Western Cape Government
Agriculture

EPIDEMIOLOGY REPORT

VETERINARY SERVICES
October 2019
Volume 11 Issue 10

Geovet 2019

Miriam Marimwe and Lesley van Helden

In the first week of October, the Geovet 2019 conference in Davis, California was attended by Lesley van Helden (State Vet: Epidemiology) and Miriam Marimwe (State Vet: Export Control). This is a conference that specialises in spatial epidemiology and the use of geographic information systems (GIS) to answer animal and public health questions.

The conference brought together delegates from 29 countries, including veterinarians, medical practitioners, geographers, ecologists and GIS technology industry representatives, all of whom had the opportunity to demonstrate the use of spatial analytics in their respective fields.

With the progress of spatial analysis and geographic information systems, spatial epidemiology plays an increasingly important role in disease management, control and prevention, because of the amount of information it can provide in describing, identifying and quantifying patterns, as well as making predictions. Network analysis, combined with spatial analytical methods, is also being used for disease transmission modelling to improve active disease surveillance.

The leading topic of the conference was "Novel spatio-temporal approaches in the era of big data". The increasing availability of spatial data and GIS software makes disease mapping widely accessible and practiced. At the same time, a large amount of data is produced by all kinds of instruments and sensors, from satellites and drones capturing aerial imagery to RFID tags and GPS collars on individual animals. In acquiring all this data comes the need to manage it and translate it into information. However, the real challenge is to understand if such a great availability of data really leads us to the generation of deeper knowledge.

Despite the fact that the volume of information available is increasing, it is not being used effectively to inform animal health decisions. Policy makers do not need to be presented with more information, but rather with less irrelevant information and a summarized version of the available, relevant information.

Of particular significance at the conference was the advancement in spatial modelling techniques that were directed towards predictive analytics, with most represented countries working towards modelling of disease risk in anticipation of disease incursions. This could also be attributed to the rise of big data, as a statistician indicated during the course of the proceedings that the availability of large amounts of data is conducive to performing predictive analysis.

There was also discussion on "Accelerating the path from the industry big data revolution to policy changes" There was consensus on the need to work together and examples of how some sectors were working together through various research collaborations as well as building data-sharing platforms and systems. However, there was a concern from industry that advances in geospatial technology were outpacing the speed at which government bureaucracy could move, resulting in a limit on government innovation and collaboration with industry. Other challenges raised were those surrounding data sharing and privacy.

Abstracts presented are available online at: https://www.frontiersin.org/events/GeoVet_2019_Novel_spatio-temporal_approaches_in_the_era_of_Big_Data/6796

The delegates attending Geovet 2019

African horse sickness vaccination permissions 2018/19 season

Reproduced with permission from the African horse sickness controls: Vaccinations permissions report (2018/2019 season) by J.D. Grewar[1] and C.T. Weyer[1]
[1] South African Equine Health and Protocols NPC

Introduction

Annual vaccination against African horse sickness (AHS) is compulsory in South Africa (Animal Diseases Act, 35 of 1984) except in the AHS free and surveillance zones in the AHS controlled area in the Western Cape Province. Vaccination against AHS in these zones can only be performed following written approval from the Veterinary Services of the Western Cape Department of Agriculture (WCDOA). Permission to vaccinate against AHS is only granted for vaccination to be performed between 1 June and 31 October each year. This vaccination period is based on the potential for vaccine virus reassortment/reversion to virulence and the risk of transmission during periods of increased vector activity. The restricted vaccination period mitigates this risk.

The process for vaccination permissions is summarized and available online at http://jdata.co.za/myhorse/documents/infographics/Vaccination%20Schema/1.%20Vaccinating%20against%20AHS%20in%20the%20Free%20and%20Surveillance%20Zone.pdf. This report briefly summarises the vaccination permission applications that were received and the descriptive statistics of those permissions that were issued. Permissions are given on an individual horse basis, with horses associated with specific holdings, and the information is analysed as such.

Summary of permissions issued

The total permission applications received are shown in Table 1 with their comparisons to the 2018 and 2017 season. There are consistently approximately 1100 applications received each year totaling an associated 7300 horses, and permissions are given for approximately 96%. By far the majority (97.5% - n= 279) of declined applications in 2019 related to invalid or non-existent passports – this is similar to previous years.

Forty veterinarians and veterinary practices were registered as the associated vet likely to perform the vaccination, with the top five practices responsible for vaccinating 73.5% of the permission-granted horses, and the top ten practices responsible for 88.5% of all permission-granted horses.

Table 2 shows the reasons that were provided by applicants (granted horses only) when requesting permission to vaccinate. The majority (92.3%) were to enable horses to comply with AHS movement requirements.

We now have three years of detailed, individual horse information for the vaccination permission process in the AHS controlled area. 4556 horses that were granted permission in 2019 had also been granted permission in 2018, making up 62.1% of the total for the year. 2987 horses were granted permission to be vaccinated in 2017, 2018 and 2019, accounting for 40.7% of permission-granted horses in 2019. There are currently 14725 horses registered in the AHS surveillance and free zone.

The vaccination permission system does require intensive regulatory checking, and particularly since individual passports for applicants are thoroughly checked. In 2019 we did allow for early applications, although permissions only got sent from 1 June since vaccination was only permitted from then. Table 3 therefore includes applications that were received prior to June 2019 but the *Days processed to response* is not applicable for those months. The applications received prior to the actual season do impact the response time in processing applications to vaccinate – this is clear from the improving processing time from June through to October.

Conclusion

Vaccination coverage within the AHS controlled area, including the AHS surveillance and free zone continues to be fairly comprehensive with approximately 50% of the known population being vaccinated based on permissions requested. A high number of those horses though are associated with repeat requests from year to year, and also since vaccination is a prerequisite for movement into the controlled area, any new adult horses entering the controlled area will be vaccinated already.

References and Acknowledgements

Weyer, C.T. et al., 2016. African horse sickness caused by genome reassortment and reversion to virulence of live, attenuated vaccine viruses, South Africa, 2004–2014. Emerging Infectious Diseases, 22(12).

We are grateful to both horse owners and veterinarians for their patience during the vaccination permission season. We are grateful for the continued support of the Western Cape Veterinary Services who assist in this program and in particular Dr Gary Buhrmann from State Vet Boland who reviewed this report. We acknowledge team members from the SAEHP: Danielle Pienaar; Esthea Russouw; Gillese de Villiers; Marie van der Westhuizen; Johanne Jacobs and Lizel Germishuys who performed much of the data processing for the vaccination permission system.

Table 1: Number of applications received for vaccination permissions with associated horses. Granted applications are shown with a percentage of the total in brackets.

Year	Applications received/Associated holdings	Total horses applied for	Total horses granted
2017	1078/647	7183	6893 (96%)
2018	1117/606	7277	7058 (97%)
2019	1108/610	7330	7044 (96%)

Table 2: Reasons provided for the vaccination of horses.

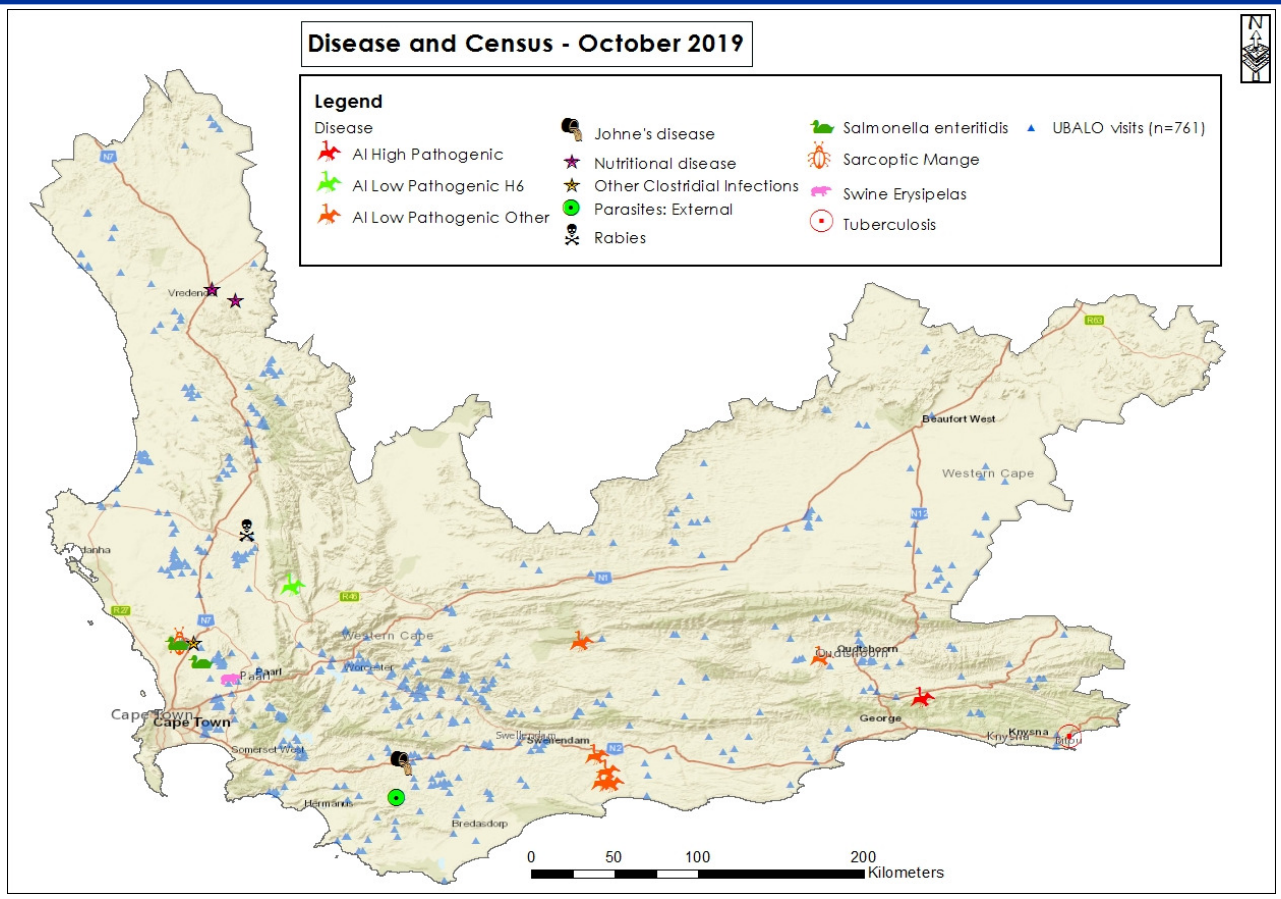
Overarching reason	Count
Movement requirements – current and for future events	6503 (92.3%)
Individual protection (owner and yard)*	518 (7.5%)
Insurance	23 (3.2%)
Total	7044

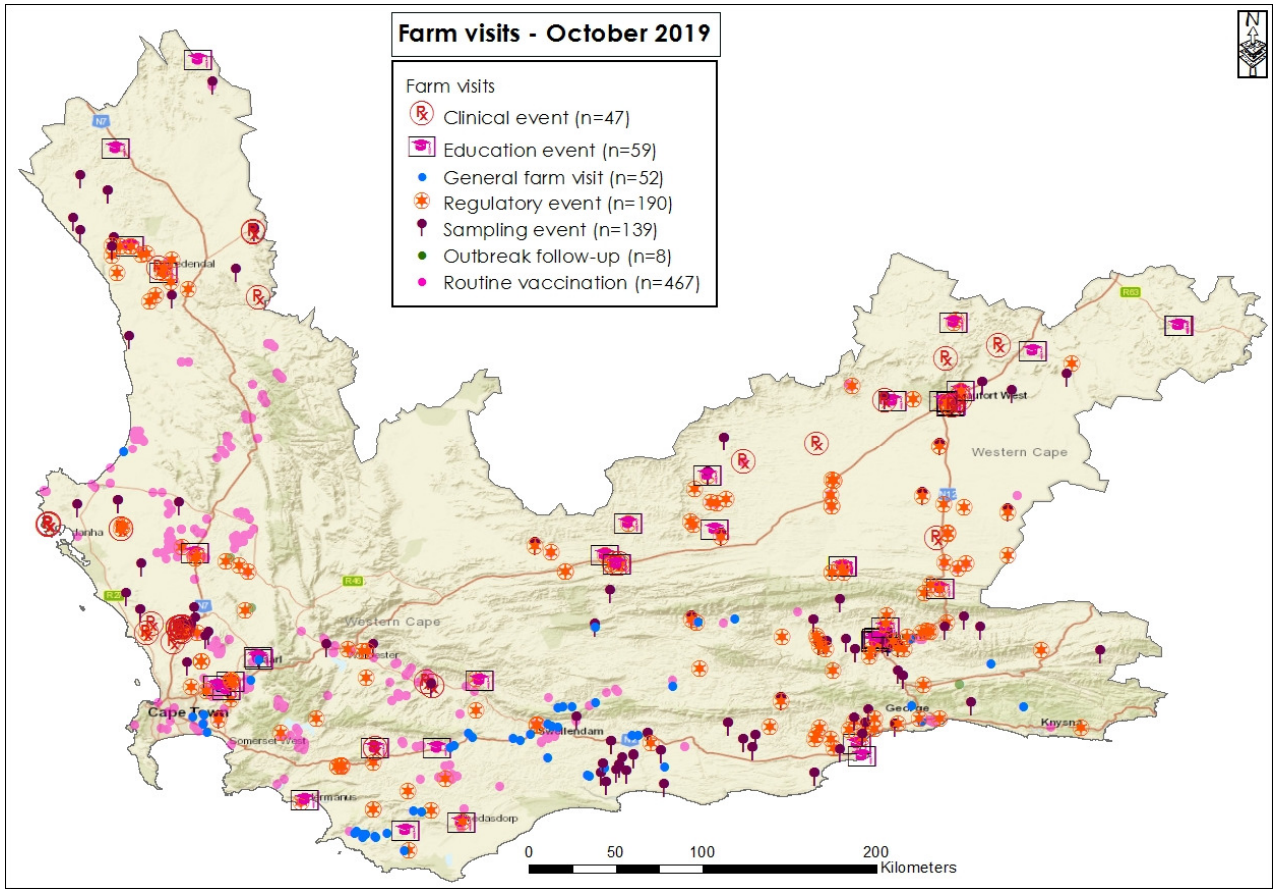
*Individual protection is cited when owners/yard managers believe that the risk to their horse (based on movement risk or prior involvement in outbreaks) justifies vaccination.

Table 3: Administrative time taken for 2019 vaccination permissions applications

Month (of 2019)	Total applications received		Median days – application to response
March	169	478 prior to season	Not applicable, however 50% of all applications received prior to 1 June were responded to by 7 June.
April	113		
May	196		
June	170	630 during season	39
July	188		24
August	146		13
September	95		11
October	31		2

Disease and surveillance





Outbreak events

A **bat-eared fox** approached a homestead near **Porterville** and tried to fight with dogs through the fence. It was shot by the farmer and submitted for **rabies** testing with a positive result. The dogs had been previously vaccinated against rabies in January 2019, and were revaccinated after the incident by the local animal health technician. The dogs and cats on neighbouring properties were also vaccinated.

A farmer near **Riviersonderend** noticed progressive emaciation in some of his **sheep**. A post mortem and histopathology was done on one animal and a diagnosis of **Johne's disease** was made. The farm was placed under quarantine.

Salmonella enteritidis was cultured from chick box liners from a hatchery and from neck skins of slaughtered broiler **chickens**, both from farms in the Malmesbury area. Increased surveillance and disinfection is in place on the affected farms.

An adult female **vervet** monkey (fig 1) was found at a shopping village on the N2 near **Plettenberg Bay** showing signs of respiratory distress. She was euthanased and granulomatous lesions with acid-fast staining bacilli were found in her lungs, indicating infection with **tuberculosis**. Earlier this year a case of tuberculosis caused by *Mycobacterium tuberculosis* was diagnosed in a baboon from the same area.

An **ostrich** farm in the **Langkloof** area was reported to the OIE as infected with H5N8 **highly pathogenic avian influenza** (HPAI) due to a positive PCR test result from samples taken on 3 October. Follow-up testing on the farm did not support this result and further investigation is underway.

Four **ostrich** farms in the **Heidelberg** area, one farm west of **Oudtshoorn** and a sixth farm south west of **Laingsburg** tested **avian influenza** seropositive. HPAI was ruled out based on serology.

An **ostrich** farm near **Tulbagh**, reported to the OIE as part of the HPAI H5N8 outbreak was re-infected with **avian influenza**. The virus was sequenced as **H6N2**.

Clinical signs of **erysipelas** were seen after slaughter on a **pig** carcass from a farm near **Paarl**. There were no clinical cases on the farm of origin, but the night before the pigs were slaughtered there was sudden cold, wet weather.

Severe **sarcoptic mange** was seen in one of seven **dogs** on a property in **Chatsworth**.

Three bull **calves** near **Malmesbury** showed clinical signs of **tetanus** after castration with rubber rings.

Newly bought **cows** showed signs of rumen **acidosis** on two properties near **Vanrhynsdorp**.

Myiasis (fly strike) was reported in **sheep** near **Napier**.

Figure 1: A vervet monkey (Photo: L van Helden)

Epidemiology Report edited by State Veterinarians Epidemiology:

Dr Lesley van Helden (lesleyvh@elsenburg.com)

Dr Laura Roberts (laurar@elsenburg.com)

Previous reports are available at www.elsenburg.com/vetepi