombo	70	61	87%
16/08/2021	Graggemore (334)	Lubuli	Lubombo	98	98	100%
10/08/2021	Enkube (868)	Mbabane	Hhohho	420	388	92%
25/08/2021	Luntsantsama (93)	Mbabane	Hhohho	814	706	87%
26/08/2021	Makhubeni (921)	Mbabane	Hhohho	1442	962	67%

INSPECTION OF CROYDON DIPTANK (402)

On 24th August 2021, inspections and mouthings were carried out at Croydon diptank (402). A total of 1466 (95% coverage) animals were inspected and none had clinical signs or mouth and or feet lesions suspicious of FMD. The dip tank was revisited on 21st September 2021 where a meeting was held with farmers to remind them on animal health issues including FMD, the importance of dipping and the application of Stock Movement Permit whenever they want to move their animals. They were requested to report animals suspected to be sick.



Figure 45: Farmer sensitization exercise at Croydon (402) diptank

LIFTING OF QUARANTINE MEASURES

On 19 August 2021 quarantine measures were lifted in the 3 subregions (Mbabane, Malandzela and Piggs Peak Subregions) except for diptanks within a 10 km radius of Gangakhulu (883) diptank. This affected 19 diptanks are as shown in Annex 1 and Figure 46.

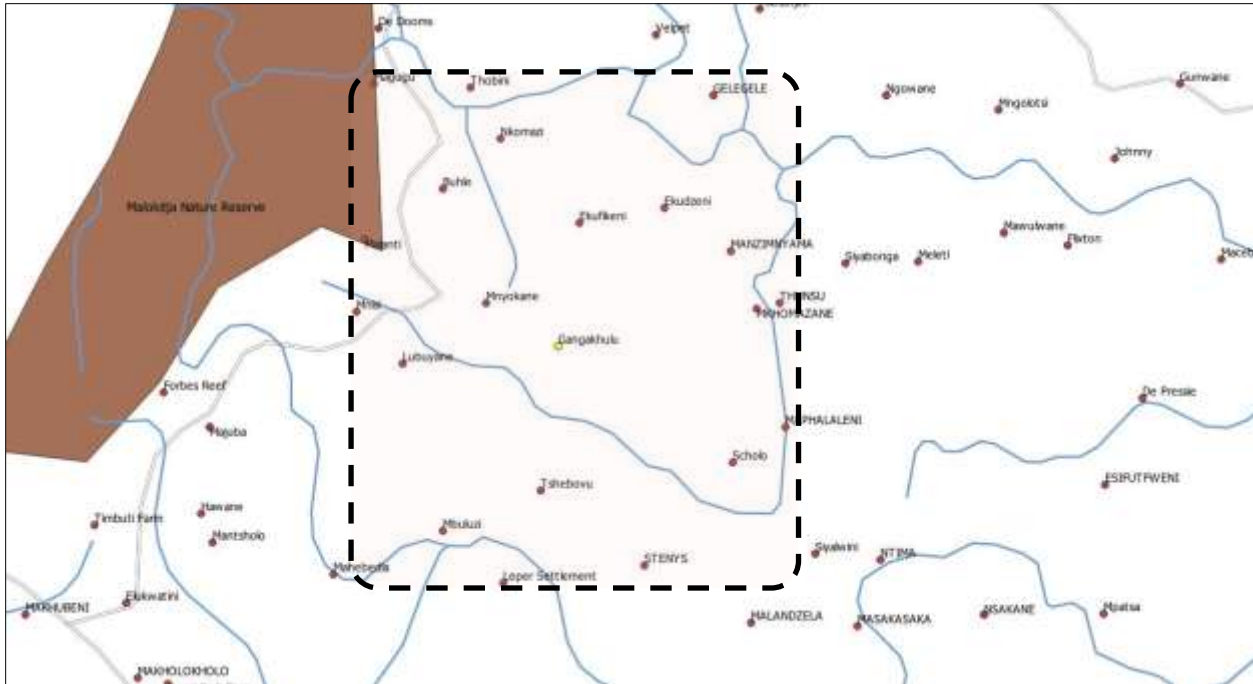


Figure 46: Map showing Gangakhulu Surveillance Area

On the 26th August 2021, the affected kraal 883/136 was visited to check on disease progress. Clinical examination was conducted on the animals and no lesions were found in all the other animals except the suspect case. The ulcer on the tongue had started to heal. The animals were feeding and drinking normally. The 18 animals were then released from confinement and allowed to graze outside the homestead.

3rd LABORATORY FINDINGS (OVI and BVI results)

At Onderstepoort Veterinary Institute (OVI), twenty five (25) serum samples, three (3) epithelial tissues and one (1) probang samples were tested. Three serum samples leaked in transit (samples belonging to animals 883-1387, 883-1372 and 883-1452). One sample (sample belonging to animal 883-1384) had enough serum to perform the Solid Phase Blocking ELISA (SPCE) only and not the NSP ELISA.

The samples were received on 16th August 2021 and tested on 18 August 2021. They were tested with the SPC ELISA, NSP ELISA and PCR. Testing for antibodies to the structural proteins of SAT-1, SAT-2 and SAT-3 FMDV was negative for all samples. Testing for antibodies to the non-structural proteins of FMDV was negative for all samples. Testing for FMDV RNA was negative for all samples. Results in *Att 3: 3rd results OVI* attached.

At BVI, samples were received on 19th August 2021, and tested on 19-20 August 2021 using the NSP ELISA. Twenty eight (28) serum samples were received and four (4) (samples belonging to animals 235-2838, 883-1384, 883-1372 and 883-1452) reacted positive for FMD. One of the samples (883-1452) was not positive with 95% confidence. The four positive samples were then tested on 19-26 August with Solid Phase Blocking ELISA (SPBE). They were all negative

for antibodies to the structural proteins of SAT1, SAT 2, SAT 3, Type A and Type O FMD Viruses. The tubes that were supposed to have epithelial tissue arrived at the laboratory empty and therefore PCR or virus isolation could not be done. Results in *Att 3: 3rd results BVI* attached.

INSPECTION OF DIPTANKS UNDER QUARANTINE

A total of 19 diptanks and Gangakhulu (883) were put on 30 day quarantine and physically inspected for clinical signs of FMD disease. The number of animals inspected in each diptank is as shown in Annex 2.

The health status of animals was generally good and none of the animals had clinical signs typically of FMD infection. A few animals were limping and upon clinical examination one had inflammation above the hoof and the other had edema on the front leg.

During the mouthing exercise several lesions were observed on animals, but these were not typical of FMD lesions. Lesions observed during mouthing included cuts on the tongue and trauma wounds of the gums



Figure 47: Mouth lesions observed during mouthing exercise of quarantined diptanks

Meetings were also held with farmers after the inspection of livestock. During these meetings farmers were interviewed on the health of their animals with regards to FMD symptoms. They were also educated on FMD and other disease, the clinical signs, biosecurity measures and were further requested to be vigilant and report any sick animals to the veterinary office.

INSPECTION IN OTHER REGIONS

In addition to the surveillance activities conducted in the quarantine area, inspections, awareness and sensitization exercises were done in other regions of the country. These were focused on FMD and other diseases of importance.

In the Manzini region intensive inspections coupled with sensitization and awareness activities were conducted from 18th August 2021 to 21st September 2021 in 11 dip tanks areas. Some of the diptanks targeted were those identified as recipients or suppliers of animals from Gangakhulu (883) diptank during the suspect period. The rest were dip tanks situated along the international boundary with the Republic of South Africa in the west.

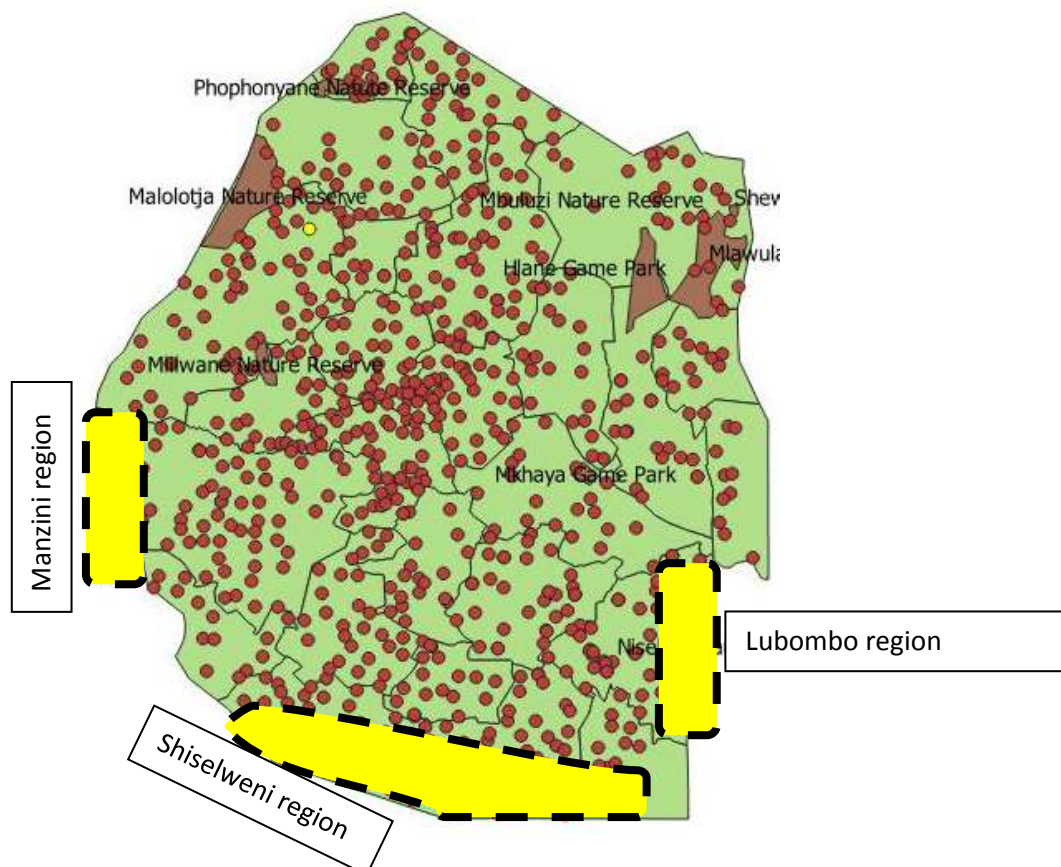


Figure 48: Map showing diptank areas targeted for surveillance in the other regions

The diptank inspected and their inspection dates are as shown in Table 77 below. None of the animals had clinical signs suggestive of FMD. The farmers also confirmed that they had not seen any animal with symptoms suggestive of FMD.

Table 77: Inspection results for diptank bordering RSA in Manzini region

Date	Dip tank	Cattle on Register	Cattle inspected	% inspected	Goats on register	Goats inspected	% inspected	Sheep on register	Sheep inspected	% inspected
25/08/21	Mbanana 095	437	317	73%	208	174	84%	3	3	100%
30/08/21	Mavela 513	500	465	93%	123	112	91%	47	37	79%
1/09/2021	Somntsewu 552	2115	1943	92%	715	694	97%	77	73	95%
13/09/2021	Mbane 842	425	232	55%	67	45	67%	0	0	
13/09/2021	Eteteni 833	901	654	73%	253	242	96%	0	0	
15/09/21	Magwaza 826	453	354	78%	113	105	93%	0	0	

In the Lubombo region surveillance activities which included inspections and mousing coincided with activities which were being done following a buffalo sighting in the north eastern border of the country (Report 2). Additional inspections, mousing and sensitization activities were conducted from 17th August 2021 to 14 September 2021 in 5 dip tanks areas situated along the south eastern international boundary with the Republic of South Africa.

The diptank inspected in the south eastern frontier and their inspection dates are as shown in Table 79. None of the animals had clinical signs and or lesions suggestive of FMD.

Table 78: Inspection results for diptank bordering RSA in Lubombo region

DATE	Subregion	Diptank name	Diptank #	On register	Inspected	% coverage
17.08.2021	Lubuli	Ndzevane	294	1194	1160	97%
18.08.2021	Lubuli	Mahlabaneni	389	1425	1390	98%
9.08.2021	Lubuli	Lismore	350	308	283	92%
01.09.2021	Lubuli	Ntungeni	875	449	425	95%
14.09.2021	Lubuli	Mountain View	347	205	199	97%

In the Shiselweni region inspections, mousing and sensitization activities were conducted from 17th August 2021 to 22nd September 2021 in 25 dip tanks areas situated along the south western frontier with the Republic of South Africa.

The diptank inspected and their inspection dates are as shown in Table 79 below. Lesions observed in some diptanks like Munywaneni (016) where threadlike lesions on the underside of the tongues which were shown to be residual scars from healed Lumpy Skin Disease (LSD). Other lesions observed were sores/wounds of traumatic origin. None of the animals inspected had clinical signs and or lesions suggestive of FMD.

Table 79: Inspection results for diptank bordering RSA in Shiselweni region

DATE	Subregion	Diptank name	Diptank #	On register	Inspected	% coverage
17/08/2021	Hluti	Thandizwe	727	768	740	96%
9/9/2021	Hluti	Hhuhhuma	896	462	430	93%
17/08/2021	Hluti	Sivule	736	613	600	98%
30/08/2021	Hluti	Maholoba	6	345	326	94%
31/08/2021	Hluti	Sikhwebezi	762	817	743	91%
9/9/2021	Hluti	Mzimvubu	730	367	317	86%
8/9/2021	Hluti	Nsalitshe	791	334	298	89%
1/9/2021	Hluti	Munywaneni	16	901	865	96%
13/09/2021	Hluti	Ncotshane	728	466	374	80%
7/9/2021	Nhlangano	Mzinsangu	719	1333	1286	96%

30/08/2021	Nhlangano	Zombodze	713	1715	1631	95%
13/09/2021	Nhlangano	Chibidze	712	1398	1353	97%
30/08/2021	Nhlangano	Maphumzane	265	804	757	94%
31/08/2021	Nhlangano	Mozane	704	1373	1373	100%
1/9/2021	Nhlangano	Matimatima	699	750	725	97%
2/9/2021	Nhlangano	Makholweni	169	717	719	100%
9/9/2021	Nhlangano	Dlovunga	168	1122	1013	90%
9/9/2021	Nhlangano	Mkhondvo	665	1054	967	92%
26/08/2021	Nhlangano	Ndlela	874	748	701	94%
13/09/2021	Nhlangano	Ncwele	879	1247	1140	91%
14/09/2021	Lavumisa	Mabande	732	1396	1319	94%
15/09/2021	Lavumisa	Msuzaneni	739	1044	1008	97%
16/09/2021	Lavumisa	Sikhalasabhodo	726	1141	1051	92%
21/09/2021	Lavumisa	Vimmy ridge	733	532	473	89%
22/09/2021	Lavumisa	Nquthu	846	1183	1069	90%



Figure 49: Some of lesions observed during inspections in the Shiselweni region

DISCUSSION

The clinical signs in the suspect animal and its positive reaction on NSP ELISA were highly suggestive of infection with FMD virus. The absence of evidence of spread of disease to other animals in herd made confirmation of disease elusive and necessitated further investigations and additional testing. The findings from the case are as follows;

1. The suspect animal had suggestive clinical signs and tested positive on NSP- ELISA at the national laboratory.
2. The other 17 animals in the same herd showed no clinical signs to the disease and all but one tested negative on NSP-ELISA at the national laboratory. The animals were isolated

together with the suspect animal for a period of 19 days but there was still no evidence of spread of infection to them.

3. Neighbouring animals which had been in-contact with the suspect herd also did not have any clinical signs suggestive of FMD infection and they also tested negative on NSP ELISA at the national laboratory.
4. Clinical and physical inspections of animals in surrounding diptank areas and diptanks which had moved or received animals from the suspect diptank area showed no animal with clinical signs suggestive of FMD infection.
5. Clinical and physical inspections of animals in diptank areas considered to be high risk areas for the introduction of FMD showed no animal with clinical signs suggestive of FMD infection.
6. Subsequent laboratory testing of the suspect animal at OIE FMD Reference Laboratories yielded negative results on both SPBE and PCR at OVI and BVI.

CONCLUSION

From the field investigations, it was concluded that the clinical picture did not fit with the epidemiology of FMD. More animals were expected to have been showing clinical signs and or lesions characteristic of FMD in the suspect kraal and neighbouring herds by that period. The suspect animal was expected to test positive on SPBE and PCR if it were truly positive.

It was therefore concluded that the suspect animal was not infected by FMDV. A possible diagnosis made was that of trauma or corrosion to the tongue caused by consuming some chemicals which were discarded in nearby fields a week before the incident.

The suspect FMD outbreak was closed and quarantine measures instituted at Gangankhulu (883) diptank and surrounding areas were lifted on the 10th October 2021.

LESSONS LEARNT

Even though the case ended up being a suspect case, the response activities done served as a Simulation Exercise for a possible FMD outbreak. There were lesson learnt; successes and gaps identified from the exercise. These were;

1. **Effectiveness of Passive surveillance.** There was prompt reporting of the farmer upon seeing possible FMD clinical signs. There was also a prompt response of the Veterinary Services on receipt of notification from farmer.
2. **Good support from Reference Laboratories.** There was immediate assistance from Botswana Veterinary Institute (BVI) in terms of field investigation as well as laboratory testing. Onderstepoort Veterinary Institute (OVI) also prioritized Eswatini samples even though they were in the middle of their own outbreak investigation.
3. Good Support from Policy makers and local authorities
4. Cooperation of farmers and local communities.
5. In presence of clinical suspicion, it is important to have laboratory results that are confirmed by the Reference Laboratories before declaring an outbreak.

6. There is a need to strengthen the diagnostic capacity of the National Veterinary Laboratory to be able to do confirmatory tests.
7. There is a need for improvement of sample transportation to Reference Laboratory to curb delays in testing.
8. Reference Laboratories need to improve the turnaround time of results for better and faster conclusion of a suspect case.
9. Inadequate resources especial lack of transport challenges and frustrates response and surveillance activities.

Annex 1: Diptanks put under quarantine

Diptank name	Diptank Number	Subregion
Nkomazi	047	Piggs Peak
Malanti	050	Piggs Peak
Buhle	121	Piggs Peak
Magugu	902	Piggs Peak
Mnyokane	051	Mbabane
Mnisi	055	Mbabane
Majuba	065	Mbabane
Mbuluzi	076	Mbabane
Lepper Settlement	082	Mbabane
Lubuyane	864	Mbabane
Ekufikeni	869	Mbabane
Tshebovu	892	Mbabane
Gangakhulu	883	Mbabane
Sicholo	002	Malandzela
Ekudzeni	005	Malandzela
Manzimnyama	052	Malandzela
Mkhomazana	056	Malandzela
Thunsu	057	Malandzela
Steyns	083	Malandzela
Maphalaleni	124	Malandzela

Annex 2: Inspection results for diptanks under quarantine

Mbabane Inspection Summaries

Date	Diptank name	Diptank number	# On register	# inspected	% coverage
13/9/21	Mnyokane	051	809	508	63%
9/9/21	Mnisi	055	832	537	65%
9/9/21	Majuba	065	1751	1190	68%

30/8/21	Mbuluzi	076	1051	847	81%
26/08/21	Lepper Settlement	082	14	14	100%
18/8/21	Lubuyane	864	1550	1269	82%
17/8/21	Ekufikeni	869	908	639	70%
2/9/21	Gangakhulu	883	1093	811	74%
18/8/21	Tshebovu	892	1038	829	80%

Malandzela Inspection Summaries

Date	Diptank name	Diptank number	# On register	# inspected	% coverage
24/8/21	Sicholo	002	665	592	89%
2/9/21	Ekudzeni	005	378	354	94%
1/9/21	Manzimnyama	052	583	527	90%
23/8/21	Mkhomazana	056	507	489	96%
30/8/21	Thunsu	057	1052	929	88%
24/8/21	Steyns	083	1366	1203	88%
26/8/21	Maphalaleni	124	929	713	77%

Piggs Peak Inspection Summaries

Date	Diptank name	Diptank number	# On register	# inspected	% coverage
25/8/21	Nkomazi	047	391	307	79%
30/8/21	Malanti	050	1050	743	71%
26/8/21	Buhle	121	462	425	92%
24/8/21	Magugu	902	404	335	83%

2: RESPONSE TO BUFFALO INCURSION AT LOMAHASHA AREA

14 October 2021

On the 18th of May 2021 members of the public reported a possible buffalo sighting in the north eastern frontier near Lomahasha Border gate, along the cordon fence with

Mozambique. The presence of the buffalo was later confirmed by rangers from Big Game Parks, who were able to positively identify its foot prints in the area. However, a ground search for the buffalo yielded no results.

On the 21st May 2021, there was another report of a buffalo sighting at Nkalashane area. It was assumed that this was the same buffalo sighted at Lomahasha area. Rangers together with veterinary personnel and Police Officers were immediately deployed to the area. They were able to find buffalo but failed to destroy it. The buffalo disappeared and was later spotted at Mlawula Nature Reserve on the 25th May 2021. Attempts to kill it were again unsuccessful and it disappeared once more.

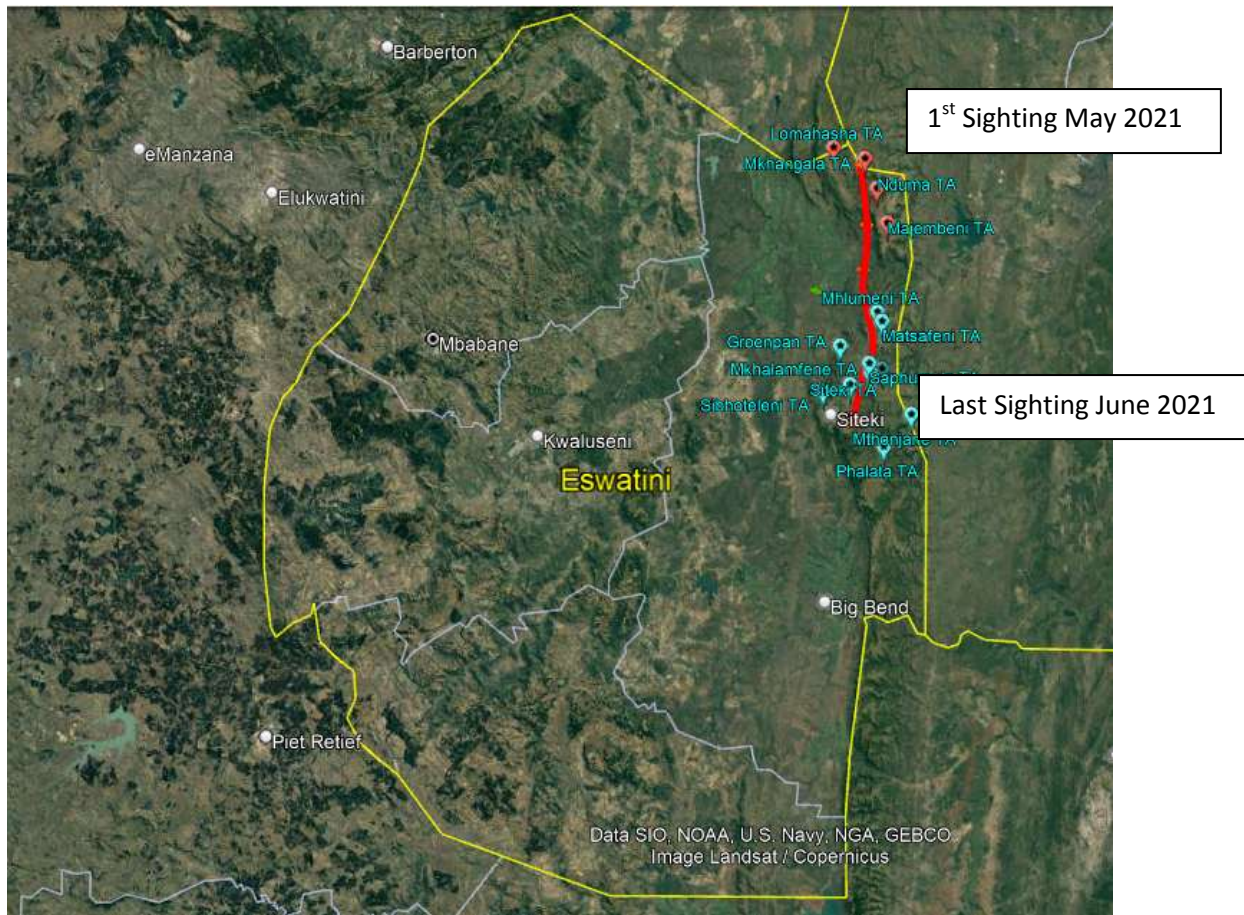


Figure 50: Map showing possible buffalo pathway from 1st to last sighting

On the 4th of June 2021 the buffalo was spotted around Makewu village on the eastern outskirts of Siteki town. It was chased by the local community as it had already injured 2 elderly people of the area. Once again, attempts to kill it were unsuccessful. It escaped into the relatively dense vegetation and efforts to hunt it further proved difficult. In the following days veterinary cordon guards patrolled the area from Makewu up to Sitsatsaweni and Maphungwane to try and locate the buffalo with no luck.

On the 12th of June 2021, the buffalo was reported to have been sighted around Sitsatsaweni area and searches conducted by the Police, Big Game Parks rangers and Veterinary officials could not confirm the presence of the buffalo in the area. Further searches were mounted by veterinary cordon guards on subsequent days but the buffalo could not be spotted anywhere. A massive search was then conducted on the 24th June, involving mainly the local community livestock owners and veterinary officials assisted by a private helicopter belonging to Lincoliny of Dyson Company. There were 2 teams, one starting from Siteki moving eastwards towards Sitsatsaweni and the second team starting at Sitsatsaweni and moving towards Siteki. Again despite the massive hunt, no buffalo was spotted or reportedly seen by the locals.

The search was later abandoned and the fate of the buffalo remains unknown. Two possibilities were suggested; the buffalo escaped out of the country into Mozambique or the buffalo was killed by the local community and consumed. There were rumours to the later but it was difficult to verify them. The community was afraid that they would be arrested under the Game Act if they were to reveal that they had killed the buffalo, hence were not forth coming with information.

RESPONSE ACTIVITIES

Diptank areas affected by the buffalo incursion are also shown in Figure 51 above. The places where the buffalo was seen and the timelines are also indicated on Figure 51. These dip tank areas were immediately placed under quarantine. Surveillance activities which included mousing and inspections were done in the livestock populations in affected dip tank areas and the results are as shown in Table 80 and Table 81 below. No lesions suggestive of FMD infection were detected.

Blood samples for serological testing in line with the routine annual serological testing were collected around 08 June 2021 to 16 June 2021 from some of the affected diptanks and submitted to Central Veterinary Laboratory in Manzini. They were tested for FMD using the NSP ELISA and all were negative for FMD antibodies, indicating that there was no infection. Results are as shown in Table 82 below.

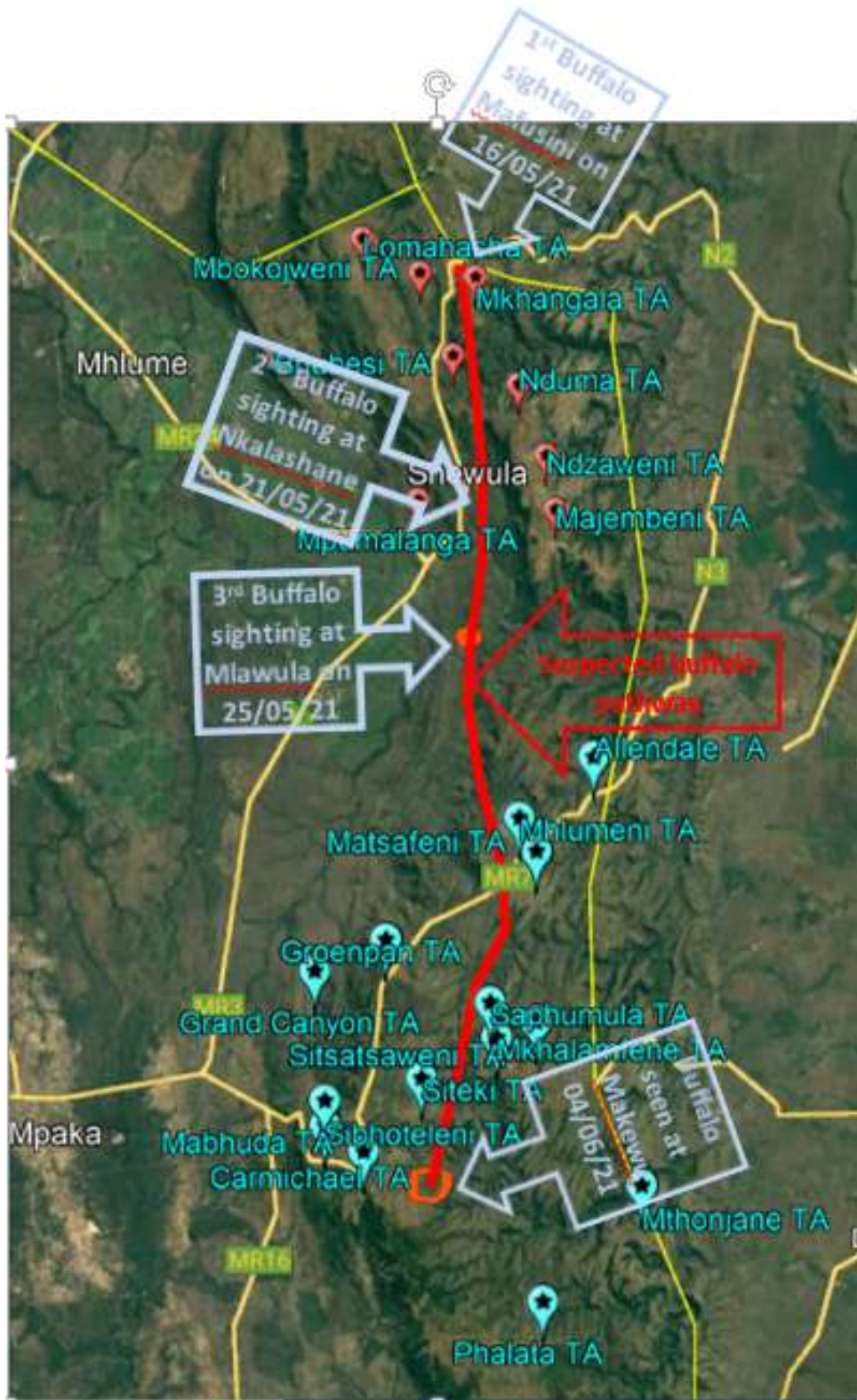


Figure 51: Map showing affected diptank areas in Lomahasha and Siteki and suspected buffalo pathway

Table 80: Mouthing and inspection activities in cattle following buffalo incursion in Lomahasha

Mouthing and inspection activities following buffalo incursion in Lomahasha							
CATTLE							
Date	Activity	Diptank Name	T/A No:	Sub-region	On Register	Dipped	coverage
07/06/2021	Mouthing	Mkhangala	378	Lomahasha	1321	1229	93%
08/06/2021	Mouthing	Bhubesi	941	Lomahasha	637	571	90%
08/06/2021	Mouthing	Majembeni	216	Lomahasha	571	511	89%
09/06/2021	Mouthing	Nduma	206	Lomahasha	760	726	96%
14/06/2021	Mouthing	Mbokojeweni	819	Lomahasha	871	832	96%
14/06/20221	Mouthing	Ndzaweni	388	Lomahasha	779	707	91%
16/06/2021	Mouthing	Lomahasha	204	Lomahasha	1540	1474	96%
21/06/2021	Inspection	Mkhangala	378	Lomahasha	1326	1233	93%
21/06/2021	Inspection	Ndzaweni	388	Lomahasha	781	692	89%
22/06/2021	Inspection	Bhubesi	941	Lomahasha	641	563	88%
23/06/2021	Inspection	Nduma	206	Lomahasha	760	727	96%
28/06/2021	Inspection	Mbokojeweni	819	Lomahasha	873	827	95%
29/06/2021	Inspection	Majembeni	216	Lomahasha	555	511	92%
30/06/2021	Inspection	Lomahasha	204	Lomahasha	1554	1480	95%

Inspection activities following buffalo incursion in Lomahasha							
SHEEP AND GOATS							
Date	Activity	Diptank Name	T/A No:	Sub-region	On Register	Dipped	coverage
07/06/2021	Inspection	Mkhangala	378	Lomahasha	1191	1107	93%
08/06/2021	Inspection	Bhubesi	941	Lomahasha	937	813	87%
08/06/2021	Inspection	Majembeni	216	Lomahasha	991	924	93%

09/06/2021	Inspection	Nduma	206	Lomahasha	1284	1155	90%
14/06/2021	Inspection	Mbokojeweni	819	Lomahasha	1003	890	89%
14/06/20221	Inspection	Ndzaweni	388	Lomahasha	903	824	91%
16/06/2021	Inspection	Lomahasha	204	Lomahasha	1565	1475	94%
21/06/2021	Inspection	Mkhangala	378	Lomahasha	1180	1058	90%
21/06/2021	Inspection	Ndzaweni	388	Lomahasha	897	830	93%
22/06/2021	Inspection	Bhubesi	941	Lomahasha	922	836	91%
23/06/2021	Inspection	Nduma	206	Lomahasha	1279	1183	92%
28/06/2021	Inspection	Mbokojeweni	819	Lomahasha	999	917	92%
29/06/2021	Inspection	Majembeni	216	Lomahasha	997	901	90%
30/06/2021	Inspection	Lomahasha	204	Lomahasha	1552	1445	93%

Table 81: Mouthing and Inspection activities following buffalo incursion in Siteki

Mouthing and inspection activities following buffalo incursion in Siteki							
CATTLE							
Date	Activity	Diptank Name	T/A No:	Sub-region	On Register	Dipped	coverage
19/07/2021	Mouthing	Sibhoteleni	236	Siteki	1470	1310	89%
26/07/2021	Mouthing	Phalata	256	Siteki	1195	1085	91%
26/07/2021	Mouthing	Saphumula	13	Siteki	529	513	97%
27/07/2021	Mouthing	Mkhalamfene	820	Siteki	469	426	91%
28/07/2021	Mouthing	Sitsatsaweni	234	Siteki	577	577	100%
29/07/2021	Mouthing	Mhlumeni	224	Siteki	694	677	98%
02/08/2021	Mouthing	Allendale	223	Siteki	53	38	72%
02/08/2021	Mouthing	Skhonkwane	318	Siteki	121	121	100%
03/08/2021	Mouthing	Siteki	243	Siteki	1175	1062	90%

04/08/2021	Mouthing	Mthonjane	254	Siteki	591	472	80%
05/08/2021	Mouthing	Carmichaels	242	Siteki	260	224	86%
05/08/2021	Mouthing	Mabhuda	249	Siteki	197	191	97%
05/08/2021	Mouthing	Grandcanyon	227	Siteki	1033	842	82%
10/08/2021	Mouthing	Matsafeni	225	Siteki	351	337	96%
10/08/2021	Mouthing	Bondlandlama	171	Siteki	136	123	90%
18/08/2021	Mouthing	Groenpan	228	Siteki	394	233	59%
11/08/2021	Mouthing	Encubekelaphambili	812	Siteki	57	55	96%
02/08/2021	Inspection	Sibhoteleni	236	Siteki	1467	1328	91%
09/08/2021	Inspection	Phalata	256	Siteki	1195	1123	94%
09/08/2021	Inspection	Saphumula	13	Siteki	533	521	98%
10/08/2021	Inspection	Mkhalamfene	820	Siteki	477	436	91%
11/08/2021	Inspection	Sitsatsaweni	234	Siteki	579	579	100%
12/08/2021	Inspection	Mhlumeni	224	Siteki	705	684	97%
16/08/2021	Inspection	Allendale	223	Siteki	53	48	91%
16/08/2021	Inspection	Skhonkwane	318	Siteki	124	124	100%
17/08/2021	Inspection	Siteki	243	Siteki	1177	941	80%
18/08/2021	Inspection	Mthonjane	254	Siteki	591	399	68%
19/08/2021	Inspection	Carmichaels	242	Siteki	260	227	87%
19/08/2021	Inspection	Mabhuda	249	Siteki	197	191	97%
12/08/2021	Inspection	Grandcanyon	227	Siteki	1033	815	79%
17/08/2021	Inspection	Matsafeni	225	Siteki	349	339	97%
17/08/2021	Inspection	Bondlandlama	171	Siteki	136	123	90%
04/08/2021	Inspection	Groenpan	228	Siteki	395	229	58%

18/08/2021	Inspection	Encubekelaphambili	812	Siteki	57	55	96%
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Inspection activities following buffalo incursion in Siteki							
SHEEP AND GOATS							
Date	Activity	Diptank Name	T/A No:	Sub-region	On Register	Dipped	Coverage
19/07/2021	Inspection	Sibhoteleni	236	Siteki	1189	970	82%
26/07/2021	Inspection	Phalata	256	Siteki	1213	988	81%
26/07/2021	Inspection	Saphumula	13	Siteki	532	483	91%
27/07/2021	Inspection	Mkhalamfene	820	Siteki	166	143	86%
28/07/2021	Inspection	Sitsatsaweni	234	Siteki	916	888	97%
29/07/2021	Inspection	Mhlumeni	224	Siteki	615	605	98%
02/08/2021	Inspection	Allendale	223	Siteki	27	27	100%
03/08/2021	Inspection	Siteki	243	Siteki	1200	1046	87%
04/08/2021	Inspection	Mthonjane	254	Siteki	364	343	94%
05/08/2021	Inspection	Mabhuda	249	Siteki	17	17	100%
05/08/2021	Inspection	Grandcanyon	227	Siteki	84	69	82%
10/08/2021	Inspection	Matsafeni	225	Siteki	173	172	99%
10/08/2021	Inspection	Bondlandlama	171	Siteki	6	6	100%
18/08/2021	Inspection	Encubekelaphambili	812	Siteki	33	33	100%

Table 82: NSP results for diptanks sampled

Date sampled	Diptank name	Diptank population	Number of samples	Results
08/06/2021	Majembeni (216)	991	28	Negative
09/06/2021	Nduma (206)	1284	28	Negative
14/06/2021	Ndzaweni (388)	897	28	Negative
14/06/2021	Mbokojeni (819)	1003	28	Negative

16/06/2021	Lomahasha (204)	1565	28	Negative
Total			140	