NSW GOVERNMENT

Information contributed by staff of
NSW Department of Primary Industries
and Local Land Services

NEW SOUTH WALES

ANIMAL HEALTH SURVEILLANCE

October – December 2018 » Issue 2018/4

In this issue

Background to the NSW DPI-Local Land Services animal disease and pest surveillance program

The Department of Industry in New South Wales is obliged under the *Biosecurity Act 2015* to detect and manage notifiable disease outbreaks. The risk of failure to detect these diseases is managed by an active, region-based, animal disease and pest surveillance program.

Part of the program requires government veterinary officers to investigate potential notifiable disease outbreaks and unusual diseases that may be new, emerging or difficult to diagnose.

They also conduct targeted surveillance projects, inspections of stock at saleyards and monitoring of compliance programs. The desired outcome is early detection of notifiable diseases and valid reports on the animal pest and disease statuses of all Local Land Services (LLS) regions in NSW. Reports are collated at state level, for subsequent official reporting to Animal Health Australia's National Animal Health Information System (NAHIS). The surveillance program is supported by the NSW state veterinary diagnostic laboratory (SVDL) and by research staff who design and improve diagnostic tests and, working with field veterinarians, investigate the epidemiology of diseases that have significant biosecurity impacts.

NSW field surveillance in 2018

The key outputs of surveillance conducted by the government veterinary service in NSW are the detection and exclusion of exotic and endemic notifiable diseases so that control strategies can be put in place to minimise the impact of these diseases if detected, and to support claims of disease freedom through diagnostic exclusion.

During 2018 in New South Wales, 3166 domestic animal disease investigations were conducted by Local Land Services (LLS) District Veterinarians and private veterinary practitioners to detect or exclude suspected notifiable or emergency animal diseases. LLS investigated 77% of these disease events *(Figure 1)*.

The most common syndrome investigated by LLS District Veterinarians was sudden death, with a quarter of all LLS investigations in 2018 reporting sudden death or animals found dead as the reason for investigation. Most commonly there was no diagnosis or no evidence of disease (both 11%). Of all cases with a final diagnosis, 14% had multiple diagnoses. The most common final diagnosis was internal parasitism (6%) followed by toxicity (5.6%). More than 90% of the disease investigations conducted by LLS District Veterinarians were in cattle and sheep *(Figure 2)*.

For further information contact Claire Harrison, Veterinary Policy & Project Officer, NSW DPI Animal Biosecurity, Orange NSW, on (02) 6391 3490.

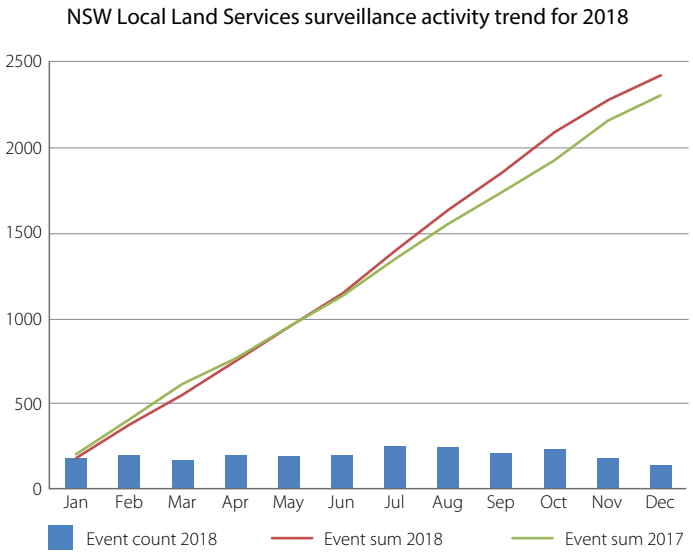

Figure 1: Graph by C. Harrison.

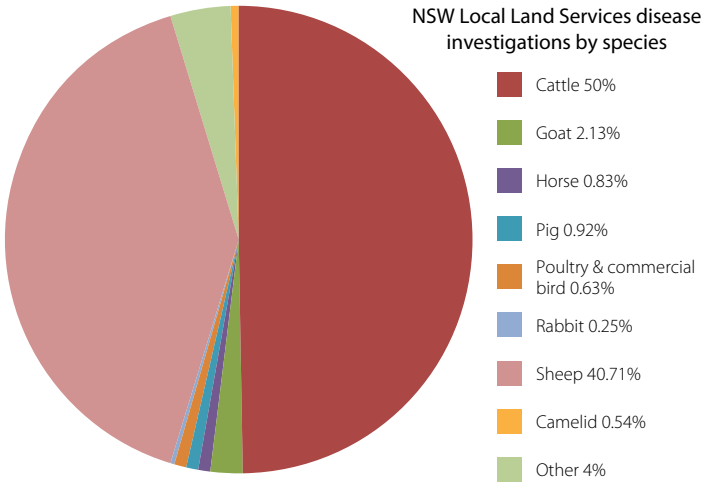

Figure 2: Graph by C. Harrison.

Survey

How can we improve the NSW Animal Health Surveillance newsletter?

We're seeking your thoughts on the Animal Health Surveillance newsletter, which is a quarterly report and plays an important part in raising awareness and sharing knowledge of notifiable disease investigations and issues amongst government and industry professionals. The information and articles for this newsletter are supplied by NSW Department of Primary Industries (DPI) staff and LLS District Veterinarians.

We'd like to know what works, what doesn't work, and what we can do better. Accordingly, we would appreciate you taking the time to complete this short survey. The answers will help us continue to provide the latest animal health surveillance news in an engaging and relevant way.

This survey can be completed by hand, then scanned and emailed to **jenna.fraser@dpi.nsw.gov.au**

Alternatively, this survey can be completed electronically using the QR code shown here or by using the link **https://www.surveymonkey.com/r/SDP9P9K**

1. Please rate the quality of the information contained in the NSW Animal Health Surveillance newsletter?
   - ☐ Excellent
   - ☐ Good
   - ☐ Okay
   - ☐ Needs improvement
   - ☐ Poor

2. Having information and case studies written by LLS District Veterinarians who conduct disease investigations on-farm is engaging and the best way to present animal health surveillance information.
   - ☐ Strongly agree
   - ☐ Agree
   - ☐ Neutral
   - ☐ Disagree

3. I like the current layout and look of the Animal Health Surveillance newsletter.
   - ☐ Strongly agree
   - ☐ Agree
   - ☐ Neutral
   - ☐ Disagree

4. Photos of diseases and animal health issues are important.
   - ☐ Strongly agree
   - ☐ Agree
   - ☐ Neutral
   - ☐ Disagree

5. I would like to see more animal health statistics and data presented in the Animal Health Surveillance newsletter.
   - ☐ Strongly agree
   - ☐ Agree
   - ☐ Neutral
   - ☐ Disagree

6. I would prefer the Animal Health Surveillance newsletter to be delivered:
   - ☐ Electronically via email
   - ☐ Electronically via the NSW DPI or LLS website
   - ☐ As a paper-based hard copy

7. What is the one thing you find most valuable about the Animal Health Surveillance newsletter?

8. If you could change one thing about the Animal Health Surveillance newsletter, what would it be?

Anthrax excluded in cattle with urea toxicity

On Sunday 4th November 2018 a producer from Rouchel NSW, in the Upper Hunter, contacted NSW LLS regarding sudden death in steers and heifers on a full hand-feeding ration due to drought conditions. This ration was a milled grain and straw mix containing urea. There had been periodic deaths over the last three weeks in the same group of animals with the carcasses "blowing" rapidly as a result of gaseous tissue-infiltration post death.

On questioning the owner, there had been two animals die overnight and the carcasses were already extremely blown and had a bloody discharge from the nose, mouth and anus.

The Rouchel area has been in severe drought for the last 2 years and there was little to no ground cover on the property, particularly where the steers were being fed. There had been several storms through the area over the preceding 2-3 weeks. The feed ration was mixed on farm and had been used to finish livestock successfully for several years.

Figure 3. One of the dead animals which appeared extremely blown and had bloody discharge from the nose, mouth and anus. Photo by J. Bennett

In Dec 2007 there was an Anthrax outbreak in the Rouchel area (including this property) after similar climatic conditions (heavy rain after a prolonged dry period).

Considering the history of the property, the decision was made to perform Anthrax exclusion testing, as well as further diagnostic investigation to determine the cause of death.

Differential diagnoses in this case were anthrax, urea toxicity or clostridial diseases.

An anthrax immunochromatographic (ICT) test was performed on-farm and returned a negative result. Due to the advanced state of putrefaction of the carcasses, only aqueous humour was collected for further diagnostic testing. Clostridial diseases were considered unlikely as the steers had received a booster vaccination of 5 in 1 within the last month.

The SVDL confirmed the negative anthrax test, and the aqueous humour returned an ammonia level of 2476 umol/l confirming urea toxicity as the cause of death. Considering the link to rain events the conclusion was that urea was being dissolved out of the feed, concentrating in lower areas of the feed troughs and only affecting a few individuals.

Rouchel, in the Upper Hunter, lies outside the classic "anthrax belt" and prior to the 2007 outbreak the previous anecdotal history suggests the early 1940's as the most recent outbreak, although it was considered endemic in the Hunter in the 1890's. Anthrax spores are long lasting and, given the right environmental conditions, outbreaks may occur outside the anthrax belt. The disease should consequently remain on the list of differential diagnoses in cases of sudden death, particularly after heavy rain in denuded pasture conditions.

For further information contact Jane Bennett, District Veterinarian, Hunter Local Land Services, Scone, on (02) 6540 2419.

Anthrax exclusions during October, November and December 2018

There were no positive cases of anthrax during the fourth quarter of 2018.

Forty five investigations of mortalities excluded anthrax as the cause of death in livestock. Thirty one of these were in cattle where alternative diagnoses included bloat, gastrointestinal obstruction, pneumonia, salmonellosis and toxicities including *Xanthium occidentale*, nitrate/nitrite and urea.

Thirteen investigations were in sheep and alternative diagnoses included hypocalcaemia, Haemonchosis, red gut, and toxicities including nitrate/nitrite and pyrrolizidine alkaloid (*Heliotropium sp*).

The one investigation in a goat was found to be due to internal parasites and possibly lightning strike.

The anthrax ICT in-field test kit was used in twenty eight of these investigations with all negative results (nineteen in cattle, eight in sheep and the one goat). Ten cattle and two sheep investigations had ICT negative results confirmed by laboratory testing, either by polymerase chain reaction (PCR) or polychrome methylene blue (PCMB). Laboratory testing also excluded anthrax in a further twelve investigations and the remaining five investigations had anthrax excluded on clinical grounds including alternative diagnoses.

For further information contact Barbara Moloney, Technical Specialist Disease Surveillance, NSW DPI, Orange, on (02) 6391 3687.

Atypical porcine pestivirus detected in association with congenital tremors on a free range piggery in NSW

In July 2018, a producer at Stockinbingal NSW reported shaking piglets being born over the preceding month from three gilt litters. A fourth affected gilt litter was delivered in August 2018. The free-range piggery, which had been established within the 12 months prior to these incidents, was located in the Riverina region of NSW. The breeding animals consisted of 5 gilts, 10 sows of parity 1 or greater and 2 boars. The sows and gilts had all been introduced from other farms and had been acquired opportunistically. Only piglets born to gilts were affected.

The affected piglets were born with an obvious intention tremor and piglets from one of the four affected litters were also affected with severe splayed legs. At the time of the initial visit the first affected litter was approximately 5 weeks of age and was no longer showing any evidence of tremors. Mortalities were most significant in the piglets affected with splayed legs which limited their ability to move and made them more susceptible to being overlain.

Four affected piglets that had died or had been culled were submitted to the SVDL for testing. Infectious causes of congenital tremors were considered most likely given that only gilt litters had been affected. Testing by real-time PCR was undertaken to exclude Aujeszky's disease, porcine circovirus 2, and pestiviruses including atypical porcine pestivirus (APPV), border disease virus, bovine viral diarrhoea virus, Bungowannah virus and classical swine fever virus. All samples gave negative results, except for the APPV PCR.

APPV was first identified in 2015 and is now considered to be the likely cause of congenital tremors Type A-II (infectious in origin but not classical swine fever virus) as a result of foetal infection. APPV has now been detected in all major pig producing regions of the world including Asia, Europe, North America and South America. This is the first confirmed detection of APPV in Australia, however reports of congenital tremors in piglets with a suspected infectious aetiology date back to the 1930's in NSW. Therefore, while this is the first detection of this newly recognised virus in NSW and Australia, it is likely that APPV has been present and endemic for many years. Cases are more common in gilt populations, most likely as a result of animals not becoming naturally infected and hence immune prior to breeding. In the current case, it is likely that naïve gilts were introduced to a herd where there was active virus transmission.

Optimal samples for diagnosis of APPV infections include collection of a range of fresh and fixed tissues including pericardial/thoracic fluid, fresh spleen and cerebellum for virus detection, and fixed brain and spinal cord for histological examination. Clotted blood and oropharyngeal/tonsillar swabs collected into PBGS from live affected piglets are also suitable for virus detection.

For further information contact Eliz Braddon, District Veterinarian, Riverina Local Land Services, on 0427 829 639; Deborah Finlaison, Principal Veterinary Virologist, Elizabeth Macarthur Agricultural Institute, on (02) 4640 6335.

Figure 4. Piglets with confirmed APPV infection on a free-range piggery in NSW. Photo by E. Braddon

Virulent footrot surveillance in NSW

Footrot is a contagious bacterial disease of sheep and goats, caused by *Dichelobacter nodosus* (*D. nodosus*) in association with a number of other bacteria. For regulatory purposes, footrot infection is classified as either benign or virulent at the flock level.

With full expression, virulent footrot is a severe, debilitating disease with significant economic loss from reduced wool growth and quality, poor ewe fertility, poor growth rates, losses from blowfly strike, and reduced value of sale sheep. In infected flocks, there are significant costs associated with controlling the disease.

Because of these animal welfare and economic impacts, virulent footrot is a notifiable disease in NSW with regulatory support for compulsory eradication programs in infected flocks.

In 1988 the NSW sheep industry implemented the NSW Footrot Strategic Plan. The plan was developed jointly by the sheep industry and government, with the objective of progressive eradication of virulent footrot from NSW. The plan commenced as an advisory program. As the number of affected flocks was reduced, regulatory support for compulsory eradication programs in infected flocks was introduced.

The Footrot Strategic Plan achieved a major milestone in August 2009 when the entire state was declared a Protected Area for footrot. The prevalence of virulent footrot in NSW had been reduced to less than 1% of flocks.

Ongoing surveillance and response activities have maintained the protected status in NSW to date. However, footrot remains a significant disease risk to the NSW sheep industry due to the large number of sheep movements occurring across the country annually. Eradication programs are continuing in flocks where virulent footrot has been detected.

Undertakings and Individual Biosecurity Directions (U/IBD) are legislative instruments used in the Footrot Program to place restrictions on the movement of sheep and goats off properties known to be affected by virulent footrot. As at 2 October 2018, approximately 227,000 sheep (76 flocks with > 50 sheep) were under U/IBD in NSW. This is equivalent to a NSW sheep flock prevalence of 0.48%. In addition there were 3 properties in the Greater Sydney Local Land Service (LLS) with a total of 23 sheep under U/IBD.

The NSW Virulent Footrot Report for the period 1 October 2017 to 30 September 2018 is currently being drafted. A summary of virulent footrot surveillance activities intended to be included in the report is presented below.

During the reporting period, case management records kept by the NSW DPI and LLS indicate that there were 240 events where a property visit occurred with the presenting complaint as Lameness/ Musculoskeletal in sheep or goats. Of these, 52 were initial visits with footrot as the reason for the investigation, and 83 were revisits to flocks where footrot had previously been detected. A variety of final diagnoses were listed for the remaining 105 events.

These surveillance figures indicate that sheep owners are contacting their District Veterinarians to report lameness in sheep and goats, and that a significant number of property investigations have been occurring in NSW.

In addition to property visits and laboratory testing, a variety of other surveillance, extension and advisory activities were undertaken across the LLS regions. These included inspections of sheep at saleyards, engaging with farmers at field days, distributing brochures and contributing articles about footrot to local newsletters.

For further information contact Graham Bailey, Senior Veterinary Policy & Project Officer - Animal Biosecurity, NSW DPI, Orange, on 02 6391 3455

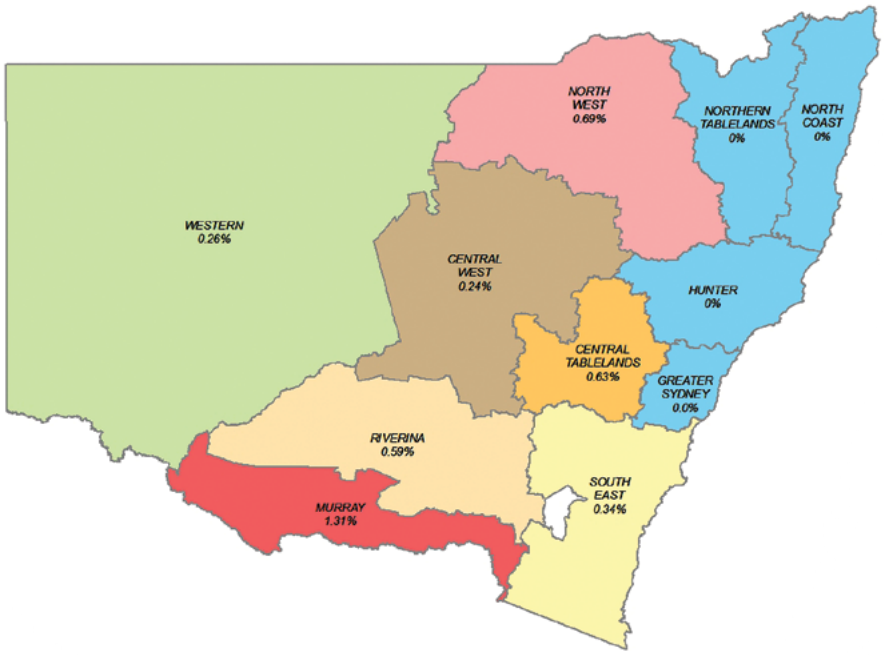

Figure 5: Sheep Flock Footrot Prevalence in each Local Land Services Region (2 October 2018)

Protein meal toxicity in merino lambs

In August 2018, cottonseed meal toxicity occurred in four month old merino lambs in the Tamworth district during severe drought conditions. There was no paddock feed available, and the lambs and ewes were being fed barley with 15% lupins in lick feeders *ad libitum* and two large bales of clover hay per week. Loose lick, comprising 30% cottonseed meal, 14% lime, 40% salt, 10% sulphur and 6% Mega Min Extra Magnesium was available *ad libitum* in separate troughs.

The lambs were marked, had been drenched with "First Drench" and had received their first vaccination with Glanvac 6 in 1 plus Se & B12.

The producer reported weakness, incoordination, recumbency and death in the lambs with the ewes unaffected. At the first property visit, 40 of 145 lambs were affected with 35 dead. Clinical signs included dull demeanour, weakness and incoordination beginning in the forelegs and progressing to the hind legs, producing a staggering gait followed by recumbency. When in sternal recumbency they could not rise, but could walk if stood up and continued to eat and drink. Death followed, often in sternal recumbency, up to a week after onset of signs. All affected lambs lost weight rapidly and were bloated. The affected lambs could see, exhibited normal proprioceptive reflexes but had reduced withdrawal reflexes on all limbs.

Autopsy of a lamb that had died the night prior to the first property visit showed severe congestion of the lungs, liver and kidneys. The rumen contained hay with no evidence of grain. Rumen pH of 8 was recorded on Combur dipstick. Samples were sent to the SVDL with the most notable finding being high ammonia in the eye fluid: 866 umol/L (normal range: 0-200umol/L).

On the day of the results being reported, the producer had picked up a further 105 affected lambs out of the paddock *(Figure 6)*. Ammonia toxicity was suspected and the producer treated the lambs with apple cider vinegar orally at a rate of 20mls 50:50 apple cider vinegar and water. Most of the treated lambs recovered within one hour of treatment *(Figure 7)*.

In the rumen, protein is degraded to ammonia which is combined with products of carbohydrate metabolism to form amino acids. When an excess of ammonia is produced and cannot be used by the microbial population, it is absorbed into the portal circulation and converted to urea by the liver. If ammonia is produced faster than it can be utilised, it enters the systemic circulation, causing toxicity. Ammonia toxicity commonly occurs following excessive urea intake but can also occur with ingestion of highly degradable protein meals, exacerbated when combined with insufficient carbohydrate intake, as can occur more readily in drought conditions.

Cottonseed meal contains 38-43% protein with medium rumen degradability. This was safe for the ewes in this instance who were also consuming the grain mix and hay. It is thought that the lambs were either not eating from the feeders or eating insufficient amounts, relying on the twice weekly hay ration for the carbohydrate component of their diet. In between hay drops they consumed increasingly high levels of the loose lick, thus consuming high levels of protein compared to carbohydrate a number of days per week which contributed to the ammonia toxicity. The administration of vinegar (acetic acid) lowers the rumen pH and neutralises ammonia, preventing further absorption into the blood stream. Only the lambs treated with vinegar soon after onset of signs recovered. The producer weaned all the remaining lambs onto lucerne hay and pellets and did not allow further access to cottonseed meal, after which there was cessation of cases.

In this event, different feeding strategies to ensure that the lambs were eating enough carbohydrate to balance the protein, such as daily feeding of hay, trailing out of the grain rather than use of a feeder or inclusion of the loose lick with the grain ration may have prevented the condition occurring.

Whilst drought conditions continue in NSW, this case serves as a reminder that instances of neurological abnormalities in livestock occur more commonly during drought conditions as a result of metabolic disturbances related to feed shortages. These cases often present with symptoms that could be suggestive of a new, emerging or exotic animal disease. As such, these cases form an important part of notifiable disease surveillance in NSW and relevant emergency animal diseases should be considered as differential diagnoses.

For further information contact Heidi Austin, District Veterinarian, North West Local Land Services, Tamworth on (02) 6764 5900.

Figure 6. Affected lambs picked up out of paddock. Photo L King

Figure 7. Lambs after treatment with vinegar and water. Photo L King

Getting information on animal diseases

This surveillance report can convey only a very limited amount of information about the occurrence and distribution of livestock diseases in New South Wales.

For statewide information, contact the Department of Primary Industries Animal and Plant Biosecurity Branch in Orange on (02) 6391 3237 or fax (02) 6361 9976.

If you would like more specific information about diseases occurring in your part of the state, contact your Local Land Services District Veterinarian or the Department of Primary Industries Senior Veterinary Officer for your region, or go to: *www.lls.nsw.gov.au*

For more information on national disease status, check the National Animal Health Information System (NAHIS) via the internet at: *www.animalhealthaustralia.com.au*

This is a report under the Animal Disease Surveillance Operational Plan, Project 8, 'Reporting for Animal Disease Status in NSW'.

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www.dpi.nsw.gov.au/about-us/publications/animal-health-surveillance

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Disclaimer

The information contained in this publication is based on knowledge and understanding at the time of writing (March 2019). However, because of advances in knowledge, users are reminded of the need to ensure that the information upon which they rely is up to date and to check the currency of the information with the appropriate officer of NSW Department of Industry, Skills and Regional Development or the user's independent adviser.

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