

## 6.0 Epidemiology Unit

### 6.1 Diseases Reported in 2012

The country has a long history of absence of some of the major epidemic diseases of livestock such as foot and mouth disease (FMD) and other viral vesicular diseases, contagious bovine pleuropneumonia (CBPP), Peste des petits ruminants (PPR), bovine spongiform encephalopathy (BSE), anthrax, African swine fever, equine infectious anaemia, highly pathogenic avian influenza (HPAI) amongst others. There are others which have not been reported for over a decade such as notifiable low pathogenic avian influenza (LPAI), theileriosis and trypanosomosis in cattle.

As already mentioned in Section on Animal Health System the disease surveillance system that informs our disease reports is a combination of the passive system that relies on farmer reports and active search from animal health officers who get to pick up cases at dip-tanks during dipping and inspection (for cattle, sheep and goats) or at farms during routine inspection and extension visits (pigs, poultry).

### 6.2 Tick-borne diseases (TBDs)

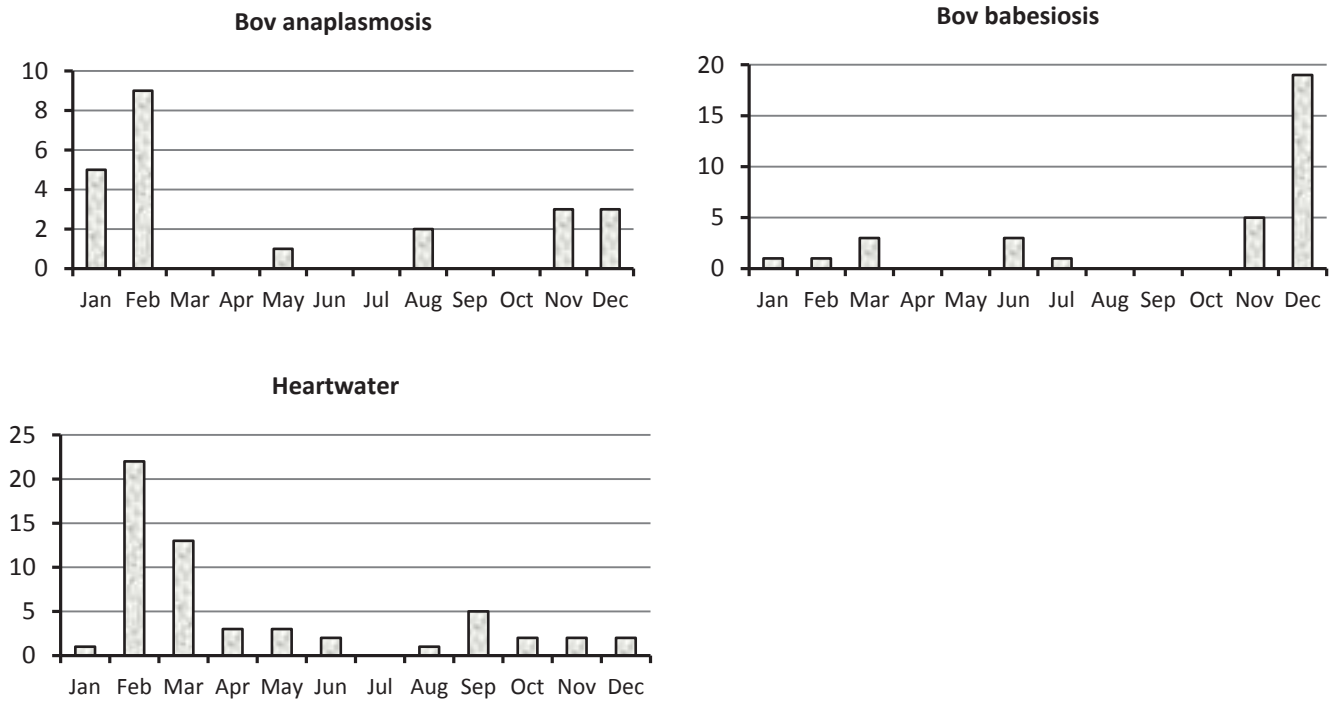
In Swaziland the most common tick-borne diseases of livestock are bovine babesiosis, bovine anaplasmosis and heartwater in cattle, sheep and goats. The diseases generally occur across all ecological zones of the country with heartwater showing tendencies of invading upland areas where it was previously not prevalent before the beginning of the 90s.

In 2012 as was the case in 2011 there were more reported cases of heartwater than the other two TBDs (table 19). A total of fifty six (56) cases of heartwater with 22 deaths were reported in 22 foci. Twenty two (22) of the 56 cases (with 11 deaths) occurred in cattle, 33 cases (with 10 deaths) in goats and one case that died occurred in sheep. There were 33 reported cases of bovine babesiosis with 4 deaths and 23 cases of bovine anaplasmosis with 8 deaths. Overall there were 112 cases of the three TBDs reported and 34 of those died. The number of cases by region is shown in table 19 below.

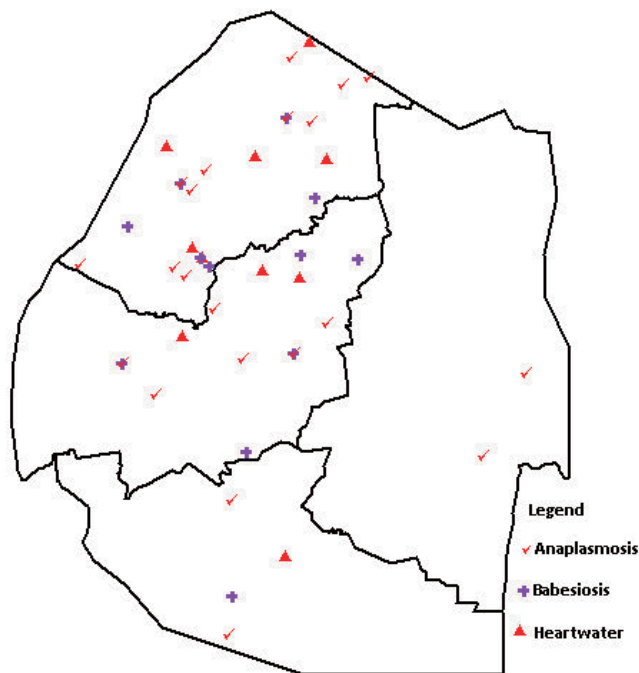
Disease	Region	No. of Foci	Cases			Deaths		
			Bovine	Caprine	Ovine	Bovine	Caprine	Ovine
Heartwater	Hhohho	11	11	30	0	6	7	0
	Lubombo	2	4	1	0	0	1	0
	Manzini	6	5	2	1	5	2	1
	Shiselweni	1	2	0	0	0	0	0
	<b>Total</b>	<b>20</b>	<b>22</b>	<b>33</b>	<b>1</b>	<b>11</b>	<b>10</b>	<b>1</b>
Bovine Anaplasmosis	Hhohho	6	19			5		
	Manzini	3	3			3		
	Shiselweni	1	1			0		
	<b>Total</b>	<b>10</b>	<b>23</b>			<b>8</b>		
Bovine Babesiosis	Hhohho	6	11			3		
	Manzini	4	4			1		
	Shiselweni	2	18			0		
	<b>Total</b>	<b>12</b>	<b>33</b>			<b>4</b>		

**Table 19:** Number of cases of three Tick-borne diseases and regions where they occurred

Figure 8 shows number of cases of the three tick-borne diseases over time (months).



**Figure 8:** Cases of tick-borne diseases (bovine anaplasmosis, bovine babesiosis and heartwater) by month



**Figure 9:** Spatial distribution of tick-borne diseases in 2012 (based on reported cases)

Figure 9 shows the spatial distribution of the three tick-borne diseases (bovine anaplasmosis, bovine babesiosis and heartwater). This apparent distribution would indicate that the three diseases are expected to be present in all regions. Although Lubombo shows two foci of anaplasmosis only, it would be expected that the other diseases occur, but were not reported to the Department at the time. Farmers are often taught on the identification and treatment of tick-borne diseases and generally have access to some of the

treatment drugs. This would explain why some cases are not reported to the Veterinary Department unless there are abnormally high mortalities.

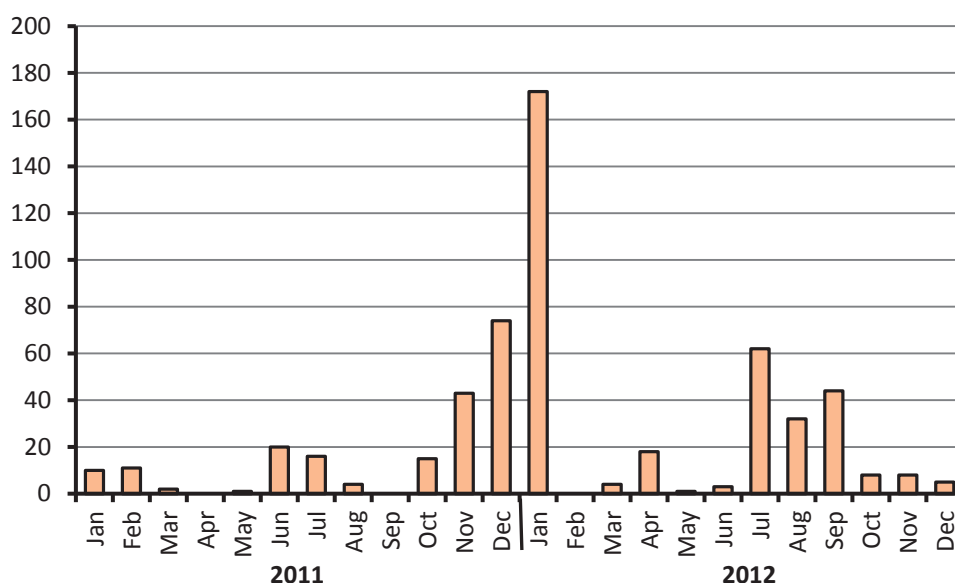
The compulsory dipping program has shown to keep the number of TBD cases under control despite this group of diseases being one of those that are responsible for major potential losses in cattle and goats mainly through mortality losses and cost of treatment and prevention.

### 6.3 Black Quarter

This disease was one of the major diseases of cattle seen in both 2011 and 2012. In the year 2012 there were 357 recorded cases and 50 deaths in 54 different foci. When comparing with the 2011 figures, the number of reported cases in 2012 almost doubled those of 2011 but the mortalities reported were very similar. The number of cases by region is shown in table 20 and figure 10 below.

Region	No. of Foci	Cases	Deaths
Hhohho	36	283	27
Lubombo	5	34	8
Manzini	9	25	13
Shiselweni	4	15	2
<b>Totals</b>	<b>54</b>	<b>357</b>	<b>50</b>

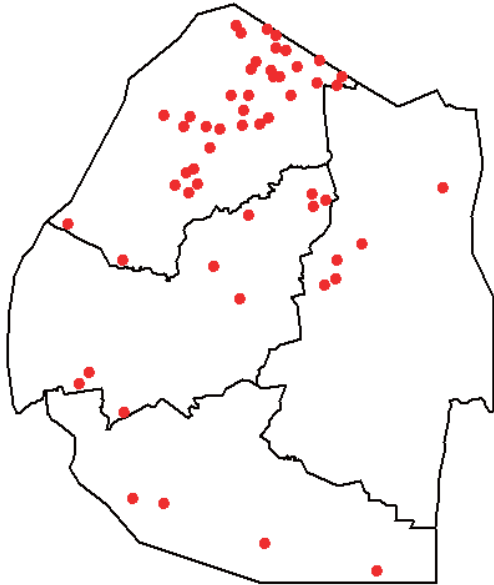
**Table 20:** Black Quarter Cases in 2012



**Figure 10:** Number of black quarter cases by month (Jan 2011 – Dec 2012)

Figure 10 shows that cases were seen throughout the year with a bias beginning from June 2011 and peaking in November/December 2011 while in 2012 a high number of cases were clumped around July to October 2011. Based on analysis of the last two years the disease appears to show a higher incidence in the second half of the year.

Below is the spatial distribution of reported black-quarter cases in 2012.



Region	Total vaccinated
Hhohho	4,155
Lubombo	13,653
Manzini	3,920
Shiselweni	8,669
<b>Totals</b>	<b>30,397</b>

**Table 21:** Black-quarter vaccinations in 2012

**Figure 11:** Spatial distribution of black-quarter cases in 2012

Control of the disease is through vaccination whereby farmers pay for the cost of vaccination while veterinary officials provide extension information on disease management as well as assist farmers in conducting vaccination. The numbers of cattle vaccinated in 2012 are not different from 2011 as in 2011 there were a total of 26,769 cattle vaccinated with Lubombo contributing 12,101 of those.

## 6.4 African Horse Sickness

This disease re-occurred in March 2012 in the same farm after it was reported in January 2011. In 2011 seven horses were clinically affected with 3 deaths whilst in 2012 four horses were affected with 3 dying from the disease. As required by the OIE, an emergency report was made to the organisation in March 2012. Vaccination was carried out and no new cases were reported by the end of 2012. With sufficient vaccine coverage and sustenance of an immune population the disease becomes quiet. Swaziland has 690 horses and 11834 donkeys and mules (2012 census) which may explain why we do not see many cases of African horse sickness, whereas the high performance horses are always vaccinated. The numbers vaccinated are not regularly captured and are not in this report.

This disease occurred in one focus in the central part of Swaziland as shown in figure 12 below.



**Figure 12:** Spatial distribution of the African horse sickness cases



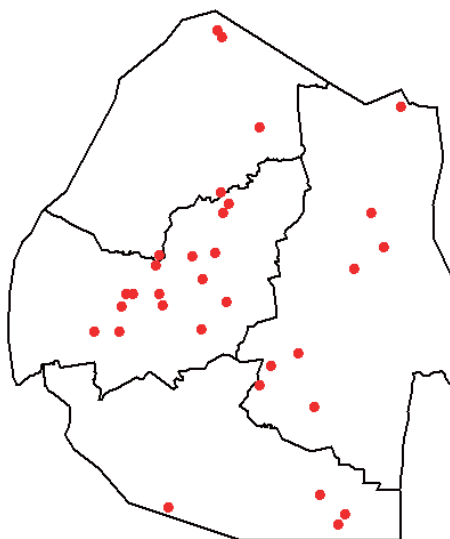
## 6.5 Contagious Abortion

Contagious abortion (CA) in cattle continues to be a disease of concern in the communal herd due to various factors, one being the lack of cooperation with farmers to enforce the test and slaughter policies for positive reactors in this husbandry sector. Dairy farms and title deed land beef farms are encouraged to follow a program of testing and slaughter/culling to eliminate positive reactors and eventually clear the farm of the disease. The Department has a national program to vaccinate young heifers between 4 to 8 months, but such programs are occasionally interrupted by lack of resources thus making vaccination efficiency less than ideal in some years.

There were 121 laboratory confirmed cases of brucellosis in cattle occurring in 31 different foci. The disease was not diagnosed in other species. In cattle the disease occurs in all regions of the country. These cases are usually detected following a report of abortion in cattle whereby blood is then taken from clinical and in-contact animals for testing at the Central Veterinary Laboratory to prove presence of infection which are reported here. The number of cases by region is shown in table 22 and figure 13 below.

Region	No. of Foci	Cases	Deaths
Hhohho	5	52	0
Lubombo	8	34	0
Manzini	14	23	0
Shiselweni	4	12	0
<b>Totals</b>	<b>31</b>	<b>121</b>	<b>0</b>

**Table 22:** Laboratory Confirmed Diagnoses of Bovine Brucellosis



**Figure 13:** Spatial distribution of Contagious abortion cases

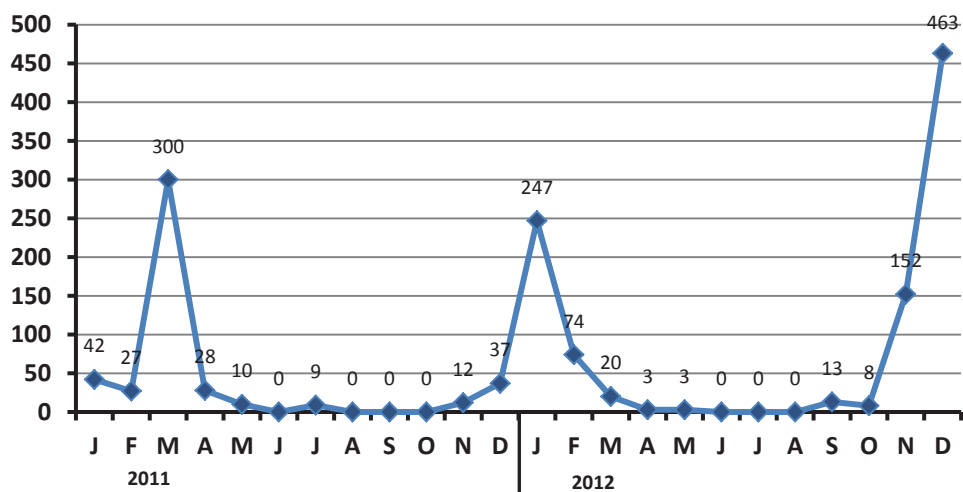
## 6.6 Lumpy Skin Disease (LSD)

There were 983 cases of LSD in 56 different foci recorded in 2012 and these accounted for 83 deaths attributable to the disease in cattle (table 23). Figure 14 below shows that the disease is generally more prevalent in the months October to April, i.e. during and immediately before and after the rainy months although cases may continue to occur throughout the year. The disease is wide spread in all regions of the country, but tends to be transient as affected animals will recover and disease will subside usually after vaccinations. The number of cases by region is shown below.

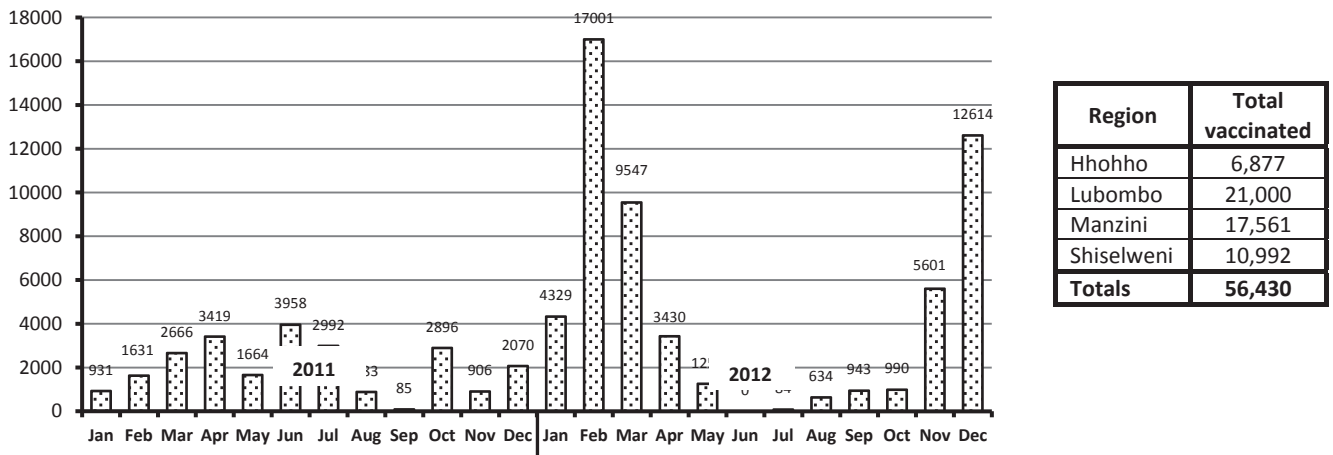
Region	No. of Foci	Cases	Deaths
Hhohho	33	661	42
Lubombo	6	147	0
Manzini	16	168	41
Shiselweni	1	7	0
<b>Total</b>	<b>56</b>	<b>983</b>	<b>83</b>

**Table 23:** Lumpy Skin Disease Cases

This disease is a problem in ill thrift animals since it exacerbates their condition and may cause mortalities as well as production losses, e.g. in dairy animals. Affected areas are quarantined and farmers are required to vaccinate within their own financial resources while government officials assist conduct and monitor the process of vaccination.

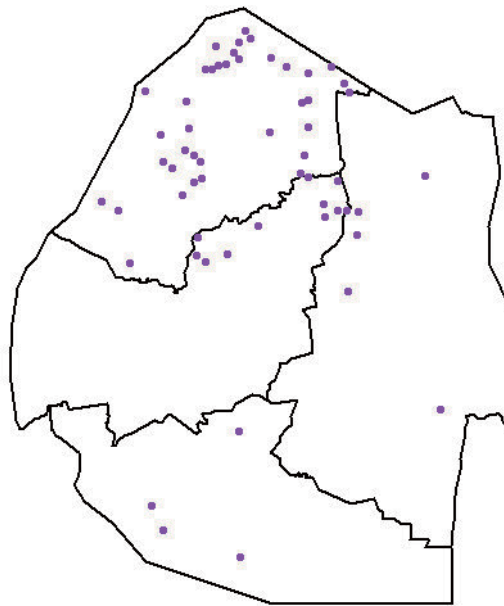


**Figure 14:** Number of cases of Lumpy skin disease (LSD) by month over two year period (Jan 2011 – Dec 2012)



**Figure 15:** Lumpy skin disease vaccinations for the years 2011 and 2012

The spatial distribution of lumpy skin disease cases is shown in Figure 16 below.



**Figure 16:** Spatial distribution of lumpy skin disease cases

There were 56,430 LSD vaccinations in 2012, and these were more than twice the number vaccinated in 2011, an indication of the ‘perceived’ threat (severity and extent) from the disease in 2012 as compared to 2011. Figure 15 showing a bar chart of numbers of cattle vaccinated in the two year period, 2011 and 2012 when viewed with figure 14 (monthly cases of LSD) does indicate that the response top vaccinations is related to occurrence of disease.



## 6.7 Bovine Tuberculosis

This disease is diagnosed from post mortem specimens obtained at slaughter predominantly from the export abattoir where the Meat Hygiene Section of the Department of Veterinary and Livestock Services conducts meat inspection services. Other cases would normally be the positive reactors obtained in live animals tested using the intradermal comparative tuberculin test. There were no cases recorded from such field tests using the tuberculin intradermal test while there were 40 positive case findings diagnosed at meat inspection from bovine slaughters. These post mortem findings were diagnosed in animals from various sources where there could be one case from a single dip-tank area (or farm/feedlot) to several cases per unit area description. More work need to be done to ascertain the extent of this disease and to use more post mortem data from meat inspections done by the Ministry of Health and Municipal abattoirs.

## 6.8 Rabies

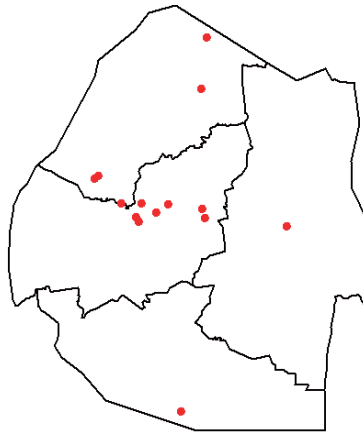
The rabies virus (**Genus:** *Lyssavirus*, **Family:** *Rhabdoviridae*) is responsible for the virus disease which affects all warm blooded animals. The vector species for transmission to humans in Swaziland is predominantly the domestic dog (*Canis lupus familiaris*) making it imperative to vaccinate dogs and cats against the virus. In Africa, wild animals such as Jackals, the African Wild dog, African Civets (*Civettictiscivetta*), White Tailed Mongooses – [liduha] (*Ichneumiaalbicauda*), Mongooses (timbholwane) and rats (including other rodents) are potential sources of infections for other mammalian species.

There were a total of 13 confirmed cases of rabies broken down to ten (10) cases in dogs, two (2) in cattle and one (1) in a cat. These 13 cases occurred in 13 different foci/dip-tank areas. Despite that 2012 had fewer cases than 2011 there is insufficient data to justify why this drop in cases occurred. Rabies in Swaziland is sustained by dogs in the domestic environment which is why dogs are the primary species as seen by the number of cases as compared to other species. The other species are accidental hosts which get infected via dog bite wounds from rabid dogs. The number of cases by region is shown in table 24 below.

Region	No. of Foci	Cases			Deaths		
		Canine	Bovine	Feline	Canine	Bovine	Feline
Hhohho	3	3	0	0	3	0	0
Lubombo	1	1	0	0	1	0	0
Manzini	8	5	2	1	5	2	1
Shiselweni	1	1	0	0	1	0	0
<b>Total</b>	<b>13</b>	<b>10</b>	<b>2</b>	<b>1</b>	<b>10</b>	<b>2</b>	<b>1</b>

**Table 24:** Rabies cases in 2012

Figure 17 below shows the spatial distribution of rabies cases in 2012

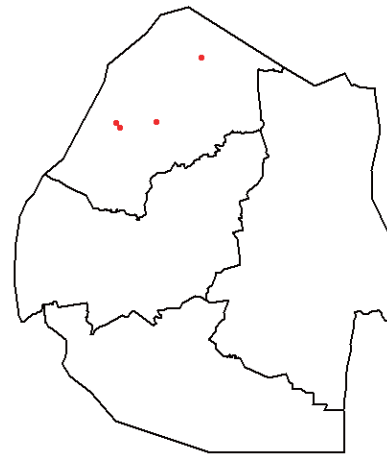


**Figure 17:** Spatial distribution of rabies cases

## 6.9 Botulism

Botulism is a paralysing disease of animals, birds and humans caused by a potent nerve toxin produced by the bacteria *Clostridium botulinum*. *Clostridium botulinum* and its spores are widely distributed in the environment in soils, sediments, and in the gastrointestinal tracts of fish and animals. In Swaziland most botulism cases are seen in cattle where the common observation is paralysis which is not associated with calving and does not respond to calcium therapy.

In 2012 there were 15 cases of botulism in cattle with 12 deaths. These cases were reported in 4 foci as seen in Figure 15 below which shows the distribution of these cases which were reported in Hhohho.



**Figure 18:** Spatial distribution of botulism cases

The disease is diagnosed clinically. Control is through prophylactic vaccination. Vaccinations are done by farmers using their own vaccines whereas veterinary officials provide technical support. In 2012 there were 12,582 cattle vaccinated for the disease (table 25 below). All such vaccinations are recorded by the Veterinary Assistant.

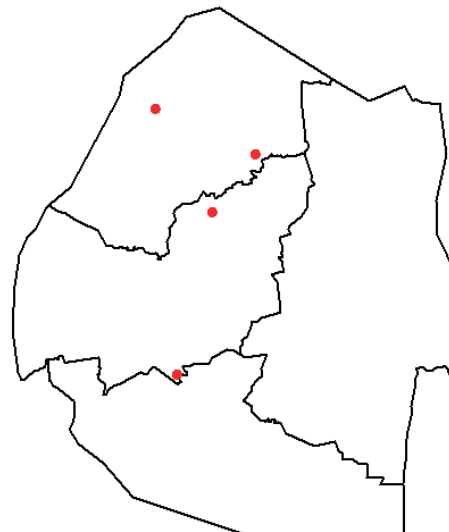
Region	Total Vaccinated
Hhohho	3,425
Lubombo	6,989
Manzini	1,554
Shiselweni	614
<b>Totals</b>	<b>12,582</b>

**Table 25:** Numbers of cattle vaccinated for botulism in 2012

## 6.10 Goat Mange

Goat mange refers to infestation of goats by any of the common three mite parasites of goats which are *Sarcoptes* scab mite, *Chorioptic* scab mite and *Demodex* mites. The responsible mite parasite in mange cases seen in Swaziland is not often isolated but *Sarcoptes* and *Demodex* mites are commonly isolated from goats.

There were 127 reported cases of goat mange with zero reported mortality from 4 foci (figure 15 below). All cases were reported from goats whose population far exceeds that of sheep.



**Figure 19:** Spatial distribution of goat mange cases

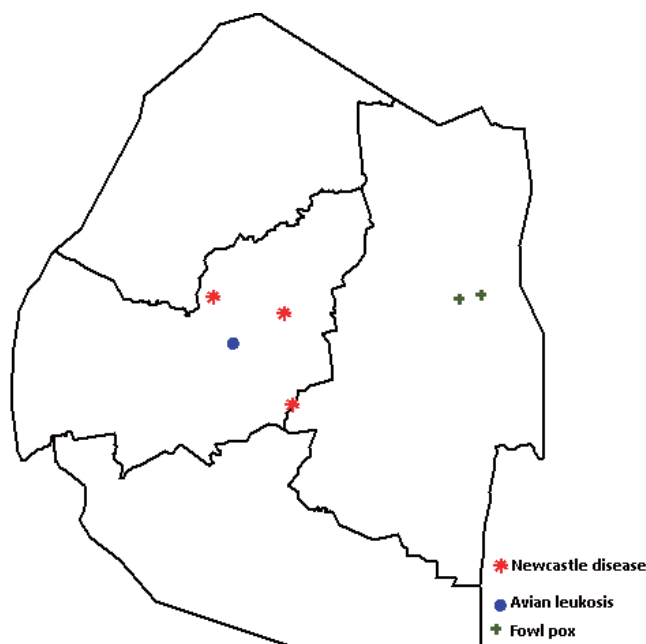
Treatment of mange is through the use of ivermectin injectables as well as dipping using Amitraz based products. Use of injectables is commonly applied by individual farmers whereas dipping calls for the involvement of government who supply acaracides for dipping. Dipping for mange mites in goats and sheep is done once yearly.

## 6.11 Avian Diseases

There were three main avian diseases reported in 2012, and these are Fowl pox, Newcastle disease (ND) and Avian Leucosis. There were 30 cases of fowl pox in three foci (dip-tank areas) with six reported deaths. Clinical reports of the disease came from Lubombo (2 foci) and Manzini as shown in the map. Newcastle disease was reported in two regions, Manzini (two foci) and Shiselweni (one focus) where there were more than 21 suspected (and clinically diagnosed) cases with very high mortality rates. Four cases of avian leucosis were diagnosed from post mortem in one foci in Manzini. The number of cases by region is shown in table 26 below.

Disease	Region	No. of Foci	Cases	Deaths
Fowl pox	Lubombo	2	28	4
	Manzini	1	2	2
	<b>Total</b>	<b>3</b>	<b>30</b>	<b>6</b>
Newcastle disease	Manzini	2	193	163
	Shiselweni	1	8	6
	<b>Total</b>	<b>3</b>	<b>201</b>	<b>169</b>
Avian leucosis	Manzini	1	4	4

**Table 26:** Avian Disease cases by Region



**Figure 20:** Spatial Distribution of Avian Disease