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HEALTH & PROTOCOLS
EXPORTS SOUTH AFRICA

African horse sickness control

Surveillance report

General AHS surveillance and testing 2022

JD Grewar & CT Weyer
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Introduction

In this report we evaluate the reporting of African horse sickness (AHS) across South Africa during 2022. We evaluate both negative and positive test results which had an impact on the risk-based system in place (see the 2022 report on the Areas Status Declaration system here) 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 AHS virus 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 is the 2022 AHS sentinel 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 2022 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) system from September 2018, coinciding with the start of the 2018/2019 AHS season. This report evaluates available data for the 2022 calendar year.

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 2022 there were 7 confirmed clinical cases of AHS with a further 74 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 but without performing laboratory tests.

While some sentinel surveillance evaluation is shown below (Figure 8), the data depicted here excludes this component simply because the sentinel program is reported on in detail annually. Furthermore, 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.

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 2022 the DALRRD reported 194 cases of AHS, 92.3% of the total reported here, and similar to the 95% in 2021 and 90% in 2020.

Results

General results

Table 1 shows the overall summary of data presented in this report (with 2021 data bracketed). A total of 1554 individual horse laboratory test results were captured, of which 86.8% were negative and 13% 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	203 (264)	1 (0)	1350 (1184)	**1554 (1448)**
Clinical	7 (4)	74 (12)	NA	**81 (16)**
Total	**210 (268)**	**75 (12)**	**1350 (1184)**	**1635 (1464)**

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=1554) with the associated 203 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 2022 calendar year with a comparison to 2020 and 2021. The epidemic curve of laboratory confirmed AHS cases is overlaid on the plot. The provincial breakdown of testing is spatially shown in Figure 2. Gauteng tested the most horses (671 – 43%). The Western Cape maintained a high level of sampling, 552 samples, which included a post-outbreak freedom from disease survey in the Cederberg region (n=42 samples). The Northern Cape reverted to their 2020 levels with 64 samples submitted, down from 120 in 2021 and like the 45 from 2020. The testing temporal pattern showed most testing occurring in the March to May period, with a drop in June compared to 2021, likely related to a shorter AHS disease season where South Africa experienced a much flatter epidemic curve compared to 2021.

Figure 3 further categorises the number of tests performed from each municipality where horses were tested – the freedom from disease survey samples show up in the Cederberg region which would not be typical of that area.

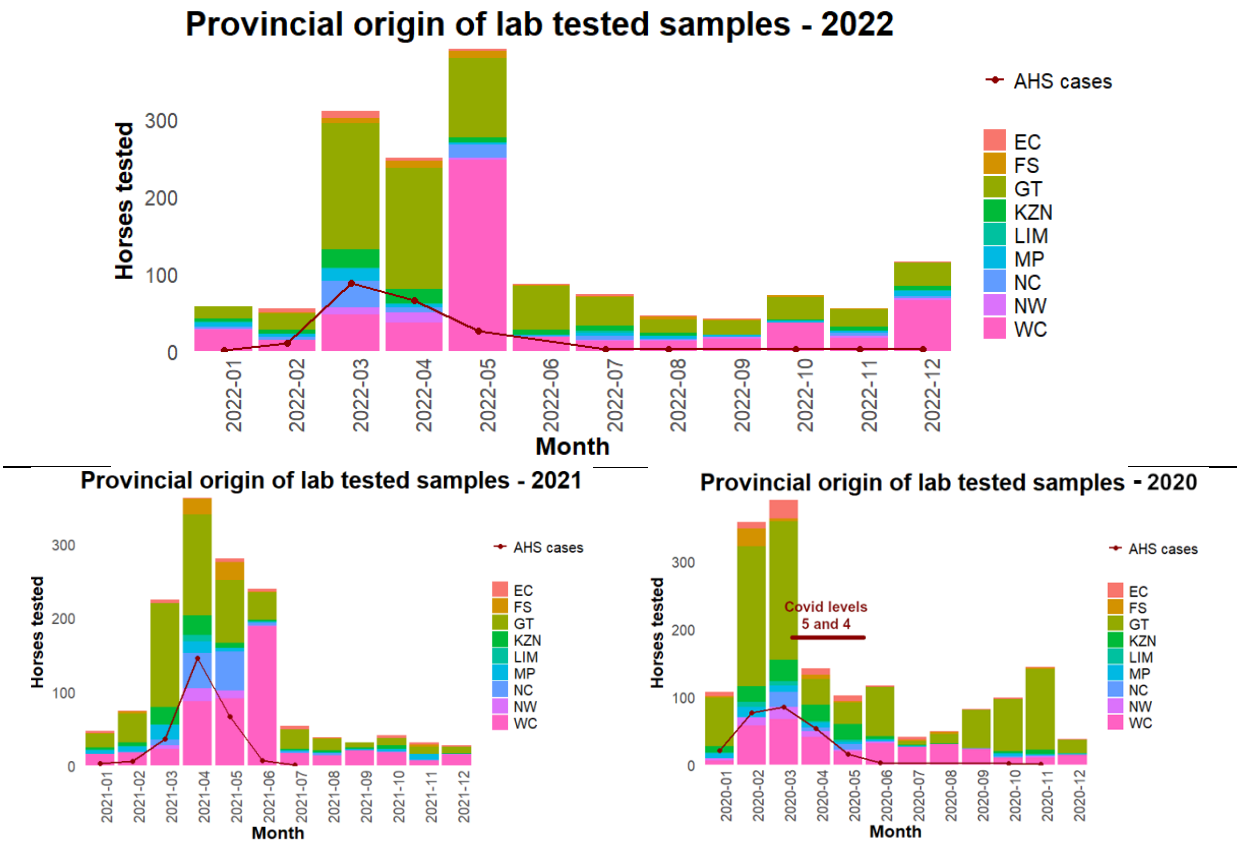

Figure 1: Breakdown of all laboratory testing performed by province and month of year of both 2020 and 2021 (the latter the year reported on). The positive laboratory diagnosed AHS cases overlays the bar plot. EC – Eastern Cape; FS – Free State; GT – Gauteng; KZN – KwaZulu Natal; LIM – Limpopo; MP –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

Horses tested at laboratories for African horse sickness
Clinical investigation and pre-movement/export
2022: Provincial breakdown

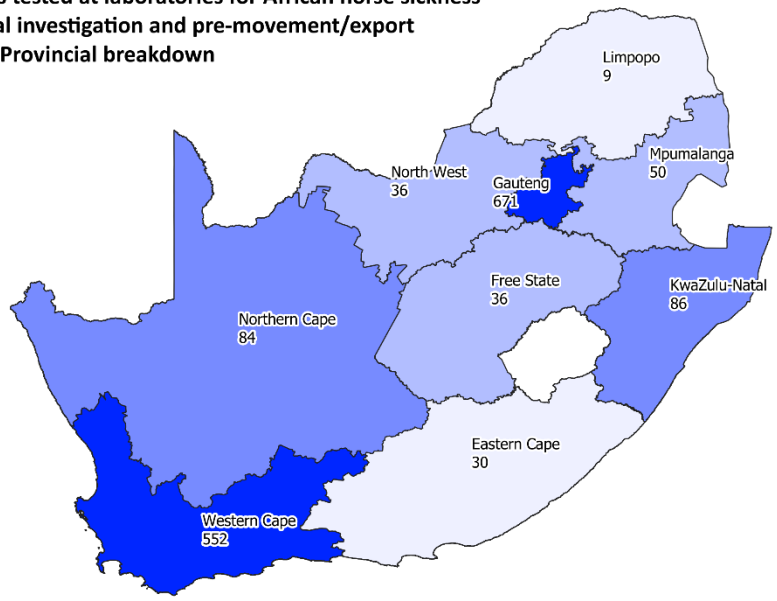

Figure 2

Horses tested at laboratories for African horse sickness
Clinical investigation and pre-movement/export
2022: Municipality breakdown

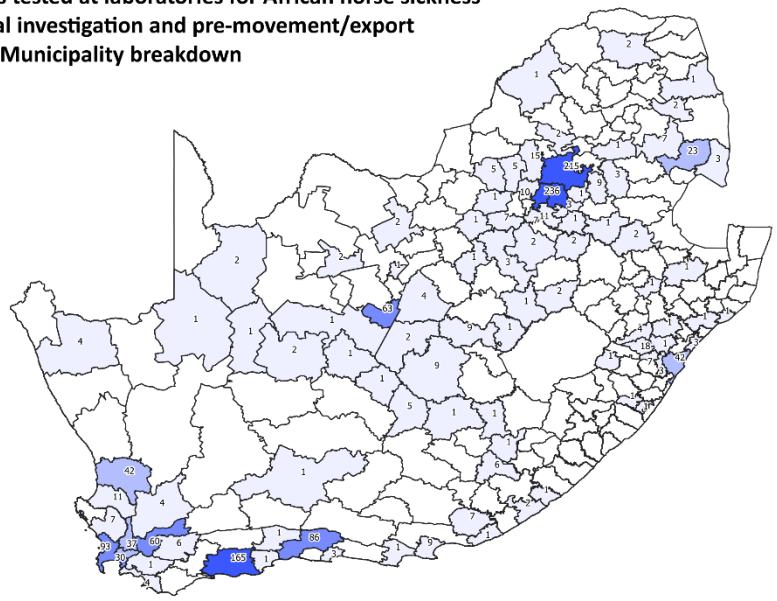

Figure 3

Positive African horse sickness cases - lab confirmed
Clinical investigation and pre-movement
2022: Provincial breakdown

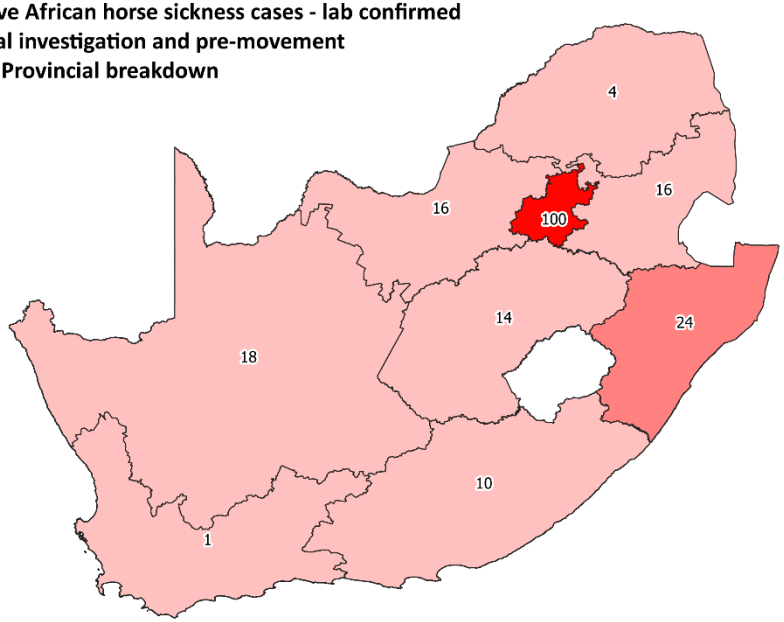

Figure 4

Positive African horse sickness cases - lab confirmed
Clinical investigation and pre-movement
2022: Municipality breakdown

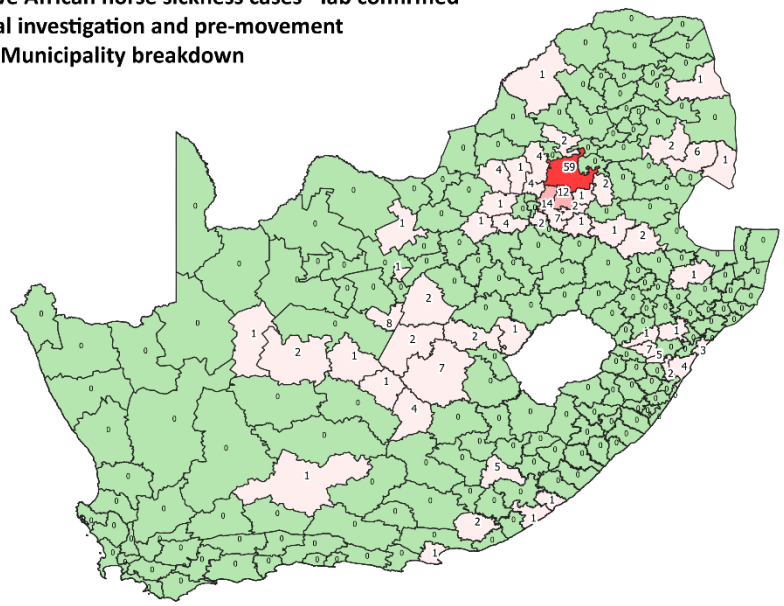

Figure 5

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 with the big difference being the Western Cape that reverted to the pre-2021 levels of sporadic AHS occurrence. Most cases occurred still occurred in Gauteng – 100 (49.2%). The Eastern Cape continued the lower, sporadic type trend, noticed in 2021.

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 2022 overlaid by the number of AHS confirmed cases.

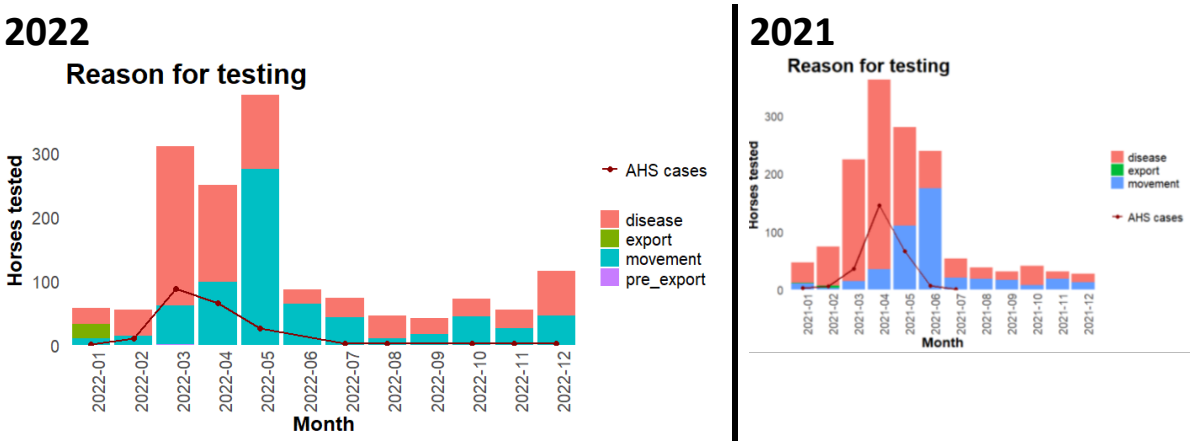

Figure 6: Breakdown of all laboratory testing performed by reason for testing and month of year – 2021 and 2022 are included for comparison purposes.

Figure 7 and 8 illustrates the breakdown of testing performed at the different laboratories for diagnostic purposes or for movement control. Stellenbosch Provincial Veterinary laboratory returned to the normal low levels of diagnostic testing after the 2021 Cederberg outbreak. 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.

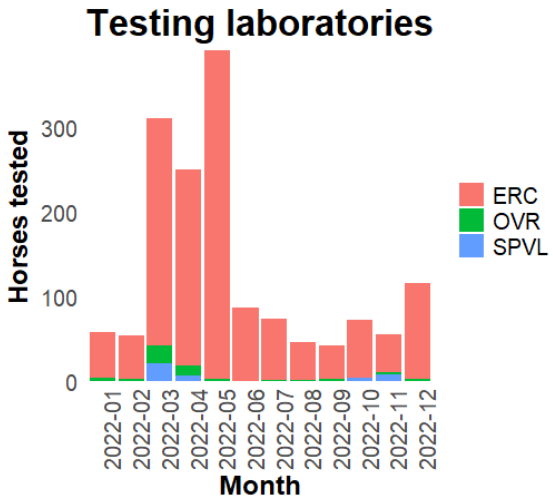

Figure 7: Breakdown of all laboratory testing performed by laboratory associated and month of year. ERC – Equine Research Centre – Veterinary Genetics Lab; OVR – Onderstepoort Veterinary Research; SPVL – Stellenbosch Provincial Veterinary Laboratory

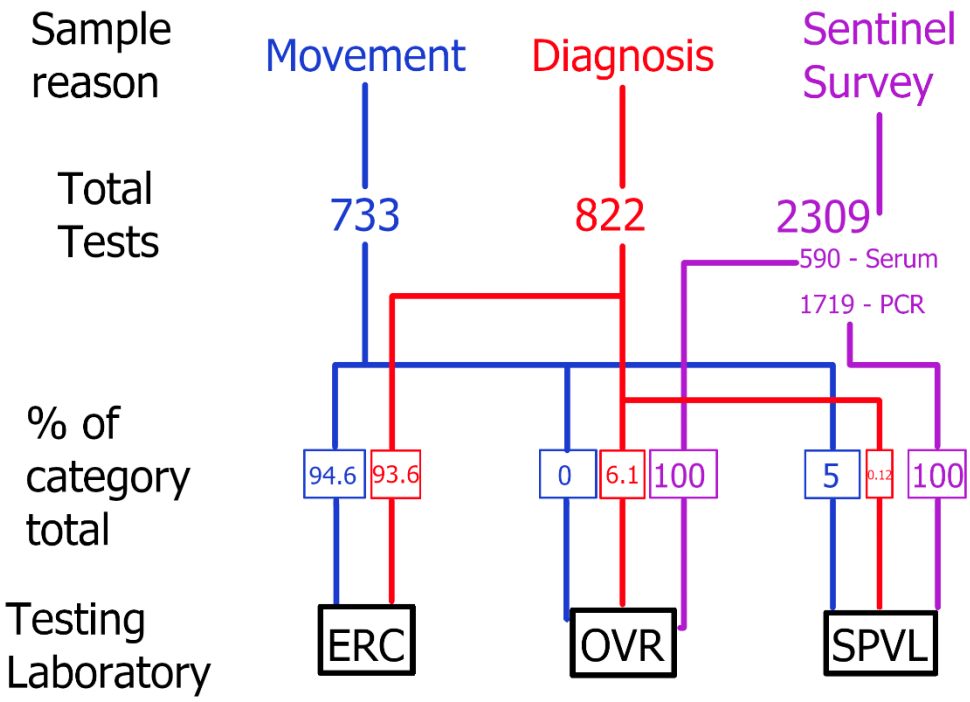

Figure 8: Reason for sampling breakdown by laboratory. NOTE: Sentinel surveillance samples are included here, and in this category antibody and RNA-based testing are separated, with OVR testing the former and SPVL the latter. ERC – Equine Research Centre – Veterinary Genetics Lab; OVR – Onderstepoort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

Discussion and acknowledgements

This is the furth 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.

AHS cases were sporadic across the country in 2022, with the maximum occurring in Gauteng making up half the country's cases. This low case total reflects in the parallel diagnostic testing extent – in 2022, 203 cases were confirmed from the 822 tests performed for this purpose, compare this to the 2180 diagnostic tests in 2019, a year in which almost 600 AHS cases were confirmed.

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.