Avian Influenza: H5 and H7 outbreak update report

23 September 2021

agriculture, land reform & rural development

Department:
Agriculture, Land Reform and Rural Development
REPUBLIC OF SOUTH AFRICA

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Please note: This report includes all information as available by close of business on 23 September 2021. *Avian Influenza update reports will from now on be issued on a fortnightly basis.* All the updates contained in this report may not currently reflect on the OIE WAHIS system due to technical difficulties with the OIE reporting system.

1. Introduction and Background

Avian influenza is a highly contagious viral disease that affects several species of food producing birds, pet birds and wild birds. Occasionally other mammals, including humans, may also contract avian influenza. Any influenza A virus of the H5 or H7 subtypes in poultry and birds other than poultry are reportable to the World Organisation for Animal Health (OIE). H5 and H7 avian influenza are classified into two categories according to the severity of disease it causes in poultry. Low pathogenic avian influenza (LPAI) strains cause few or no clinical signs in poultry. Highly pathogenic avian influenza (HPAI) strains however may cause severe clinical signs and potentially high mortality rates among poultry.

Outbreaks of HPAI in poultry may result in trade bans on the export of poultry and poultry products. Reporting of HPAI outbreaks in non-poultry, such as wild birds, to the OIE do not have trade implications. Poultry is defined by the OIE as all domesticated birds, including backyard poultry, used for the production of meat or eggs for consumption, for the production of other commercial products, for restocking supplies of game, or for breeding these categories of birds, as well as fighting cocks used for any purpose.

In South Africa, avian influenza of any subtype is a controlled animal disease in terms of the Animal Diseases Act, 1984 (Act No 35 of 1984). Any suspect or confirmed case of avian influenza of any subtype must be reported immediately to the responsible state veterinarian in terms of the Animal Diseases Act, 1984 (Act No 35 of 1984). Both passive and active surveillance for avian influenza are conducted across the country in order to detect any incursion of avian influenza. Passive and active surveillance in backyard and commercial chickens is continuing across the country. A number of backyard chicken holdings in all Provinces are included in the six monthly active surveillance. Active surveillance in commercial chickens is conducted every six months with monthly surveillance in NAI free compartments. Active surveillance in commercial ostriches is conducted six monthly with additional pre-movement, pre-slaughter and 28 days post-movement testing.

In 2017 the first case of Highly Pathogenic Avian Influenza (HPAI) was confirmed in commercial chickens in South Africa. This was confirmed as HPAI H5N8 and the information on the HPAI H5N8 event is summarised in point 3 below. No new HPAI outbreaks were reported in commercial and backyard chickens since June 2018 until the recent detection in April 2021 of a HPAI H5N1 in commercial chickens.

Current H5 and H7 avian influenza outbreaks within the country are summarised in this report and are categorised according to pathogenicity (HPAI, LPAI or undefined). The most recent detection of HPAI H5N1 is discussed in point 2, while previous outbreaks (HPAI H5N8, LPAI H5 and H7) are discussed in points 3 to 5.

2. Highly pathogenic avian influenza (HPAI) H5N1

2.1 Overview of the HPAI H5N1 poultry event

The index case was detected on 11 April 2021 in Gauteng Province. Up to date, a total of fifty seven (n=57) outbreaks were reported across Gauteng, North West, Western Cape, Mpumalanga, Free State, KwaZulu Natal and Eastern Cape Provinces. Another possible outbreak is being investigated in chickens in KwaZulu-Natal –

samples tested avian influenza matrix gene positive and we are awaiting further diagnostics. The affected Local Municipalities in each Province are represented in Table 1 below.

Province	**Local Municipality with total number of outbreaks within this Local Municipality**	**Details of Outbreak**
Gauteng	City of Tshwane (n=4)	Commercial chicken layer farm[$,#]
		Commercial chicken layer farm
		Commercial chicken layer farm[&]
		Commercial chicken layer farm[&]
	Ekurhuleni (n=2)	Commercial chicken layer farm[$,#]
		Commercial chicken broiler breeder farm*
	~~Emfuleni (n=1)~~	~~Small scale farmer*~~
	~~Merafong City (n=1)~~	~~Commercial chicken layer farm~~
	~~Midvaal (n=1)~~	~~Small scale farmer*~~
	Mogale City (n=2)	Backyard facility
		Small scale farmer
Eastern Cape Province	Nelson Mandela Bay (4)	Developing chicken broiler and layer farm*
		Backyard facility*
		Backyard facility
		Backyard facility
	Inxuba Yethemba (n=1)	Commercial ostrich
	Walter Sisulu (n=1) (previous name - Gariep)	Commercial ostrich
Free State Province	~~Mafube (n=1)~~	~~Commercial chicken broiler farm~~
	Nala (n=1)	Backyard facility*
	Ngwathe (n=1)	Commercial chicken layer breeder farm*
KwaZulu Natal	Dannhauser (n=1)	Commercial chicken layer farm
	Mkhambathini (n=2)	Commercial chicken broiler breeder farm
		Commercial chicken layer farm
	Msunduzi (n=8) (previous name - Mkhombathini)	Commercial chicken layer farm[&]
		Commercial chicken broiler breeder farm[&]
		Commercial chicken layer farm[&]
		Commercial chicken layer farm[&]
		Commercial chicken broiler breeder farm
		Commercial chicken broiler breeder farm[&]
		Commercial chicken layer farm
		Small scale farmer
Mpumalanga	Lekwa (n=1)	Commercial chicken laying and rearing breeder farm
North West Province	JB Marks (n=4) *(Includes the old Thlokwe City and Ventersdorp Local Municipalities)*	Commercial chicken breeder farm[$]
		Commercial chicken layer farm
		Commercial chicken layer farm
		Commercial chicken layer farm*
Western Cape Province	Bergrivier (n=1)	Backyard facility
	Breede Valley (n=3)	Commercial chicken broiler breeder farm*
		Commercial chicken broiler farm
		Commercial chicken rearing farm
	City of Cape Town (n=2)	Backyard facility*
		Backyard facility
	~~Drakenstein (n=2)~~	~~Commercial chicken layer farm~~
		~~Commercial chicken layer rearing farm*~~
	~~George (n=2)~~	~~Commercial chicken layer farm*~~
		~~Commercial chicken layer farm*~~
	Hessequa (n=3)	Commercial ostrich*
		Commercial ostrich
		Commercial ostrich
	Oudtshoorn (n=1)	Commercial ostrich
	~~Saldanha (n=1)~~	~~Commercial chicken layer farm*~~
	Stellenbosch (n=1)	Commercial chicken layer farm[&]

	~~Swartland (n=3)~~	~~Commercial chicken broiler breeder farm*~~
		~~Commercial chicken layer farm*~~
		~~Non-commercial, backyard~~
	Theewaterskloof (n=1)	Commercial chicken broiler farm&
	Witzenberg (n=1)	Commercial ostrich

TABLE 1: AFFECTED LOCAL MUNICIPALITIES PER PROVINCE

Where all the outbreaks within a Local Municipality were resolved, that Local Municipality with the outbreaks were indicated by strikethrough in Table 1 above.

Sixteen (n=16) out of the fifty seven outbreaks were resolved with the OIE:

1. The one commercial chicken layer outbreak in the City of Tshwane Local Municipality in Gauteng Province
2. The outbreak in the Merafong City Local Municipality in Gauteng Province
3. The outbreak in the Mafube Local Municipality in the Free State Province
4. The commercial chicken layer outbreak in the Swartland Local Municipality in the Western Cape Province
5. The commercial chicken broiler breeder outbreak in the Swartland Local Municipality in the Western Cape Province
6. The commercial chicken layer outbreak in the Drakenstein Local Municipality in the Western Cape Province
7. The small scale farmer outbreak in Midvaal Local Municipality in Gauteng Province
8. The Commercial chicken layer rearing outbreak in Drakenstein Local Municipality in Western Cape Province
9. A commercial chicken layer outbreak in George Local Municipality in the Western Cape Province
10. The commercial chicken layer outbreak in Saldanha Bay Local Municipality in the Western Cape Province
11. The commercial chicken breeder outbreak in JB Marks Local Municipality in the North West Province
12. The commercial chicken broiler breeder outbreak in Ekurhuleni Local Municipality in Gauteng Province
13. The small scale farmer outbreak in Emfuleni Local Municipality in Gauteng Province
14. The non-commercial, backyard outbreak in Swartland Local Municipality in the Western Cape Province
15. The commercial chicken layer outbreak in the George Local Municipality in the Western Cape Province
16. The backyard facility in Mogale City Local Municipality in Gauteng Province

Sequencing conducted up to date confirmed that the current HPAI H5N1 is a Clade 2.3.4.4 virus. The HPAI H5N8 virus discussed in point 3 below was also a Clade 2.3.4.4. virus. The sequencing of the current HPAI H5 virus however confirms that it is not genetically identical to the HPAI H5N8 virus of 2017, with several nucleotide differences between the two viruses. The current HPAI H5 virus is genetically similar to HPAI Clade 2.3.4.4 strains currently circulating in wild birds in Europe and West Africa as determined by phylogenetic analysis. Further sequencing confirmed the N type to be N1. No human infection due to these circulating avian influenza strains were reported in Europe and the zoonotic risk is therefore low.

Sequencing results for the outbreak indicated with "$" in Table 1 above yielded HA and NA gene sequences that have genetic similarities to viruses isolated from wild birds in Europe. Sequencing results of the NA gene analysis are identical for the two outbreaks in Gauteng indicated with "#" in Table 1 above. Further sequencing of 5 more genes also indicate that it is the same virus. These two farms are owned by the same group and hence secondary spread is suspected. Sequencing results for all of the outbreaks indicated with "*" in Table 1 above were sequenced as HPAI H5N1 with both the HA and NA genes having genetic similarities to viruses isolated from chickens in South Africa and Nigeria. Sequencing results for all of the outbreaks indicated with "&" in Table 1 above were sequenced as HPAI H5N1 and we are awaiting subsequent reports on the phylogenetic relationships with other recent cases.

Published information on the spread of the Clade 2.3.4.4b strains currently circulating in Europe, indicated that secondary spread by fomites (e.g. vehicles, people, equipment) between poultry facilities was a big contributing factor in the spread of the European outbreaks. The commercial chicken layer breeder farm in Ngwathe Local Municipality in the Free State Province is linked via secondary spread to the latest commercial chicken layer farm in JB Marks Local Municipality in North West Province and the latest commercial chicken layer farm in City of Tshwane Local Municipality in Gauteng Province. It is of utmost importance that all poultry facilities ensure that the best possible biosecurity are being maintained and that morbidity and mortality are closely monitored with no chickens being moved if there is a slight increase in morbidity and mortality.

All suspect farms are immediately placed under quarantine and no movement of birds, eggs or products are allowed on or off these farms. Samples are collected for verification of the suspicion and back and forward tracing is implemented to detect any possible spread of disease. So far most of the affected properties have culled out the chickens and carcases disposed by dumping at an approved hazardous dump site, incineration, rendering or composting on farm; or on farm burial where allowed by the Environmental Department. Eggs are taken under veterinary supervision for pasteurisation or moved after double fumigation or fogging. Passive surveillance in the whole country is ongoing, and all vets have been notified to be on high alert and place HPAI at the top of the differential diagnostic list for any increased mortalities. Listed NAI free compartments are continuing with the monthly surveillance. Press releases are sent out continuously to update and remind the public to report any increased mortalities in poultry and wild birds to their nearest State Veterinarian for immediate investigation.

Due to the mode of transmission of Avian Influenza, primarily by wild birds, there is no scientific justification in placing a radius around the affected farms as a controlled/protection area; however, all neighbouring farms are immediately visited, and all epidemiologically linked properties to an affected farm are immediately placed under quarantine until preliminary investigations can be conducted with no indication of suspicion of disease - increased mortality or drop in egg production.

Further suspect outbreaks in ostriches in the Western and Eastern Cape Provinces are under investigation.

2.2 Overview of the HPAI H5N1 non-poultry (wild bird) event

A total of thirty eight (n=38) non-poultry outbreaks were reported and these include wild birds and birds kept as hobby or zoo purposes. Eleven (n=11) of these non-poultry outbreaks were resolved. These outbreaks do not have any trade implications.

2.3 Spatial distribution of the poultry HPAI H5N1 event

The spatial distribution of the HPAI H5N1 outbreak in the commercial chicken facilities and backyard facilities in Gauteng, North West, Western Cape, Mpumalanga, Free State, KwaZulu Natal and Eastern Cape Provinces is represented in Figure 1 below.

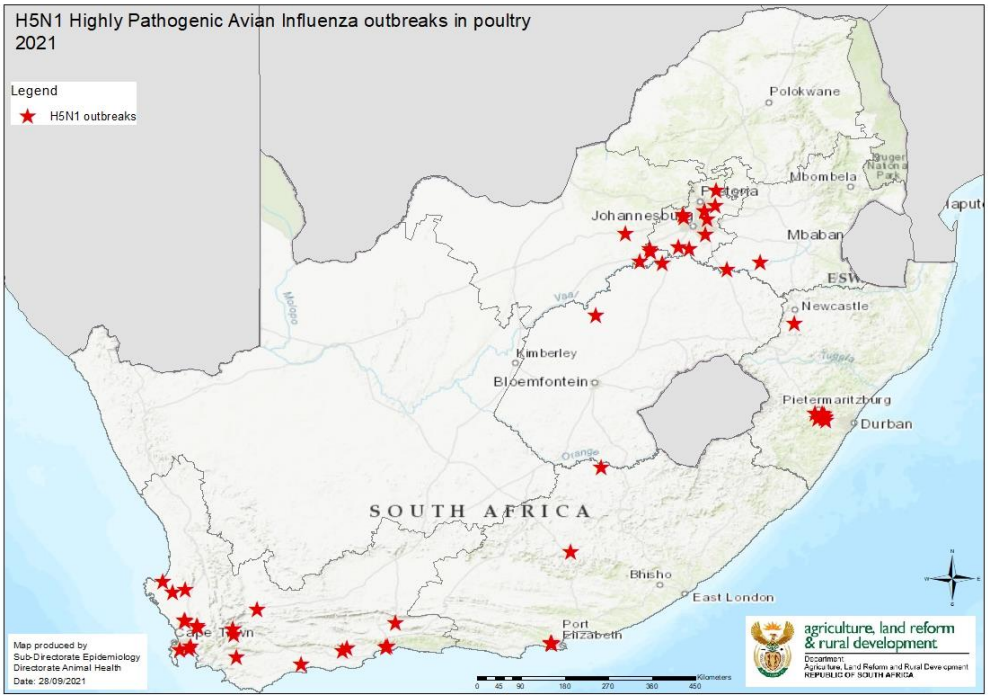

FIGURE 1: SPATIAL DISTRIBUTION OF HPAI H5N1 OUTBREAKS IN COMMERCIAL CHICKENS AND BACKYARD FACILITIES

2.4 Spatial distribution of the non-poultry HPAI H5N1 event

The spatial distribution of the HPAI H5N1 outbreak in non-poultry in the Western Cape, Eastern Cape, Limpopo and Gauteng Provinces is represented in Figure 2 below.

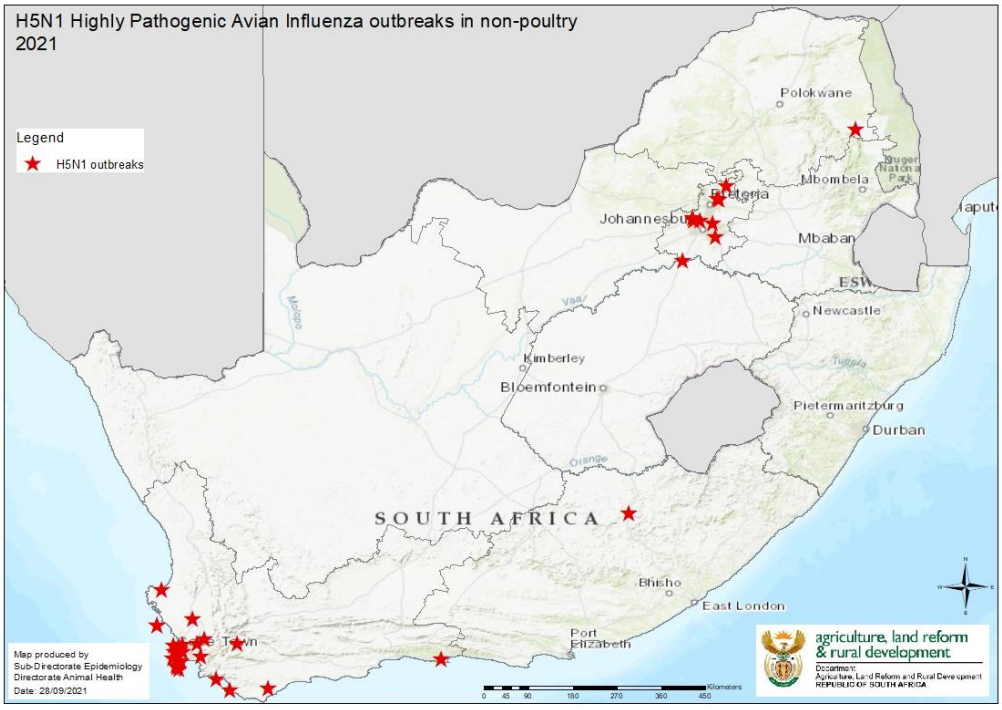

FIGURE 2: SPATIAL DISTRIBUTION OF HPAI H5N1 OUTBREAKS IN NON-POULTRY (WILD BIRDS OR BIRDS KEPT AS A HOBBY/ZOO PURPOSES)

2.5 Temporal distribution of the poultry HPAI H5N1 event

The temporal distribution of the poultry event is depicted in Figure 3 below.

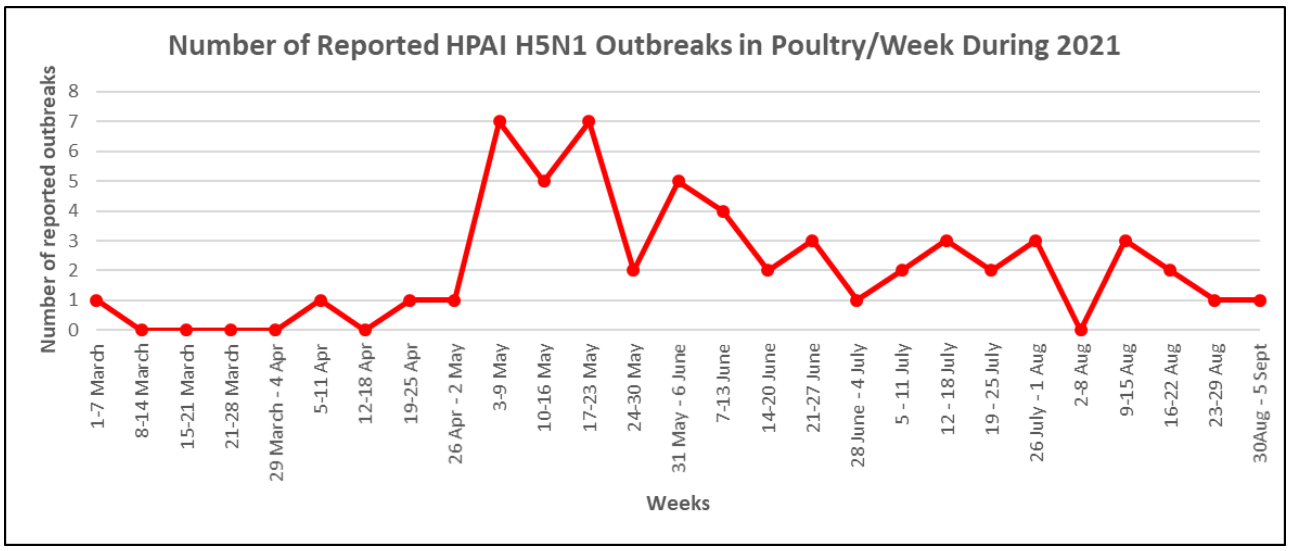

FIGURE 3: TEMPORAL DISTRIBUTION OF HPAI H5N1 OUTBREAKS IN POULTRY DURING 2021

3. Low pathogenic avian influenza (LPAI) in ostriches

3.1 LPAI H7

Ongoing active surveillance for avian influenza in ostriches detected the presence of H7 avian influenza on PCR in July 2020. These positive samples were sequenced and confirmed to be LPAI H7. The index case (first identified outbreak/case) was an ostrich compartment sampled on 15 July 2020 in the Mossel Bay Local Municipality in the Western Cape Province. Since then a further five (5) outbreaks in ostriches were confirmed to be LPAI H7 by sequencing. The N types of these LPAI H7 sequences could not be definitively determined. Up to 23 September 2021, a total of six (6) LPAI H7 outbreaks were reported to the OIE, of which four (4) were resolved (67%).

The spatial distribution of the unresolved LPAI H7 outbreaks in ostriches are depicted in Figure 4 under point 5 of this report.

3.2 LPAI H5

Ongoing active surveillance for avian influenza in ostriches also detected the presence of H5 avian influenza on PCR on a single ostrich compartment in August 2020. These positive samples were sequenced and confirmed to be LPAI H5. The index case was an ostrich compartment sampled on 27 August 2020 in the Oudtshoorn Local Municipality in the Western Cape Province. Sequencing has confirmed the N type to be N2.

Another ostrich compartment in the Hessequa Local Municipality of the Western Cape Province was confirmed to be LPAI H5N2 on samples collected during April 2021. Sequencing confirmed that both this strain and that of the index case in Oudtshoorn Local Municipality have a nucleotide sequence identity of 96% to the A/ostrich/SouthAfrica/325863/2015(H5N2) and hence this outbreak was reported as part of the same event to the OIE. Two further outbreaks were detected based on serology and are based within 12km of the farm that

was sequenced as part of the LPAI H5N2 event during 2021. Up to 23 September 2021 four (n=4) LPAI H5N2 outbreaks were reported to the OIE, which remain unresolved.

The spatial distribution of the LPAI H5N2 event is represented in Figure 4 under point 5 of this report.

4. Undefined H7

In addition to the confirmed LPAI H7 outbreaks as discussed above, since July 2020 a number of outbreaks were detected in ostriches where the presence of H7 avian influenza was detected by means of serology only. Follow-up sampling conducted on these compartments yielded PCR negative results and hence the pathotype of these outbreaks could not be determined. These are reported to the OIE as an H7 AI event of unknown pathotype. This H7 event is summarised in point 5 below as undefined H7. Up to 23 September 2021, a total of twenty three (23) undefined H7 outbreaks were reported to the World Organisation for Animal Health (OIE), eighteen (18) which have been resolved (78%).

The spatial distribution of the unresolved undefined H7 outbreaks in ostriches is depicted in Figure 4 under point 5 of this report

5. Spatial distribution of LPAI H7, LPAI H5 and undefined H7

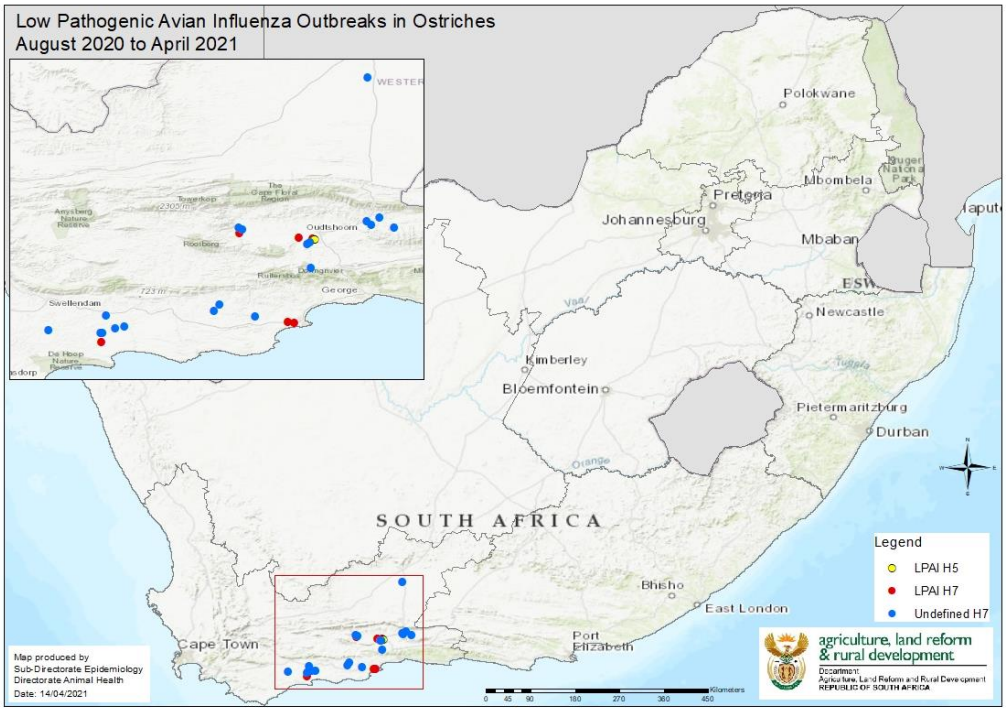

FIGURE 4: SPATIAL DISTRIBUTION OF UNRESOLVED LPAI H7, LPAI H5 AND UNDEFINED H7 OUTBREAKS IN OSTRICHES

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