SA EQUINE
HEALTH & PROTOCOLS
EXPORTS SOUTH AFRICA

African horse sickness control

Surveillance report

General AHS surveillance and testing 2021

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Introduction

In this report we evaluate the reporting of African horse sickness (AHS) across South Africa during 2021. We evaluate both negative and positive test results which had an impact on the risk-based system in place with regards to movement control of equids into and within the AHS controlled area. AHS movement control aims to limit the risk of introduction of the disease into the controlled area of South Africa. An active surveillance report is published annually which focusses on the sentinel surveillance program within the AHS free and surveillance zones of the controlled area. The most recent report related to 2021 is the 2020/2021 AHS surveillance season report available here. AHS surveillance is however not limited to this active component. Passive surveillance is undertaken throughout the country since AHS is a controlled (and therefore notifiable) disease. Clinical investigations by veterinarians will often include testing for the virus, and, since the development of RNA-detection methods, primarily PCR, this has been the testing method of choice for clinicians.

The laboratories in South Africa that tested for AHS during 2021 were Onderstepoort Veterinary Research (OVR), the Equine Research Centre – Veterinary Genetics Laboratory (ERC) and Stellenbosch Provincial Veterinary Laboratory (SPVL). In collaboration with the laboratories in South Africa, with support from the Department of Agriculture, Land Reform & Rural Development – DALRRD, the Western Cape Department of Agriculture and the South African Equine Veterinary Association (SAEVA), SAEHP have been provided with access to AHS case reports and testing results since September 2017 and have captured these in the Equine Cause of Disease (ECOD[i]) system from September 2018, coinciding with the start of the 2018/2019 AHS season. This report evaluates available data for the 2021 calendar year.

An outbreak of AHS in the AHS controlled area in the Western Cape occurred in April 2021. For a full review of the events thereof please go to www.myhorse.org.za/ahs2021

Data considerations

General data considerations have been discussed in a prior report and relate to the ability to follow up on all negative results. While this report focusses on laboratory associated results, it is important to note that clinically diagnosed cases of AHS (with no laboratory result), with an epidemiologic link to a confirmed AHS case, are considered cases that prevent movement of horses from the area concerned. In 2021 there were 4 confirmed clinical cases of AHS with a further 12 suspect cases in this regard. One data set that is not available is the number of clinical investigations performed by clinicians where AHS was ruled out as a differential diagnosis.

While some sentinel surveillance evaluation is shown below (Figure 8 primarily), the data depicted here excludes this component simply because the sentinel program is reported on in detail each AHS season. The data presented does not consider clustering at herd level – results are captured on lab-report basis, and while it can be assumed that all horses tested in a single lab report are associated with a single group it is not possible to confirm this in all cases without further investigation.

[i] www.myhorse.org.za/ecod

Finally, the case totals published here differ slightly from officially published totals by the South African Government, where the latter focus more on cases submitted officially through SR1 reports or monthly disease reporting processes. In 2021 the DALRRD reported 255 cases of AHS[ii], 95% (up from 90% in 2020 - see Table 1) of the total reported here and 96.5% of the laboratory confirmed total reported here.

Results

General results

Table 1 shows the overall summary of data presented in this report, with 2020 data bracketed. A total of 1448 individual horse laboratory reports were captured, of which 81.7% were negative and 18.2% were positive.

Table 1: Summary of all available data regarding AHS diagnoses and categorised by laboratory or clinical-only cases with case status. Data shown in brackets () relate to the 2020 values for the same parameter.

Diagnosis method	AHS status			Total tested
	Confirmed	Suspect	Negative	
Laboratory	264 (259)	0 (3)	1184 (1410)	**1448 (1672)**
Clinical	4 (9)	12 (7)	NA	**16 (16)**
Total	**268 (268)**	**12 (10)**	**1184 (1410)**	**1464 (1688)**

Spatial and temporal depiction of AHS surveillance

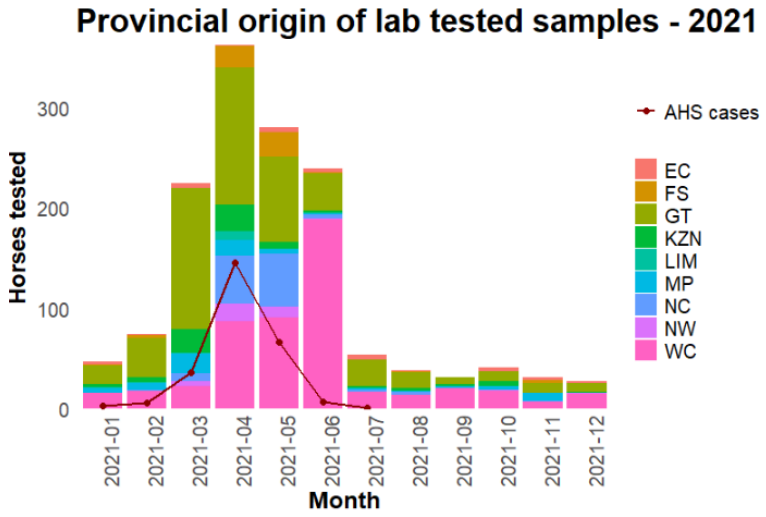
To allow for areas and months to be compared this section only includes results from laboratory-based testing (N=1448) with the associated 264 confirmed AHS cases by laboratory testing (see Table 1).

Provincial and Municipal breakdown of testing and laboratory positives

Figure 1 shows the temporal spread of testing per province during the 2021 calendar year with a comparison to 2020. The epidemic curve of laboratory confirmed AHS cases is overlaid. The provincial breakdown of testing is spatially shown in Figure 2. While Gauteng tested the most horses (535 – 37%) this was down from 2020 where 918 tests; (~55%) were sampled in Gauteng. As will be discussed in this report throughout the AHS outbreak in the AHS controlled area in April changed the testing dynamic for 2021, as well as an increase in testing in provinces such as the Northern Cape. The Western Cape increased their samples submitted to 513 (from 339 in 2020) while the Northern Cape increased theirs to 120 from 45 the previous year. The testing temporal pattern returned to pre-COVID normality with most testing occurring in the March to June period, although a substantial increase in the Western Cape submissions in this period due to the outbreak is evident.

Figure 3 further categorises the number of tests performed from each municipality where horses were tested.

[ii] http://webapps.daff.gov.za/VetWeb/dieaseDatabase.do



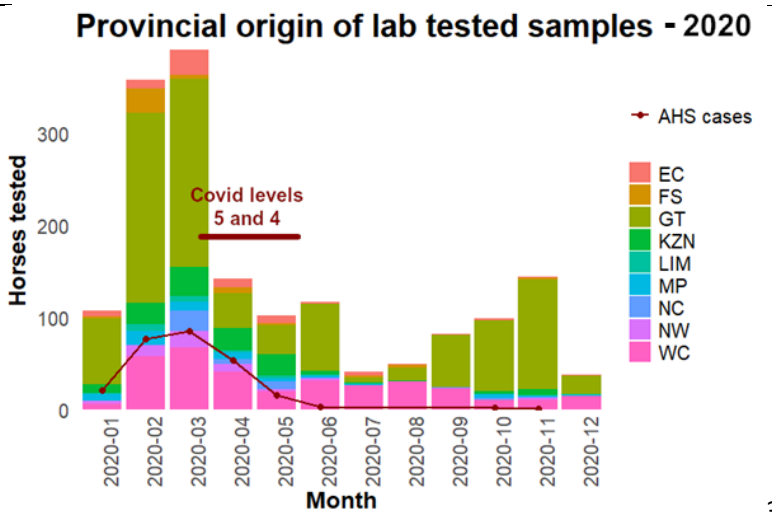


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Figure 1: Breakdown of all laboratory testing performed by province and month of year of both 2020 and 2021 (the latter the year reported on). The positive laboratory diagnosed AHS cases overlays the bar plot. EC – Eastern Cape; FS – Free State; GT – Gauteng; KZN – KwaZulu Natal; LIM – Limpopo; MP – Mpumalanga; NC – Northern Cape; NW – North-West; WC – Western Cape

Horses tested at laboratories for African horse sickness
Clinical investigation and pre-movement/export
2021: Provincial breakdown

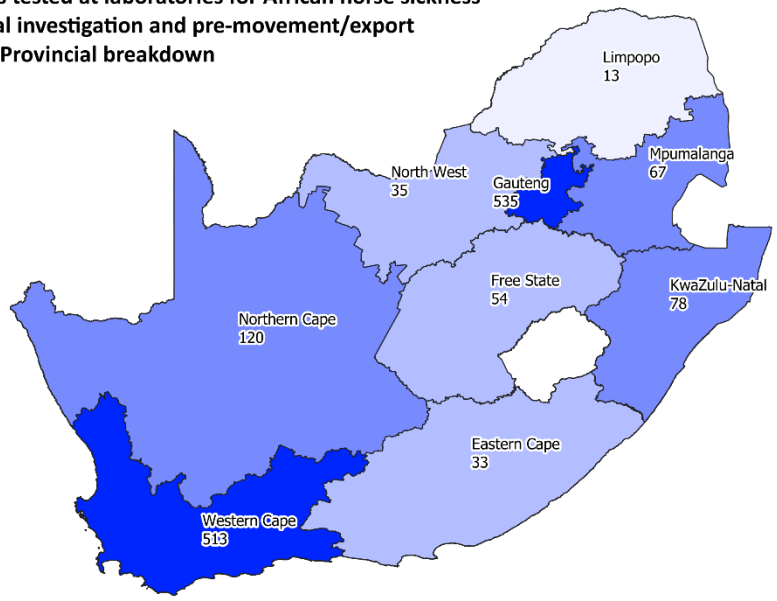

Figure 2

Horses tested at laboratories for African horse sickness
Clinical investigation and pre-movement/export
2021: Municipality breakdown

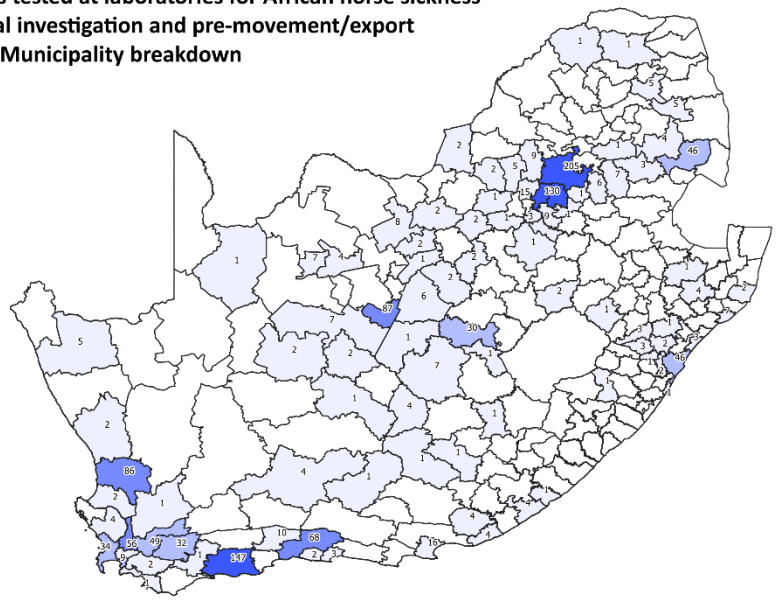

Figure 3

Positive African horse sickness cases - lab confirmed
Clinical investigation and pre-movement
2021: Provincial breakdown

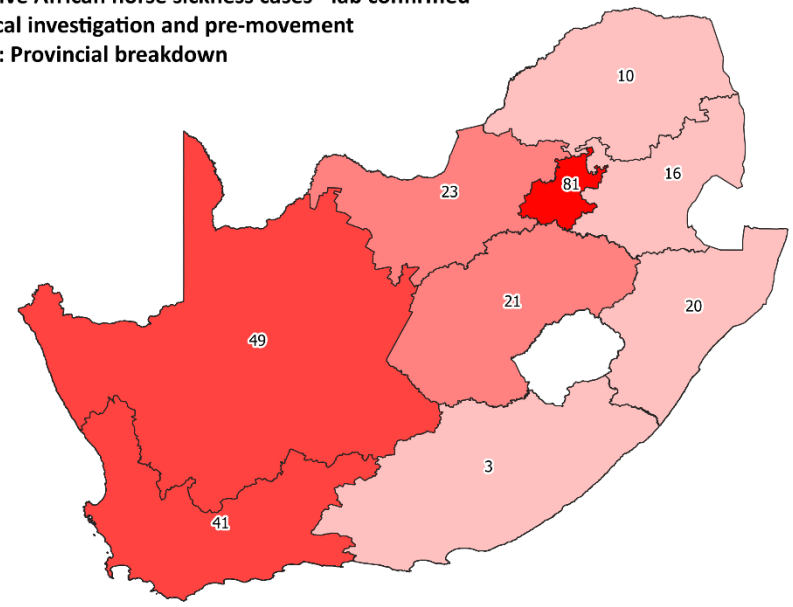

Figure 4

Positive African horse sickness cases - lab confirmed
Clinical investigation and pre-movement
2021: Municipality breakdown

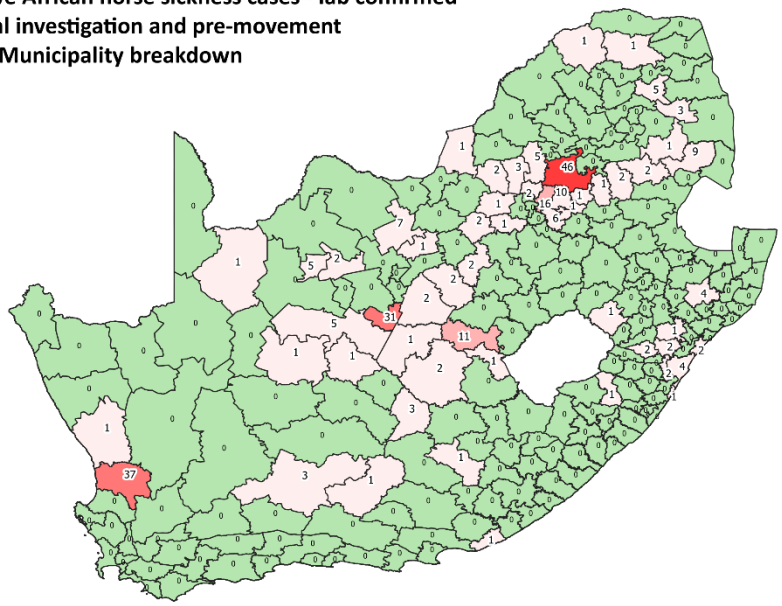

Figure 5

Positive AHS results for the year are shown in Figure 4 and Figure 5. Positive cases occurred in all provinces with the AHS controlled area outbreak clearly increasing the case totals for the Western Cape from previous years. Most cases occurred still occurred in Gauteng – 81 (30.7%), but this was a decrease from 2020 where ~47% of the total cases were accounted for by Gauteng. The Eastern Cape also showed a downtick in AHS case totals (3 reported down from 35 in the previous year) although, as mentioned, the Northern Cape increase between 2020 and 2021 made up for this difference in the total cases context.

Reason for testing and proportional laboratory involvement

There are three primary reasons for testing for AHS in South Africa – diagnosis of disease (clinical investigation), movement control (including pre-export testing) and sentinel surveillance. Figure 6 below shows the former two reasons depicted over 2021 overlaid by the number of AHS confirmed cases. A substantial change from 2020 was a decrease in samples taken for export purposes – this because of changes in the South African – Mauritius trade protocol that delayed shipments in the second half of the year.

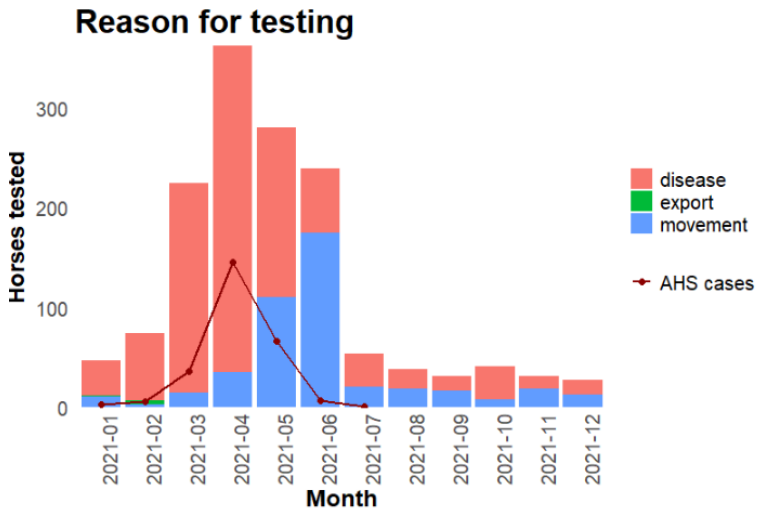

Figure 6: Breakdown of all laboratory testing performed by reason for testing and month of year.

Figure 7 and 8 illustrates the breakdown of testing performed at the different laboratories for diagnostic purposes or for movement control. An increase in testing at the Stellenbosch Provincial Veterinary laboratory during the AHS controlled area outbreak resulted in this lab performing more diagnostic tests than previous years. The ERC though remains the mainstay of most AHS testing for diagnostic or movement purposes. This excludes the monthly sentinel testing in the AHS surveillance zone where the same cohort of horses are tested from month to month and which approximately accounts for ~60% of the total number of tests performed.

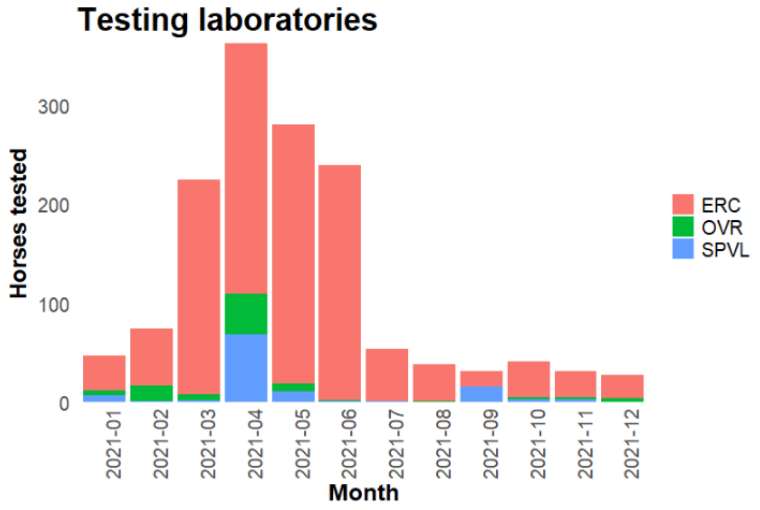

Figure 7: Breakdown of all laboratory testing performed by laboratory associated and month of year. ERC – Equine Research Centre – Veterinary Genetics Lab; OVR – Onderstepoort Veterinary Research; SPVL – Stellenbosch Provincial Veterinary Laboratory

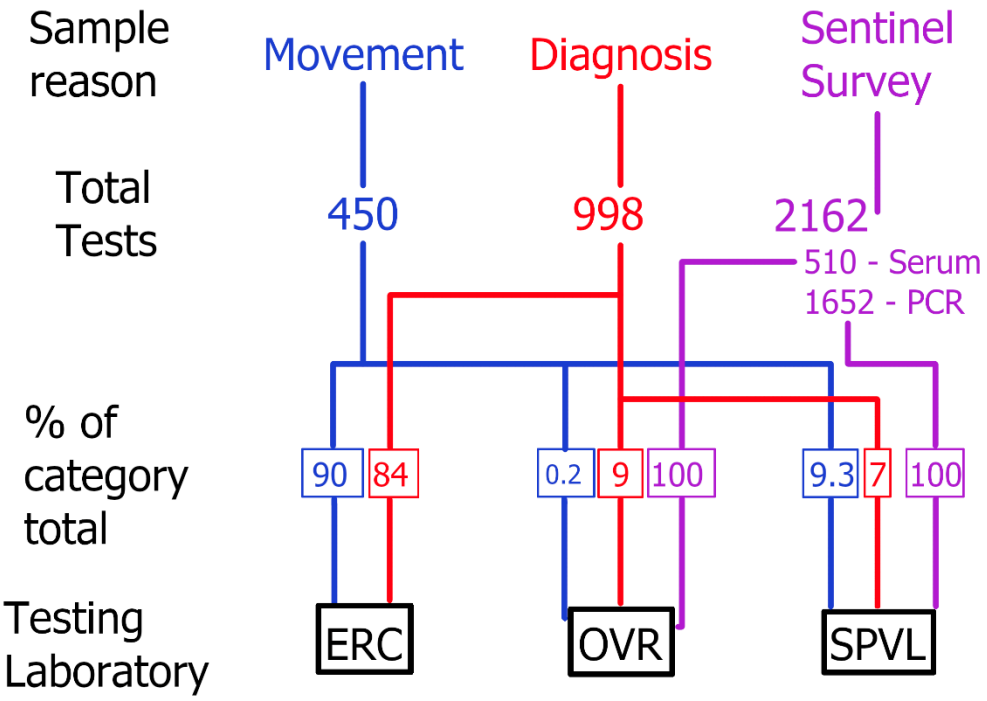

Figure 8: Reason for sampling breakdown by laboratory. NOTE: Sentinel surveillance samples are included here, and in this category antibody and RNA-based testing are separated, with OVR testing the former and SPVL the latter. ERC – Equine Research Centre – Veterinary Genetics Lab; OVR – Onderstepoort Veterinary Research; SPVL – Stellenbosch Provincial Veterinary Laboratory

Discussion and acknowledgements

This is the third consolidated report that includes both positive and negative AHS test results for testing performed over the entire country for a calendar year. The report establishes a testing baseline, an overview of the reasons for testing and a summary of the samples processed at the different laboratories with a breakdown of the results, all of which supports and refines a risk-based approach to AHS control in the country.

Overall testing patterns have generally returned to those seen in pre-COVID, although test totals are still below those of 2019. An increase in diagnostic testing was noted in the Western Cape where an outbreak of AHS occurred in the controlled area. Gauteng and the Eastern Cape registered fewer than normal cases. Export associated testing dropped off substantially due to changes in import/export protocols.

We are grateful for the continued support of the DALRRD and the Provincial Veterinary Services in allowing access to laboratory results from the respective laboratories. The laboratories mentioned in this report have kindly made their information available to the Boland State Veterinary Office, on whose behalf this analysis is performed by SAEHP. The ECOD system was developed for the South African Equine Veterinary Association to report on all equine diseases and syndromes in the country. SAEHP have maintained this system and have adapted it to capture negative AHS testing with the primary purpose of refining risk-based control measures. In this regard we are grateful to SAEHP personnel who have captured much of the negative result and movement data.