NSW GOVERNMENT

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

NEW SOUTH WALES

# ANIMAL HEALTH SURVEILLANCE

July–September 2017 » Issue 2017/3

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# Notifiable disease exclusions over 12 months

The basic unit of surveillance in NSW is field investigations of suspected notifiable diseases, with samples being sent for laboratory examination. The table below lists the total numbers of laboratory exclusions for some notifiable diseases in NSW for the 2016–17 financial year. It shows that we need to exclude many exotic and notifiable diseases that have the same clinical syndromes or features as non-notifiable diseases.

**Examples of laboratory submissions in NSW for notifiable disease exclusions, July 2016 to June 2017**

| Disease | No. of suspect cases | No. of positives | Total |
|---|---|---|---|
| African swine fever | 1 | 0 | 1 |
| Australian bat lyssavirus | 137 | 4 | 141 |
| Babesiosis in tick-free areas | 7 | 0 | 7 |
| Bluetongue (clinical disease) | 13 | 0 | 13 |
| *Brucella suis* (swine brucellosis) | 185 | 28 | 213 |
| Enzootic bovine leucosis | 4 | 0 | 4 |
| Equine influenza | 1 | 0 | 1 |
| Equine piroplasmosis (*Babesia caballi* and *Theileria equi*) | 1 | 0 | 1 |
| Foot-and-mouth disease | 18 | 0 | 18 |
| Infection with classical swine fever virus | 1 | 0 | 1 |
| Infection with Hendra virus | 245 | 1 | 246 |
| Infection with vesicular stomatitis virus | 18 | 0 | 18 |
| Lumpy skin disease | 1 | 0 | 1 |
| Malignant catarrhal fever (wildebeest-associated) | 1 | 0 | 1 |
| Paratuberculosis (Johne's disease) | 21 | 13 | 34 |
| Sheep pulmonary adenomatosis (jaagsiekte) | 1 | 0 | 1 |
| Tularaemia | 1 | 1 | 2 |
| Turkey rhinotracheitis (avian metapneumovirus) | 1 | 0 | 1 |
| West Nile virus infection (clinical) | 10 | 0 | 10 |
| Newcastle disease | 90 | 0 | 90 |
| Avian influenza | 95 | 0 | 95 |
| Scrapie in sheep | 88 | 0 | 88 |
| Bovine spongiform encephalopathy | 145 | 0 | 145 |

# Bluetongue virus exclusion

In July 2017, a single Merino wether in the Upper Hunter District was examined by the district vet. It was the only sheep affected in a mixed mob of 250 head grazing improved native pasture. Crusted, erosive lesions were noted around the eyes and around the muzzle, extending to cover the bridge of the nose. There was also swelling of the ears. No other abnormalities were noted on clinical examination, and a probable diagnosis of photosensitization was made.

Given the recent identification of bluetongue virus strain BTV 16 in the region during the National Arbovirus Monitoring Program sentinel herd bleeding, and the unknown pathogenicity of this strain in sheep, a jugular blood sample was collected to exclude bluetongue. The sheep was euthanased and a post-mortem was conducted. The liver appeared mildly discoloured. All samples were sent to the Elizabeth Macarthur Agricultural Institute (EMAI).

A virus antibody enzyme-linked immunosorbent assay (ELISA) revealed that the sheep was seronegative for bluetongue. Analysis of the blood sample also revealed increases in the levels of liver enzymes and bilirubin, suggesting that the sheep had damage to the liver cells and reduced bile flow. The histopathology results showed extensive liver damage.

Photosensitization was likely to have occurred secondarily to liver damage due to plant toxicity, producing the skin lesions, but the cause was not definitively identified.

For further information contact Jane Bennett, District Veterinarian, Hunter Local Land Services, Scone, on 0427 322 311.

This sheep shows photosensitisation around the eyes and muzzle but was negative for clinical bluetongue disease. Photo J. Bennett

# Anthrax exclusion

In mid-September, a producer in the Moree region of north-west NSW asked the district vet to examine some stock for possible anthrax. The property was located in an area in which anthrax had occurred previously, in 1973. The producer has just reinitiated anthrax vaccination on his property after a recent case in southern Queensland had re-alerted him to the impact of the disease.

The producer had found three dead calves in an oats paddock, all within a 4-metre radius. The calves had died about 2 weeks previously but had been discovered only on the day of the investigation. All three carcasses showed evidence of predation and were in an advanced stage of decomposition. Because of the history of the property and the unknown cause of death, it was decided to perform immunochromatographic tests (ICTs) and take tissue samples for anthrax polymerase chain reaction (PCR) testing.

Two ICTs were performed, and both gave negative results. An ear and a piece of muscle was removed from each carcass and sent to EMAI for PCR testing. A full post-mortem was not done on any of the carcasses because of their advanced decomposition and the risk of anthrax. EMAI confirmed that all three PCR tests were negative for anthrax.

Anthrax was not the cause of death in these young steers. Photo J McNally

This case shows that good producer awareness leads to the reporting of unusual deaths. Although the results were negative for anthrax, it was a good example of a producer realising the importance of anthrax investigations and initiating a visit as soon as the dead animals were found.

For further information contact Justine McNally, District Veterinarian, North West Local Land Services, Moree, on 02 6790 7600.

# Brucellosis excluded in aborting beef cows

Neosporosis was diagnosed and brucellosis excluded as the cause of abortion in a commercial beef cattle herd on the Central Tablelands in early July.

The producer discovered five near-full-term foetuses in the paddock when mustering 86 mature Angus cows for pre-calving vaccination. Two cows were found to have retained foetal membranes. Physical examination showed only that the cows had elevated temperatures associated with uterine infection. Laboratory culture of the material from vaginal swabs revealed *Escherichia coli*, which was considered to be a contaminant rather than the cause of the abortions.

The aborted foetuses ranged from 6 to 8 months' gestation. There were no significant findings on post mortem. The carcasses had been scavenged to various extents, but samples were collected where possible.

Both cows were seronegative for *Brucella abortus*, *Leptospira pomona/hardjo* and the parasite *Neospora caninum*, but they were seropositive for pestivirus. A vaginal swab collected from one cow was positive on qPCR testing for *Coxiella burnetii* (the cause of Q fever) at the Australian Rickettsial Reference Laboratory.

Pericardial fluid samples from two foetuses showed elevated levels of IgG, suggesting that the foetuses had been exposed to antigens. These samples were positive for *Neospora* on antibody ELISA.

Failure to detect *N. caninum* antibodies in the two cows tested suggested that a third cow, yet to be identified, was involved.

Although dogs are recognised as the definitive hosts for *N. caninum*, other wild canids are likely to be capable of becoming infected with the parasite and shedding its oocysts in their faeces. This producer has recently observed a marked increase in fox activity on the affected property.

Australia has been free from *Brucella abortus* in both domesticated and wild animals for two decades, but surveillance of abortion cases is still done to assure our trading partners of our animals' ongoing freedom from this disease.

Achievement of country freedom from *B. abortus* in 1989 followed a joint industry, Australian government and state and territory government program of eradication that started in 1970. The Brucellosis and Tuberculosis Eradication Campaign included Australia's entire cattle population: 180,000 herds at that time.

For further information contact Amy Masters, District Veterinarian, Central Tablelands Local Land Services, Orange, on (02) 6391 3830.

# Grain poisoning in weaner steers

A NSW Mid North Coast cattle manager called the district vet to investigate a case of sudden death in eight out of 82 recently introduced weaner steers.

The manager advised that a number of the carcasses had blood coming from the nose and anus. The cattle were apparently up to date with their clostridial disease vaccinations and had been introduced to the property's normal entry feeding regime of pasture and a rolled barley–silage mix, which the property had used successfully for a number of years. The manager was concerned that there might be an infectious cause of the deaths.

The weaner group had arrived on the property 7 days earlier from the Northern Tablelands. Paddock feed was reported to be a good body of early autumn kikuyu grass. Kikuyu toxicity was thus on the list of differential diagnoses, as was the need to rule out anthrax.

The property manager was off farm at the time of the incident and in the time leading up to it. A paddock inspection by the district vet and the district biosecurity officer found an additional, dying animal lying on its side. Moreover, 10% of the remaining herd showed various degrees of lethargy, scouring and staggering.

Inspection revealed that the pasture was now non-existent and the feed trough contained a grain-rich mixture.

Sudden death in any district warrants a notifiable disease investigation. Photo L Stone

Despite the strong suspicion of grain poisoning, an ICT test was run to rule out anthrax before a post mortem.

Euthanasia and post mortem of the animal found dying and of several of the animals that had been found dead confirmed grain poisoning: the rumen contents were rich in grain, with a low pH on the test strip. The intestinal contents were watery and pale green, with grey, grainy material, and the animals had blood-tinged scours. Eye fluid was negative for nitrate toxicity on a test trip.

The sick animals were treated by the owner and a private vet. A further six animals died over the coming 2 or 3 days, with a final total of 15 animals dead.

Subsequent laboratory analysis confirmed lactic acidosis, with markedly elevated D-lactate levels in the blood and the eye fluid. Histopathology showed multifocal, moderate to severe inflammation of the rumen, with micropustules in the rumen lining.

A management and ownership review of the incident identified a feeding error that had resulted in the swapping of introductory and advanced feeding rations. Enhanced management processes have been put in place to prevent these types of costly error in future.

For further information contact Lyndell Stone, District Veterinarian, Hunter Local Land Services, Wingham, on 02 6553 4233.

# Footrot in the Riverina

The figure on the next page shows the approximate locations of 20 premises (amounting to 0.6% of commercial flocks with more than 100 sheep) in the Riverina Local Land Services region where sheep were confirmed to be infected with virulent footrot . The property managers have all developed, or are in the process of developing, a state-approved Footrot Eradication Program with the help of each of their local district vets, who are based in offices throughout the region.

In mid-July a district vet was called out to a property about 50 kilometres south-west of Wagga Wagga to investigate lameness in two mobs of Merino ewes with young Merino lambs at foot. This property was under management for the eradication of virulent footrot, and both mobs had been under a 'tip and treat' program (including treatment with oxytetracycline and zinc sulfate 10% at first tip), but they were still under quarantine. The mobs, of about 200 ewes each, had recently been grazing a lush cereal crop (average height 20 centimetres) for 2 weeks. Despite apparently identical environmental exposures, the lameness in lambs from one mob (mob A) was more severe than the lameness in ewes from the same mob. On the other hand, the lameness in lambs from the other mob (mob B) was less severe than the lameness in ewes from that mob. Mob A was foot-bathed (zinc sulfate 10%), partially resolving the lameness, and mob B was inspected by the vet 1 week later.

At the time of the inspection, mob B had been grazing a canola crop for 1 week. Over this period, rainfall and

This flock near Wagga had many lame ewes and lambs with footrot. Photo T Biffin

temperature had changed only mildly in favour of disease expression. Despite this, the producer reported that the lameness in the ewes had noticeably

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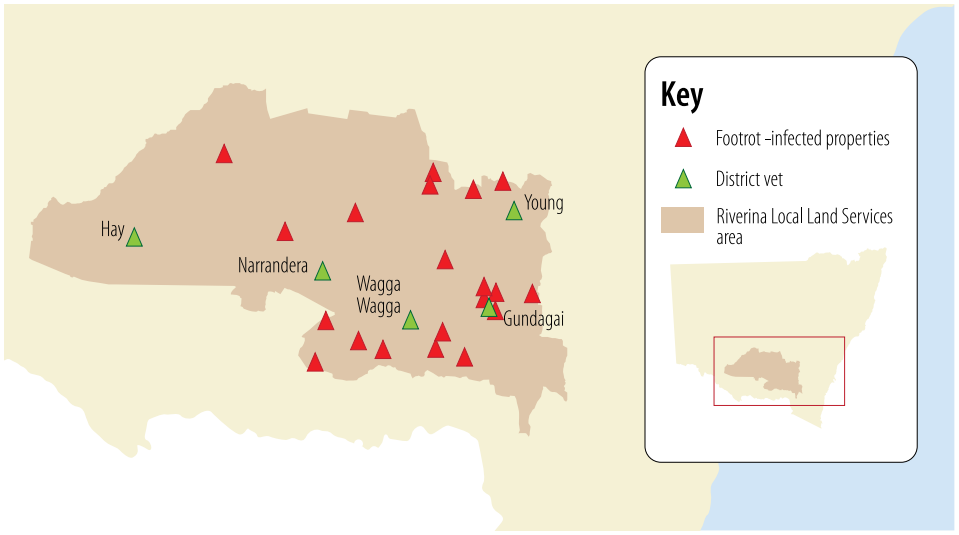
A foot from mob B with an active score 4 lesion on the left (as indicated by the hoof parers) but 'dried up' lesions on the right.




Footrot-infected properties in the Riverina, September 2017. Green points are the locations of district vets.

resolved but the lameness in the lambs had progressed. Foot scores in both the ewes and the lambs were consistent with virulent footrot, but many of the lesions observed had 'dried up'.

Virulent footrot is often first observed in sheep exposed to predisposing environmental conditions: grazing short, lush cereal crop or clover. Although there are potentially confounding factors (such as having been treated previously for footrot), this case identifies the importance of pasture substrate for disease expression and spread. Additionally, it's peculiar that lameness progressed in the lambs, in contradiction to the lameness in the ewes. It's possible that this was because of the softer, more susceptible hoof horn of the lambs.

For further information contact Tim Biffin, District Veterinarian, Riverina Local Land Services, Wagga Wagga, on (02) 6923 6300.

# Akabane virus detection in beef cattle herds on the Northern Tablelands, spring 2017

In July, a live newborn 36-kilogram Angus female calf from a property in the Tenterfield district was presented unable to rise and suckle. It had severe arthrogryposis (contracted joints) of the elbow, carpus and fetlock of the front limbs. The calf's head was a normal shape.

Both parents tested free of genetic defects, arthrogryposis multiplex and developmental duplications, which can present with arthrogryposis. The herd was screened and vaccinated for bovine viral diarrhoea virus (BVDV). The producer reported that there had been several late term abortions, and a pre-term live calf had been delivered 4 weeks earlier.

Blood samples were collected from the presented calf before it was euthanased. The results showed an elevated serum IgG level of 197 micrograms per litre (which is consistent with antigenic stimulation in utero from a probable infectious cause) and a positive Akabane ELISA result. The producer reported a further five abnormal calves, including two with neurological ataxia and one with a domed head.

A second property to the west of Tenterfield reported four deformed calves and 10 failures to calve in a herd of 80 homebred heifers. Blood samples were collected from five dry heifers. All five samples were seropositive on Simbu group indirect antibody ELISA and were confirmed to be Akabane virus antibody ELISA positive. Additionally, one of the five was seropositive for *Neospora* and *Leptospira pomona* and all were seronegative for BVDV.

Since February 2017, the district's National Arbovirus Monitoring Program sentinel herds have shown positive reactors for arboviruses (including Akabane) and have reported abnormal calves with arthrogryposis. For 12 years prior there had been no evidence of Akabane seroconversions in northern New England cattle herds.

It was concluded that Akabane virus had caused the losses in both affected herds. Common presentations of Akabane virus include abortion, or calves born with fused joints and flexed legs, enlarged dome-shaped heads, apparent blindness, aimless wandering and incoordination.

This calf had deformed limbs from Akabane virus infection in utero. Photo L Martin

A media release was released to producers and vets to be on the alert for signs of Akabane virus in local cattle herds. Producers were reminded that increased monitoring of calving herds and getting early help could mitigate the potential losses.

For further information contact Lisa Martin, District Veterinarian, Northern Tablelands Local Land Services, Tenterfield, on (02) 6739 1400.

# Hydranencephaly and cerebellar hypoplasia in calves

District vets were called to a property in North Western NSW in September 2017 to investigate the births of seven abnormal calves in a mob of 30 heifers.

One calf was stillborn, with no visible abnormalities; one died within 12 hours of birth, and a further five were 'dummy calves', probably with a degree of mental deficiency. All five live calves were 2 or 3 days old when examined. Two of them were able to walk and suckle but were showing marked muscle tremors and appeared to have visual impairments, although it was hard to determine how badly their vision was affected. The other three calves were unable to stand or to sit upright on their sternums. When supported to stand, they could balance for a few seconds with their legs splayed outwards, but would then fall over. Neurological examination of these calves showed that they had impaired menace (blink) responses, but no other abnormalities. The calves were able to suckle, had good muscle tone, and responded to external stimuli such as noise and touch. They had been tube fed by their owner, but had shown no improvement over 2 days.

A post-mortem examination was done on the calf that had died soon after birth. It had marked hydranencephaly (fluid inside cavities in the brain tissue), with very little normal cerebral tissue present. The cerebellum was markedly small and soft. The rest of the carcass showed no significant abnormalities. The owner offered another of the calves for post-mortem examination. It was found to have identical brain lesions to the first calf.

Brain deformity from bovine viral diarrhoea virus infection of a calf in utero. Photo M Davies

Given the calves' location in North Western NSW, arboviruses—especially Akabane virus—were high on the differential diagnosis list. The property was within 50 kilometres of the bluetongue virus buffer zone, and National Arbovirus Monitoring Program sentinel herds in the district had shown positive reactors for arboviruses in the past 12 months. Other likely differential diagnoses included bovine viral diarrhoea virus (BVDV) infection of the calves in utero and congenital diseases.

Laboratory testing of blood samples from the mothers of the affected calves was performed at EMAI. The heifers all tested negative for Akabane virus antibodies on ELISA and PCR. All tested strongly positive for BVDV antibodies, suggesting that they had been infected with the virus within the past few months. BVDV antigen-testing on the dead calf returned a negative result, indicating that the animal had not been persistently infected.

BVDV is known to cause congenital abnormalities in calves when their mothers are infected while pregnant. The signs and the degree of abnormality are determined by the stage of pregnancy at the time of infection. The hydranencephaly and cerebellar hypoplasia are consistent with calves whose mothers became infected at 3 to 6 months' gestation.

The prognosis for the surviving calves is guarded. Calves that are able to walk and suckle may survive into adulthood but are prone to misadventure, such as entanglement in fences and drowning. They are also difficult to muster and handle in yards. There is little that can be done for this season's calves, but a testing and vaccination program has been implemented on this property to prevent such catastrophic BVDV infections in future.

For further information contact Megan Davies, District Veterinarian, North West Local Land Services, Narrabri, on (02) 6790 7600.

# Lead poisoning

Lead poisoning was confirmed on a property west of Boomi in the state's North West. Owners of the 1500-hectare property operated a cropping enterprise with a modest number of cattle. They were directed to phone Local Land Services by a stock agent after a number of cattle had been found dead or unwell in a paddock of barley. Two were found dead; another cow had been seen to convulse before recovering, and another steer was found standing blind and depressed along a fence line in the same paddock.

The history and reported clinical signs, along with the fact that a burnt-out header was known to be sitting in the paddock, led to suspicion of lead poisoning. The district vet came out the following day and collected blood from a steer and did a brief autopsy from a heavily decomposed carcass.

Lead particles were found in the carcass, and the clinical signs in the live steer were classical for lead poisoning. Possible other differential diagnoses included polioencephalomalacia, salt poisoning, and *Histophilus somni* infection.

Laboratory results showed an elevated level of lead in the steer. All animals

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in the paddock were prevented from leaving the property and blood samples were collected for laboratory analysis. The property owner was issued an undertaking by the district vet, and the State Residue Coordinator was notified of the affected animals. Subsequently, NLIS (National Livestock Identification System) lead-affected statuses were applied to the animals to prevent lead-affected animal products from entering human or animal food chains.

For further information contact Ted Irwin, District Veterinarian, North West Local Land Services, Warialda, on (02) 6790 7600.

The burnt-out header found in the paddock with cattle showing signs of lead poisoning. Photo T Irwin

Remains of the battery—a concentrated source of lead—in the burnt-out header. Photo T Irwin

# Disease surveillance in fallow deer

Some landholders think that wild deer can act as potential carriers of stock and wildlife diseases, and they therefore argue that they should be culled. However, the disease status of wild deer has not been examined in a structured way.

Therefore, a targeted disease surveillance program was run as a component of a fallow deer culling program undertaken in early 2017 near Mudgee NSW. The purpose of the project was to assess the presence or prevalence of a number of diseases and disease agents that are important to livestock or human health and can potentially be carried by feral deer. Diseases or disease agents assessed (by gross examination, post mortem or laboratory testing) were Johne's disease, leptospirosis (*Leptospira hardjo* and *Leptospira pomona*), bovine viral diarrhoea virus (BVDV), cattle tick infestation, virulent footrot, and Q fever.

Post mortems were performed on about 75 fallow deer, and samples were collected where possible. Gross examination revealed no evidence of footrot or cattle ticks. Faecal samples were collected for HT-J (high-throughput Johne's) PCR testing. DNA consistent with *Mycobacterium avium* subsp. *paratuberculosis* was not detected in any of the 73 samples tested. Pericardial fluid was collected for serological testing. Of the pericardial fluid samples, 0 of 42 were positive for *L. hardjo* and *L. pomona* and 0/37 were positive for Q Fever. Of 42 samples, five were positive for BVDV antibody.

Sampling for a disease survey in culled fallow deer. Photo N Gillan

The results suggested that this particular fallow deer population does not pose a risk in terms of Johne's disease or leptospirosis transmission. The BVDV results could indicate exposure from cattle or exposure to virus circulating within the deer population. There doesn't appear to be a risk of transmission of leptospirosis or Q fever to farm workers or hunters who may have contact with feral deer. However, the results of the study can't necessarily be applied to areas outside the study region.

For further information contact Clare Hamilton, Manager Biosecurity and Emergency Response, Central Tablelands Local Land Services, Mudgee, on (02) 6378 1722.

# 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/status/nahis.cfm*

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

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Copies of NSW Animal Health Surveillance reports are available on the internet at: *www.dpi.nsw.gov.au/newsletters/animal-health-surveillance*



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