



REPORT ON AVIAN INFLUENZA (AI)

SURVEILLANCE MONITORING FOR THE SURVEILLANCE PERIOD: July 2017 to December 2017 (2H 2017)

CONTENTS

		Page
1	OVERVIEW	2
2	RESULTS OF AI SURVEILLANCE MONITORING: 2H 2017	2
	2.1 Reported outbreaks	2
	2.2 Temporal and spatial distribution of the HPAI H5N8 outbreaks	4
	2.3 AI surveillance	8
	2.4 Provincial distribution of layer and broiler birds in South Africa	8
	2.5 The number, type and distribution of poultry farms in South Africa	11
	2.6 Distribution of farms according to volumes recorded in the AI survey	13
3	CHALLENGES	14

1 OVERVIEW

As early as 2009 the Department of Agriculture, Forestry and Fisheries (DAFF) and the Poultry Disease Management Agency (PDMA) jointly established precautionary measures and disease surveillance and control protocols, in order to minimise the possible impact of outbreaks of poultry diseases of economic importance that might occur in South Africa.

The South African Poultry Association (SAPA) is an active participant in the surveillance monitoring process for avian influenza (AI) in the national poultry flock. During the reporting period, surveys were conducted on a six-monthly basis, according to a prescribed protocol, and all producers are periodically encouraged to participate with this programme.

In 2017 there were reported cases of HPAI (H5N8) in Austria, Bangladesh, Bulgaria, Bosnia and Herzegovina, Cameroon, China, Chinese Taipei, Croatia, Cyprus, Czech Republic, Democratic Republic of Congo, Egypt, Finland, Greece, India, Iran, Israel, Italy, Kazakhstan, Kuwait, Lithuania, Luxembourg, Nepal, Niger, Nigeria, Portugal, Romania, Republic of Korea, Russia, Saudi Arabia, Serbia, Slovakia, Slovenia, Switzerland, Sweden, Tunisia, Uganda, the Ukraine and Zimbabwe.

In addition, the following countries have reported the H5N1 strain: Bangladesh, Cameroon, Cambodia, China, Côte d'Ivoire, France, India, Iran, Laos, Libya, Malaysia, Myanmar, Nepal, Niger, Nigeria, Togo and Vietnam. China, Chinese Taipei and the US have reported H5N2.

During the same period, there have also been reports of H7N9 in China and the US. Chinese Taipei lays claim to H5N6, along with China, France, Greece, Hong Kong, Japan, Republic of Korea, Laos, Myanmar, the Netherlands, the Philippines and Vietnam. The H5N5 strain has been reported in Croatia, Italy, Netherlands, Germany, Greece, Poland, Serbia and the Czech Republic in 2017. Mexico reported H7N3 in May 2017.

2 RESULTS OF AI SURVEILLANCE MONITORING: 2H 2017

2.1 Reported HPAI outbreaks

Following the first two reported outbreaks of HPAI in Mpumalanga on 19 June 2017, further outbreaks were reported in Gauteng, North West, Free State, KwaZulu-Natal, Eastern Cape and Western Cape. The Northern Cape and Limpopo remained unaffected.

Table 1 shows the categorical breakdown of HPAI H5N8 outbreaks per province since the index case and until 8 January 2018.

Table 1: Breakdown of HPAI H5N8 outbreaks per province*

Province	Backyard	Commercial	Hobby/ Zoo	Ostriches	Wild Birds	Total
Mpumalanga	4	5	0	0	2	11
Gauteng	0	3	5	0	6	14
Limpopo	0	0	0	0	0	0
North West	0	1	1	0	0	2
Free State	0	2	0	0	0	2
KZN	0	1	0	0	0	1
E. Cape	0	1	1	1	0	3
W. Cape	4	17	12	37	17	87
N. Cape	0	0	0	0	0	0
Total Cases	8	30	19	38	25	120

*source: DAFF, 11 January 2018. *Avian influenza: HPAI H5N8 outbreak and surveillance update report*

A total of 30 outbreaks in commercial chickens and ducks were reported during the 2H2017 leading to the first week of January 2018. Of these, 28 outbreaks were in commercial chicken operations and 2 on duck farms. For ease of reference captive hobby birds, exotic species and zoo birds are listed separately. In total, approximately 5.4 million birds died or were culled to date since the first confirmed case in June 2017.

Although mainly commercial chickens, ducks and ostriches were involved in the outbreaks, the H5N8 virus has also been detected in the following species, as reported by DAFF during the reporting period:

- Southern masked weavers
- Yellow-billed ducks
- Egyptian geese
- House sparrows
- Spur-winged geese
- African rock pigeons
- Sacred ibis
- Common guinea fowl
- Blue cranes
- Laughing doves
- Peregrine falcons
- Pied crows
- Spotted eagle-owls
- Mallard Duck
- Black Swan (In Zoo)
- Wild turkey (in Zoo)

- Black-headed heron (in Zoo)
- Manchurian Crane (in Zoo)

The largest number of HPAI H5N8 outbreaks on commercial chicken farms and the highest number of wild bird outbreaks have been reported in the Western Cape Province – 87 in total during the reporting period.

2.2 Temporal and spatial distribution of the HPAI H5N8 outbreaks

The initial 16 weeks of this episode consisted mainly of outbreaks reported in Mpumalanga, Gauteng, North West and KwaZulu-Natal provinces. This was termed the "Northern outbreak cluster". Thereafter there were outbreaks initially on ostrich farms reported in the Western Cape and Eastern Cape and this was termed the "Southern outbreak cluster".

No outbreaks have been reported in the Northern cluster since week 16 – that is, 2 October 2017 during the reporting period. Outbreaks however continued in the Southern cluster.

Epidemic curves allow the analysis of outbreaks in time; in other words, a temporal analysis of data. While the output of an epidemic curve is relatively straightforward, the benefit of such analysis allows the determination of:

- Establishing the probability of the detection of the actual first case in the outbreak;
- Establishing the rate of progression and trend of outbreak;
- Establishing the secondary spread of infection;
- Establishing the effect of control measures.

Figures 1 to 4 show the epidemic curves classified by bird type (domestic and wild), farm type, province, and municipality respectively. Figures 5 and 6 show maps that indicate the geographical spread and outbreak density of the HPAI infections.

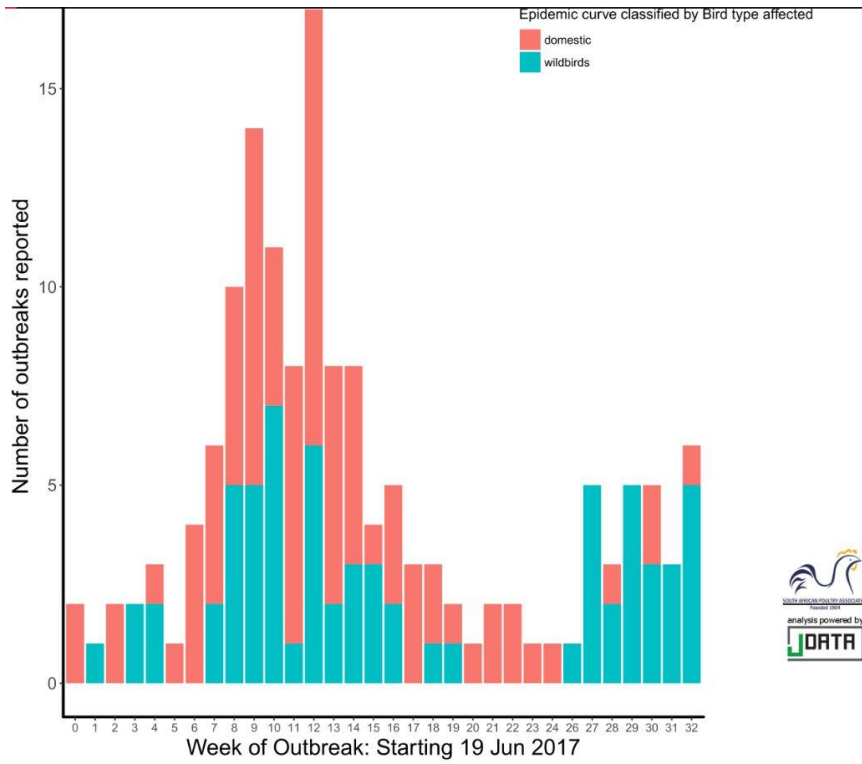


Figure 1: Epidemic curve classified according to bird type

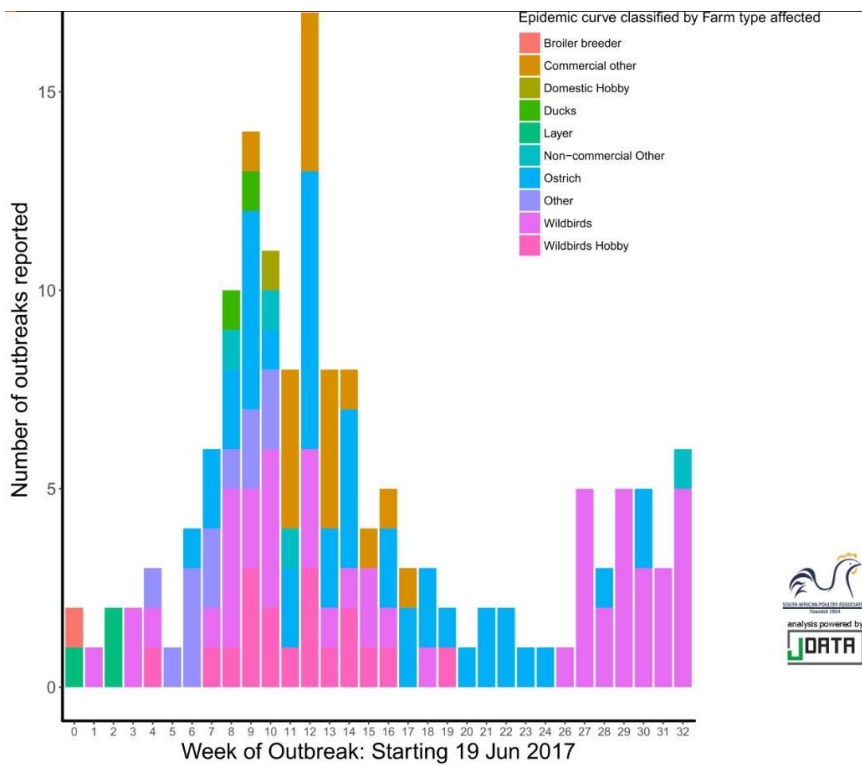


Figure 2: Epidemic curve classified according to farm type

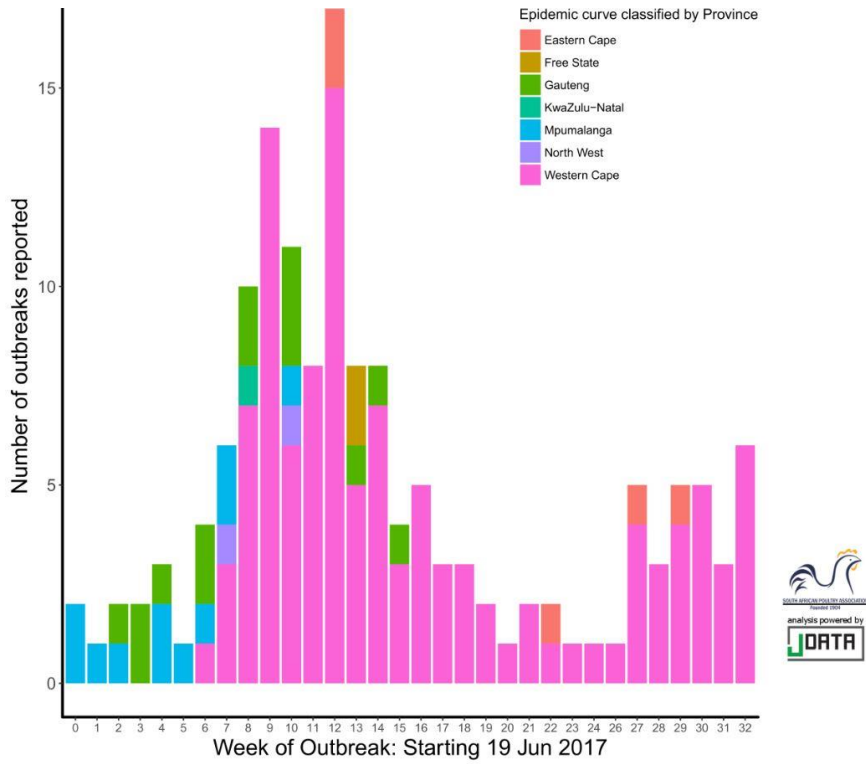


Figure 3: Epidemic curve classified according to province

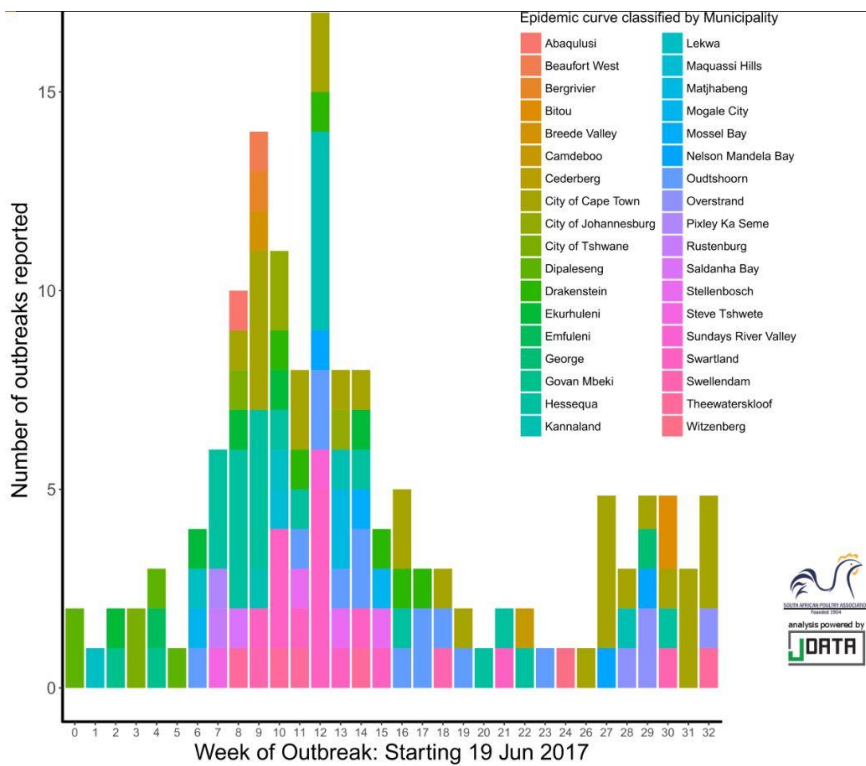


Figure 4: Epidemic curve classified according to municipality

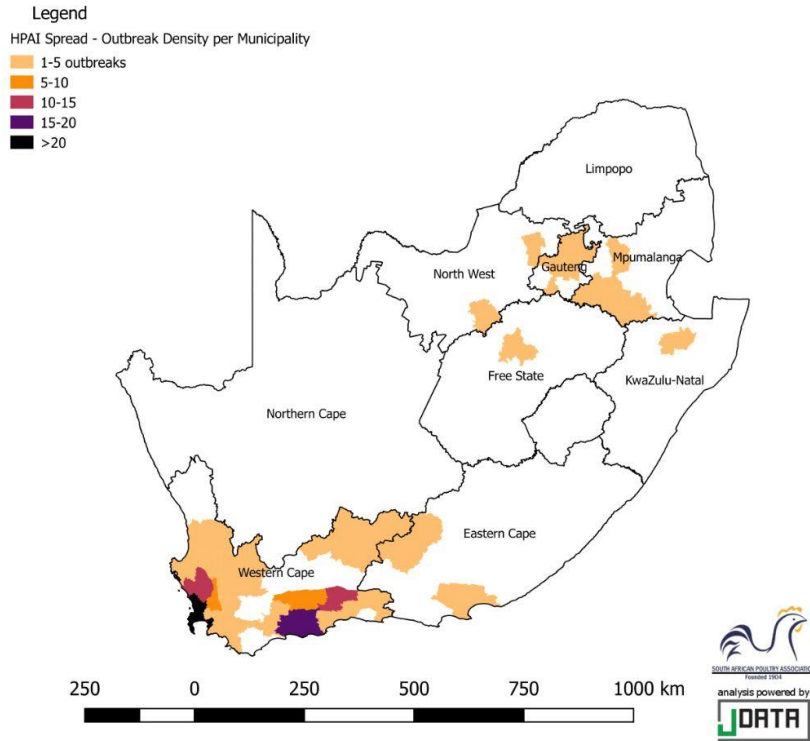


Figure 5: Outbreak density per municipality

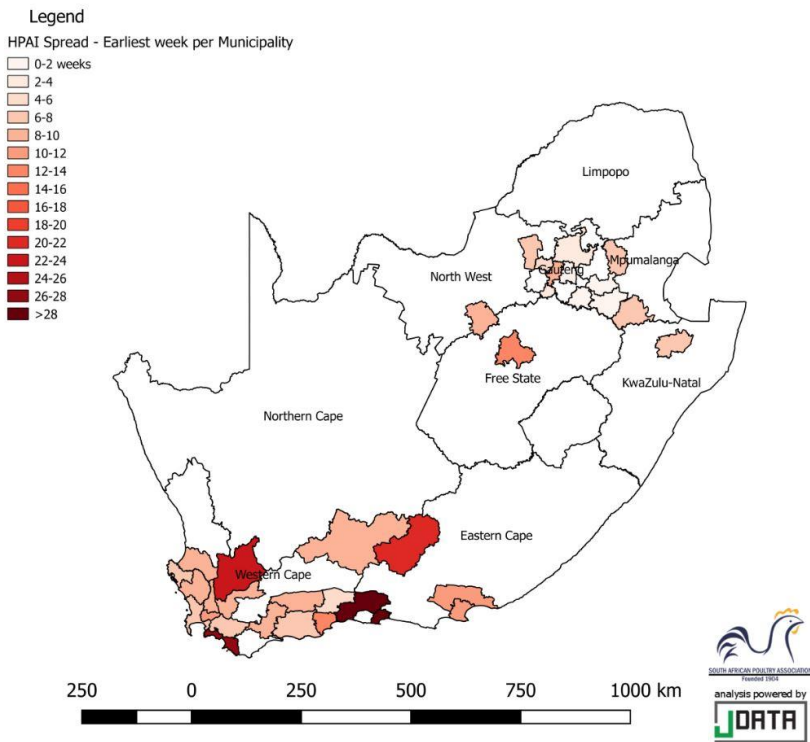


Figure 6: Outbreak spread over time

2.3 AI surveillance programme

Table 2a summarises the AI test results for the farms that submitted data during the 2H 2017. The number of farms that did not participate during the surveillance period is shown in Table 2b. This indicates that 29% of broiler farms and 77% of layer farms did not submit samples for testing during the reporting period.

Table 2a: AI test results

PROVINCE	FARM TYPE		SAMPLES TESTED
	Broiler	Layer	
E. Cape	29	0	888
Free State	24	1	793
Gauteng	25	18	2 119
KZN	20	3	3 172
Limpopo	0	0	0
Mpumalanga	84	2	2 957
N. Cape	1	1	72
North West	48	5	3 574
W. Cape	80	12	3 922
National	311	42	17 497

Table 2b: Number of farms that did not submit AI test results

PROVINCE	FARM TYPE	
	Broiler	Layer
E. Cape	15	5
Free State	10	17
Gauteng	28	17
KwaZulu-Natal	10	26
Limpopo	11	26
Mpumalanga	14	9
N. Cape	1	3
N. West	35	24
W. Cape	2	14
National	126	141

2.4 Provincial distribution of layer and broiler birds in South Africa

The provincial distribution of chicken farms, in terms of broilers and layers, is given in Table 3. These figures were recorded during the course of the AI survey, where producers provide data on actual bird numbers in addition to the AI laboratory test results. 'Broiler birds' refers to broiler

breeders, broiler day-old chicks and broilers in rearing. 'Layer birds' refers to layer breeders, day-old pullets, pullets in rearing and layers in lay. Layer birds belong to the egg industry.

Table 3: Provincial distribution of chickens in South Africa

PROVINCE	BROILER		LAYER		TOTAL	
	birds	%	birds	%	birds	%
E. Cape	7 508 361	7.2	909 783	3.6	8 418 144	6.5
Free State	6 943 844	6.7	3 608 677	14.2	10 552 521	8.2
Gauteng	11 104 107	10.7	6 444 855	25.3	17 548 962	13.6
KZN	6 696 594	6.4	2 358 268	9.3	9 054 862	7.0
Limpopo	2 343 780	2.3	803 669	3.2	3 147 449	2.4
Mpumalanga	23 265 356	22.4	2 213 282	8.7	25 478 638	19.7
North West	24 286 311	23.4	2 661 557	10.5	26 947 868	20.8
N & W Cape	21 746 385	20.9	6 423 408	25.3	28 169 793	21.8
TOTAL	103 894 738	100.0	25 423 499	100.0	129 318 237	100.0

Note: The bird numbers do not reflect the mortalities and culls due to avian influenza.

Table 4 shows the poultry census figures as given by SAPA's egg forecasting model.

Table 4: Poultry census figures for the broiler and egg industries

Broiler GGP's & GP's	244 300
Broiler parents in rearing	3 830 800
Broiler parents in lay	6 545 200
Broiler rearing	88 965 700
TOTAL BROILER INDUSTRY	99 586 000
Comm. Layer GP's	8 300
Layer parent hens	327 000
Layer replacement pullets	7 544 000
Commercial Layers	21 326 100
TOTAL EGG INDUSTRY	29 206 000
TOTAL INDUSTRY	128 792 000

Figure 7 gives the total number of chickens per province at 31 December 2017, as per Table 3. The Northern Cape has a very small number of poultry producers, thus in order to disguise their bird numbers the province is combined with the Western Cape. These two provinces are home to the largest number of birds with 21.8% of the national total, followed by the North West with 20.8%.

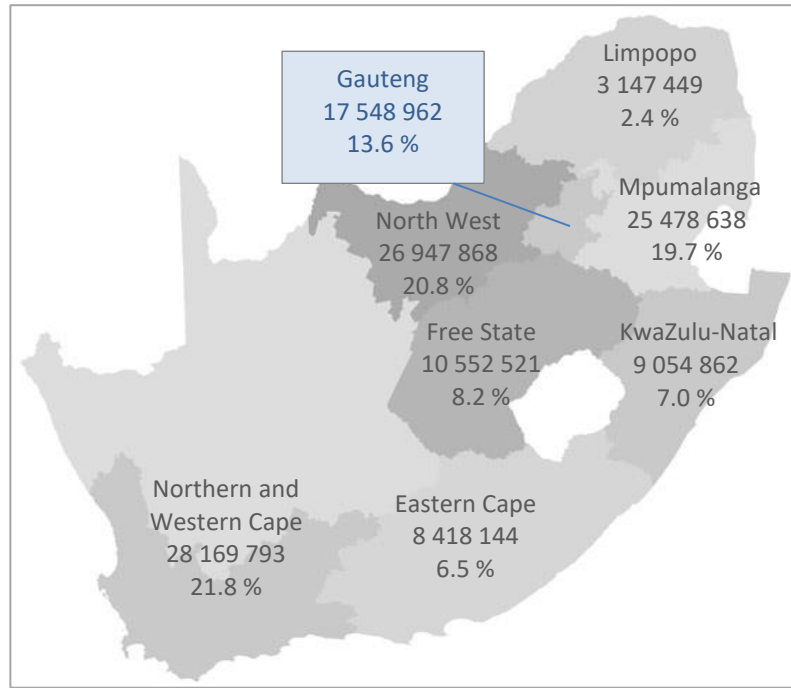


Figure 7: Provincial distribution of the national chicken flock in South Africa at December 2017; numbers per province and percentage of total flock.

The proportion of broiler birds and layer birds in each province is illustrated in Figure 8. Broiler production dominates in Mpumalanga, North West and E. Cape, with the ratio of broilers to layers being 10.5:1, 9.1:1 and 8.3:1 respectively.

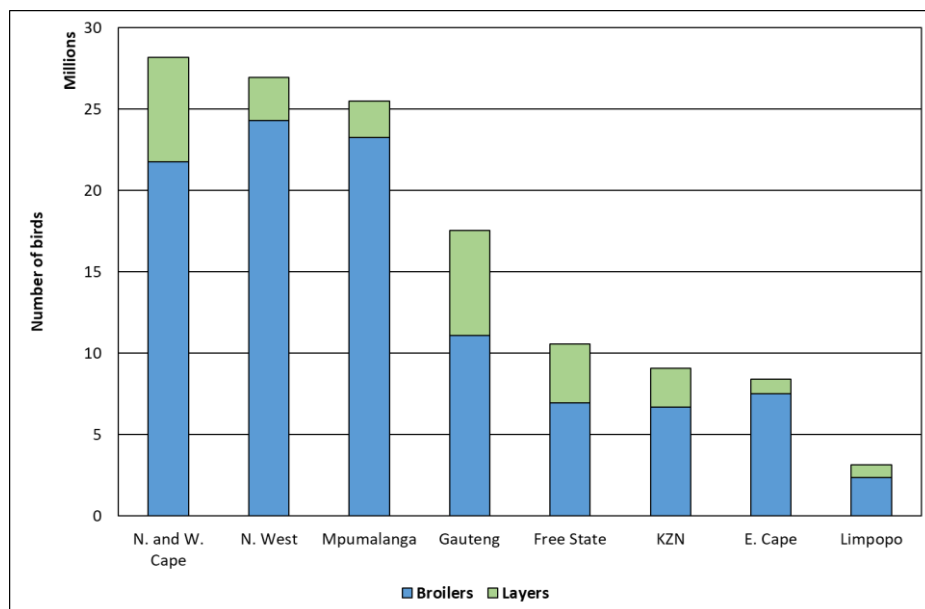


Figure 8: Provincial distribution of layer and broiler birds in South Africa in 2H 2017

The provincial distributions (%) of broiler and layer chickens are given in Figures 9 and 10 respectively. Bird numbers are shown in Table 3.

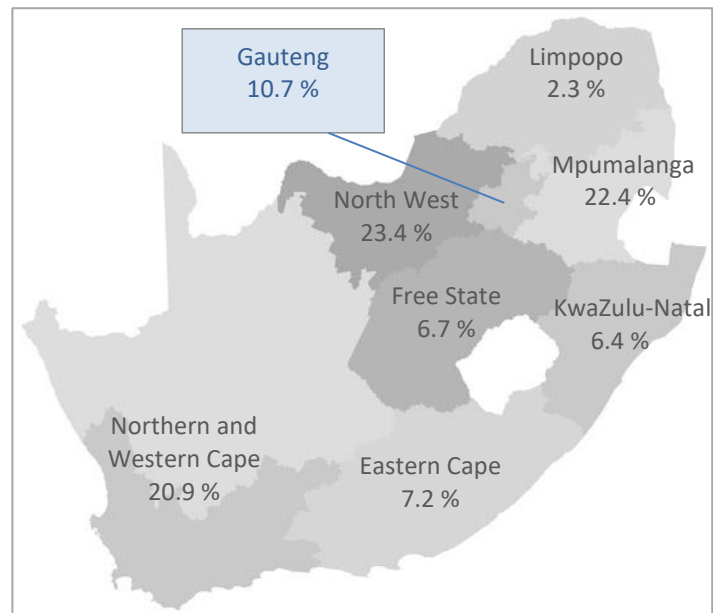


Figure 9: Provincial distribution of the national broiler flock in South Africa at December 2017, as a percentage of the total flock.

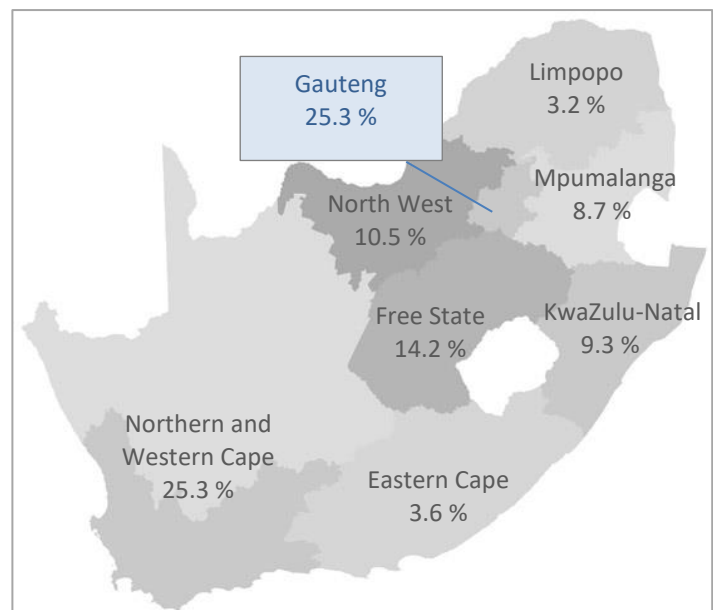


Figure 10: Provincial distribution of the national layer flock in South Africa at December 2017, as a percentage of the total flock.

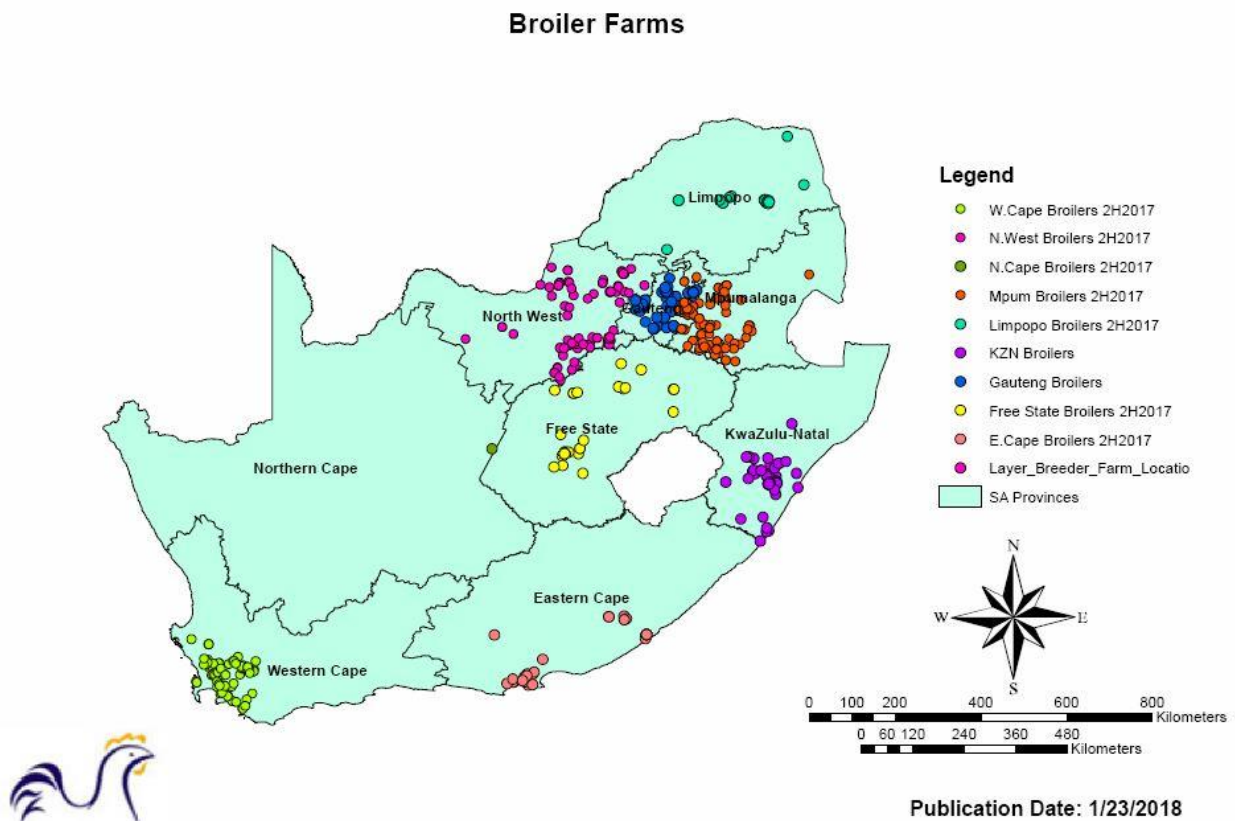
2.5 The number, type and distribution of poultry farms in South Africa

The number of farms in the AI database is given in Table 5.

Table 5: Number of farms participating in the survey

BROILER INDUSTRY	
Broiler breeder farms	121
Broiler rearing farms	424
TOTAL	545
EGG INDUSTRY	
Layer breeder farms	24
Layer rearing farms	28
Layer farms (egg producing)	147
TOTAL	199
BROILER AND EGG INDUSTRIES	
GRAND TOTAL	744

For this surveillance period the number of broiler farms increased by five; two farms closed or temporarily had zero production and seven new farms started trading or became operational again. The number of layer farms decreased by two; three farms closed or temporarily stopped producing eggs and one of the layer farms resumed production. The nationwide distribution of broiler and layer farms in the AI database is shown in Figures 11 and 12 respectively.

**Figure 11:** Geographical location of broiler farms

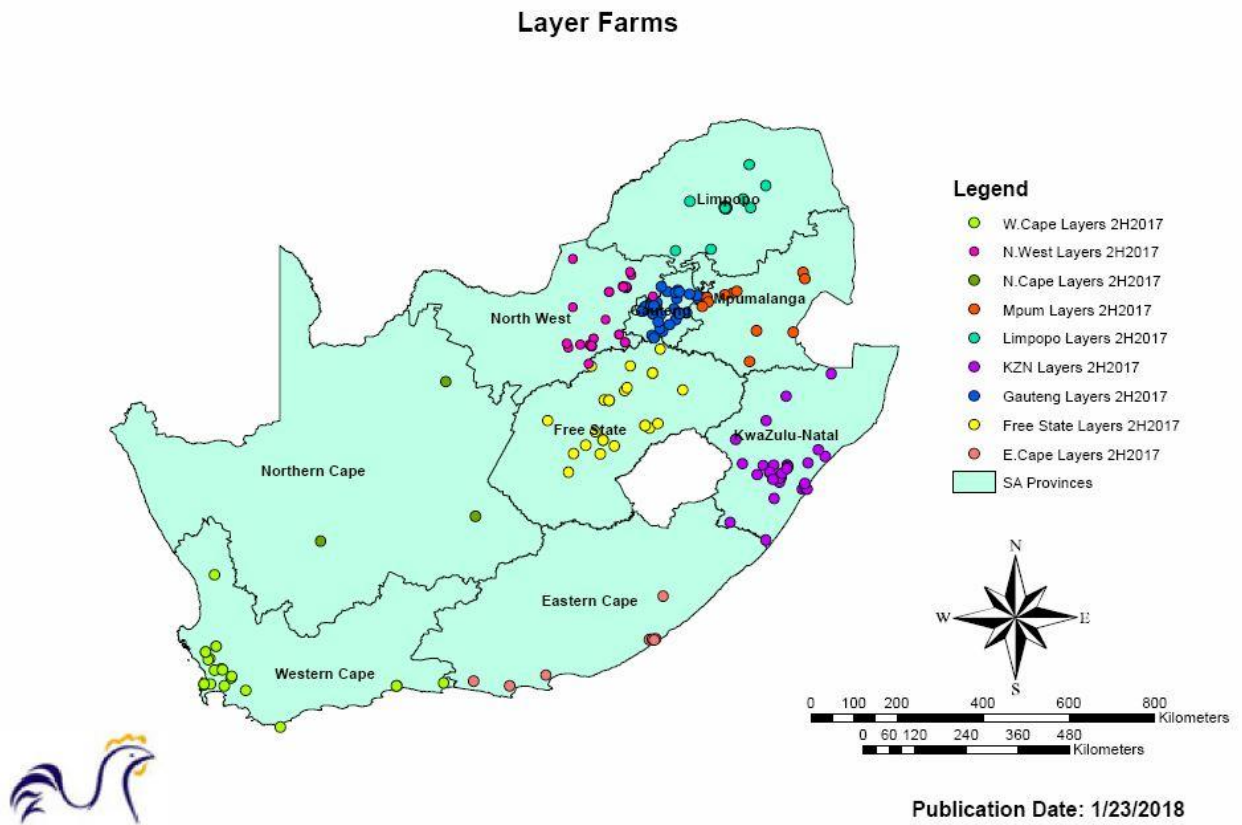


Figure 12: Geographical location of layer farms

2.6 Distribution of farms according to volumes recorded in the AI survey

Table 6 shows the distribution of farms according to size of operation. 48 % of the farms fall in the 100 000 to 400 000 bird range (359 farms out of a total of 744).

Table 6: The distribution of farms according to the average number of birds on the farms

Number of birds		Number of farms
from	to	
700 000	and more	12
600 000	699 999	12
500 000	599 999	18
400 000	499 999	19
300 000	399 999	50
200 000	299 999	135
100 000	199 999	174
90 000	99 999	21
80 000	89 999	15
70 000	79 999	8

60 000	69 999	26
50 000	59 999	17
40 000	49 999	31
30 000	39 999	84
20 000	29 999	35
15 000	19 999	18
10 000	14 999	28
5 000	9 999	19
100	4 999	22
		744

3 CHALLENGES

Accurate data is essential to assist with the implementation of fact-based disease management strategies.

The surveillance monitoring in the poultry industry is an enormous and complex task. The following challenges remain critical:

- Getting new leads to contact.
- Encouraging all poultry farmers to participate in the surveillance monitoring.
- Receiving and processing data more rapidly.
- Getting producers to provide updated bird numbers on the farms.
- Receiving correct GPS co-ordinates for each farm.
- Reporting on information that is not verified.
- Relying on different sources of information.

SAPA contact details

Silverpath Consulting is contracted to SAPA to collate the information regarding Avian Influenza and thus to contact poultry farmers in order to solicit the required information. Ms. Idah Mosewu conducts these surveys and we request the industry to cooperate with the process. She can be contacted at 079 871 9085 during working hours, and via e-mail: Christel@sapoultry.co.za or (011) 768 5126. Should you wish to escalate any issues directly to SAPA please contact Malesedi Mokgoathheng-Mamogobo on Malesedi@sapoultry.co.za or alternatively 012 529 8298.