NSW GOVERNMENT

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NEW SOUTH WALES

ANIMAL HEALTH SURVEILLANCE

April–June 2015 » Issue 2015/2

In this issue

Thiamine deficiency in cattle grazing turnips

A cattle producer in the Upper Hunter reported nervous system signs and several unexplained deaths in a herd of 120 mixed-breed yearling cattle grazing a paddock of turnips, oats and rye.

Four steers had died in the preceding 3 weeks. These deaths had been attributed to bloat and had not been investigated further, but now five more five steers were showing marked neurological signs and the District Vet was called in.

The animals appeared blind and were either excitable—running into fences and waterways—or lethargic. On closer examination they had brain-related blindness: there was no menace reflex (i.e. they did not respond when the hand was moved rapidly close to the eye) but a positive palpebral reflex (they blinked when the inside corner of the eye was touched). There was also some muscle trembling and grinding of teeth.

The paddock had been recently sown to turnips and strip-grazed for the previous 6 weeks, but it had an extensive history of cultivation and grazing without any previous problems. No sources of lead or plants toxic to the liver were found. The cattle had some access to silage, so listeriosis was considered, as was hypomagnesaemia (low blood magnesium levels). However, because turnips dominated the available forage a presumptive diagnosis of polioencephalomacia (PEM) was made. PEM is a softening of the brain's grey matter that is associated with a deficiency of thiamine or problems metabolising this vitamin.

The herd was removed from the crop and the affected cattle were given hay and vitamin B injections daily for several days. The cattle improved dramatically over the following 48 to 72 hours, with only one steer showing a delayed recovery of several weeks.

Lab testing excluded lead toxicity and metabolic diseases. The cattle's response to the thiamine treatment clinched the diagnosis.

The PEM was suspected to have been associated with the sulfur content of the turnips. Other feed materials such as molasses can also cause sulfur-associated PEM.

Brassica forages are used successfully and extensively in NSW coastal and Victorian dryland dairy farms, but they are not yet used often in the Upper Hunter.

For further information contact Lyndell Stone, District Veterinarian, Hunter LLS, Scone, on (02) 6545 1311.

Abortion due to ovine brucellosis

Ovine brucellosis (OB) is a known cause of ram infertility and has plagued the Australian sheep industry for decades. Stud rams have to go through a rigorous accreditation process for studs to be placed on the DPI's list of OB-accredited NSW studs. OB can also cause abortions in some ewes, and the case described here exemplifies and reinforces the risks of having OB-infected rams on your property.

A producer in the Riverina grew concerned when he began noticing a few aborted foetuses in his lambing paddock. This producer had been vaccinating for *Campylobacter* (formerly known as vibriosis) for the previous 4 years and was up to date with all of his management practices.

Two aborted near-term foetuses were collected from a ewe that had potentially not been vaccinated against *Campylobacter* and sent to the Elizabeth Macarthur Agricultural Institute (EMAI) for analysis. Growth of *Campylobacter* was found, and it was decided that *Campylobacter* was the cause of these abortions.

A week later, Riverina LLS vets were called out to investigate abortions in two other mobs on the same property. A fresh foetus was again taken for analysis at EMAI. Possible causes for late-term abortions in this case were *Campylobacter*, toxoplasmosis, brucellosis, listeriosis and *Chlamydophila abortus* (the cause of enzootic abortion, which is not present in Australia). Samples were checked against each of the above diseases and a diagnosis of brucellosis was made and confirmed by culture and PCR (polymerase chain reaction) testing.

The rams were examined thoroughly, and about 60% were found to have lesions consistent with OB on one or both testicles. A further 25% had extremely high titres in serology testing. All of these

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An ovine-brucellosis-affected ram, with testicles three or four times normal size. Photo courtesy of Flock & Herd (http://www.flockandherd.net.au/)

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rams were culled and removed immediately from the flock. The remaining rams were retested at 4 to 6 week intervals; they were also separated into two smaller mobs to make the eradication and salvage program easier. Unfortunately, the titres of some of the rams in each of these mobs kept coming back positive for OB. The owner opted to remove all of these rams from his property and buy new ram stock before the next joining season.

Diagnosing OB by testing a foetus is a rare occurrence, but it does make a lasting impression on owners to always be mindful of their rams' health, particularly before joining. This producer had never experienced OB in the past, and it just so happened that his rams weren't checked before joining (or on arrival at the property) because other management tasks had taken precedence.

For more information contact Rahul Shankar, District Veterinarian, Riverina LLS, Young, on (02) 6381 4700.

Paspalum staggers on the Northern Tablelands

In late March 2015, a truckload of finished beef cattle travelled from a property near Glen Innes to Scone Abattoir, with Herefords on the top deck and Angus below. One Hereford was down on arrival; it received emergency slaughter. The next morning two more were found down and were humanely euthanased. The affected cattle were all reported to have had high temperatures but no specific signs of disease.

Three weeks after the first incident, the same producer inspected his next fattening mob (consisting of 48 animals ready to go in another 2 weeks) late one afternoon and found two dead steers and several others collapsed in the paddock. Those cattle that could rise voluntarily had muscle tremors and mild incoordination but no marked apprehension, circling or evident blindness. The rectal temperatures of two of the recumbent animals were markedly raised (to 39.5°C); the cattle had slight tachycardia but no nystagmus (involuntary eye movement), leg-thrashing or convulsions. There was mild bloat but positive ruminal activity and no diarrhoea or salivation.

The animals were grazing and were also receiving the farm's standard grain-based supplement in paddock feeders as part of their finishing ration. They had been moved to the paddock about 2 weeks before, and it was being mown to about 10 centimetres in three sections. One-third had been cut the day before the animals were moved in, a second third had been cut 2 days previously, and the rest remained uncut at an average height of about 80 centimetres.

Pasture showing a paspalum head infected with the ergot fungus *Claviceps paspali*. Photo N. Brown

The differential diagnosis included hypomagnesaemia, ryegrass staggers and assorted central nervous system problems such as meningitis and encephalitis. Grain overload was also a slight possibility. However, a walk across to see the first collapsed animal revealed large amounts of black ergot on the seed-heads of the paspalum grass.

In a post-mortem the rumen showed no signs of grain overload.

Claviceps paspali is a fungus that forms sclerotia (masses of fungal vegetative parts) that replace the seed-heads of paspalum grass; this season's warm, moist conditions had favoured its growth. The fungus produces paspalinine, a tremorgen (tremor-causing toxin) that is also produced by ryegrass and other fungi and affects cattle, horses and sheep. Paspalinine is addictive, and some animals will actively seek it out.

Shortly after rain, the fungus grows as a sticky 'honeydew'; signs of disease are seen as this honeydew changes to the harder black stage. The later stages are less toxic.

In this case, all the animals except one were gently walked off the paddock and into a yard. The walking animals all recovered uneventfully on hay and water overnight. The remaining steer, which couldn't rise, died.

For further information contact Nigel Brown, District Veterinarian, Northern Tablelands LLS, Glen Innes, on (02) 6732 8800.

Photosensitisation in sheep

Late April and early May 2015 saw outbreaks of photosensitisation in sheep in the mid-Murray Valley of NSW.

Several flocks between Barooga and Corowa and within 40 kilometres of the Murray River were affected. Outside this approximately 80 × 40 kilometre area no incidents were reported.

The disease was diagnosed by Murray LLS and private vets on eight holdings—several of them on multiple sites up to 30 kilometres apart—and anecdotal reports indicated that quite a few other flocks were affected.

The area had had several significant rainfall events during the summer of 2014–15, as well as 30 to 50 millimetres of rain during the second half of April 2015. The April rain was followed by several mild (>20°C) sunny days, and all of the photosensitisation seemed to occur over a few days to a little over a week after this April rain.

Muzzle of a sheep affected by photosensitisation. Photo D. Salmon

Eye and ear of a sheep affected by photosensitisation. Photo D. Salmon

Merino, crossbred and Awassi sheep—adults, unweaned lambs and weaned lambs—were all affected. The incidence in affected flocks ranged from 50% to 100%. In almost all of the affected flocks there were sheep in adjoining paddocks that were unaffected. In one case the affected and unaffected mobs had been split only 2 weeks before the event. In two cases single sheep had gotten through a fence into the paddock where photosensitisation was occurring and were affected, whereas the sheep in the paddock they came from were unaffected.

Clinically affected sheep had severe inflammation of the muzzle, eyelids, coronets, udder and groin. This inflammation progressed rapidly to scabbing and ulceration, and in two flocks secondary infection with *Staphylococcus aureus* caused multiple micro-abscesses under the skin.

The involvement of the hooves was unusual and severe. Some affected sheep were severely lame, with a few walking on their front legs only. Post mortems revealed that these sheep had severe inflammation of the sensitive layers of the hoof.

Another unusual feature of this incident was the relative lack of swelling under the skin of the ears, although the ear skin appeared more fragile than usual.

In affected Awassi sheep there was a clear demarcation between affected unpigmented skin and unaffected pigmented skin.

Hoof of sheep affected by photosensitisation. Photo D. Salmon

The progress of the condition varied. In some flocks the disease went through inflammation, ulceration, sloughing and regeneration of the affected skin with little apparent long-term damage apart from some loss of body condition. In contrast, in three of the eight flocks investigated, 5% to 15% of the affected sheep died.

The causes of death varied. Some pregnant ewes died of pregnancy toxaemia. Some young lambs died of mismothering and exposure because their mothers wouldn't let them suckle their inflamed teats. Some sheep died of pneumonia and septicaemia caused by *Staph aureus* presumably derived from the micro-abscesses under the skin. These deaths stopped after antibacterial therapy.

Serum enzyme and histopathology examinations of several of the affected flocks showed that there was no liver pathology.

There was no apparent difference in plant species between paddocks where 100% of the sheep were affected and adjoining paddocks where no sheep were affected. There was also no correlation with the plant species present in paddocks on different properties where 100% of the sheep were affected. All paddocks contained a mix of summer-active native perennial grasses and winter-active introduced annual grasses and legumes. The winter-active annuals had germinated and were actively growing and the summer-active perennials had become active again.

This incident appears to have been primary photosensitisation caused by unidentified toxins in plants that were growing rapidly after significant rain and mild weather. Murray LLS is investigating these outbreaks further.

For further information contact Dan Salmon, Regional Veterinarian/ Team Leader Animal Biosecurity and Welfare, Murray Local Land Services, Deniliquin, on (03) 5880 1400.

Increase in diagnosis of chlamydial arthritis in sheep

Chlamydial arthritis in sheep is not commonly diagnosed in the Northern Tablelands area of NSW.

In a 2-week period in February 2015 on two properties in the Inverell area, lameness consistent with chlamydial arthritis was confirmed in mobs of 4- to 6-month-old second-cross lambs.

On both occasions the investigations were triggered by the finding of one or two crippled-up lambs with wasting of the muscles of the hindlimbs and obvious swelling of the stifle joints. Closer examination of the mobs by the owner while mustering them to the yards was that 20 out of 2000 and 50 out of 1000 lambs had signs of lameness.

The differential diagnosis included footrot, foot abscess, septic arthritis and polyarthritis. Examination of lambs showed no signs of footrot or foot abscess. The severely affected lambs with muscle wasting and joint swelling could have had septic arthritis. Of more interest were the lambs that had lameness during mustering but then 'warmed out' of it in the yards. This 'warming out' presentation reminded me of a conference presentation by Dr Bruce Watt from the Central LSS in NSW, so I sampled for chlamydia while telling the owners 'We never find it in this area—it's more a problem on the slopes and plains'!

On the first property all six samples collected returned a complement fixation test titre of 64 for chlamydia, and on the second property three samples gave results of 32, 16 and less than 8.

On both properties we successfully treated further lameness in these mobs with oxytetracycline antibiotics.

For further information contact Andrew Biddle, District Veterinarian, Northern Tablelands LLS, Inverell, on (02) 6720 8300.

Humpy back in sheep

In April 2015, a District Vet was called to investigate weakness and ataxia in full-wool adult Merino sheep of both sexes that were being mustered for shearing at a property west of Warren.

Twenty out of 300 sheep were affected and the owner first suspected barber's pole worm, despite a dry summer and drenching 2 months beforehand with a short-acting combination wormer. There were no deaths. Some mildly affected sheep seemed to recover when left behind in the paddock.

Four adult full-wool Merinos were examined in the yards, where they were receiving nursing care. They were depressed and hunched and were ataxic in all four legs (most severely in the hind legs). The worst-affected animal would stumble forward and land on its face if moved quickly in the yards. It had ulcerations at the front of the mouth (see pictures). Rectal temperatures ranged from 40°C to 41°C.

Blood testing revealed normal calcium levels and elevations in the enzymes that indicate muscle damage (consistent with lying down). Foot and mouth disease and vesicular stomatitis virus were excluded via PCR, virus isolation and antigen capture ELISA testing.

The paddock was dry, with an almost pure growth of *Solanum esuriale* (wild tomato) following a recent shower of rain (see photo). This plant causes a staggering and neurological syndrome in sheep—known as 'humpy back' in this area—at this time of the year. This was presumed to be the cause of the syndrome. The exact toxin in the plant and the mechanism of the disease are largely unknown. The mouth ulcerations were probably self-trauma from staggering and falling forward.

For further more information contact Jillian Kelly, Regional Veterinarian and Team Leader Animal Biosecurity and Welfare, Central West LLS, Coonamble, on (02) 6822 1588.

Mouth ulcers found in a sheep with humpy back. Photo J. Kelly

Solanum esuriale (wild tomato) covered the paddock in which the sheep with humpy back had been grazing. Photo J. Kelly

Acidosis in Dorper ewes on pasture

In late April and early May, three cases of lactic acidosis were seen in Dorper ewes on pasture (two at Narrabri and one at Tamworth). The ewes had not been grain fed. The district received the first substantial rainfalls for the year in early April. The Narrabri ewes were grazing river flat country with emerging clovers and medics, wild turnip and liverseed grass. The Tamworth ewe was grazing native pasture with substantial dry matter and a green pick underneath.

The ewes were severely depressed, dull, lethargic and staggering, with no appetite. They were breathing rapidly through the mouth and had diarrhoea, increased salivation, and muscle tremors. Some appeared blind and were lying down on the sternum with the head to the side. These signs had developed over 12 to 24 hours, and two of the three died within 24 hours of the onset of signs. The ewes were 2 to 3 years old: one had a twin pregnancy, one had just lambed with twin lambs at foot, and the other was dry. All ewes were treated with calcium borogluconate 4-in-1 injection, as well as a proprietary propylene glycol drench used for pregnancy toxaemia, and antibiotics. All sheep had received an initial course of 5-in-1 vaccine, but yearly boosters were due. The sheep had been recently drenched for worms.

One of the dead Dorper ewes. Note the good body condition. Photo J. Ellem

Pasture grazed by the Dorper ewes at Narrabri; it was similar to the Tamworth pasture mix. Photo J. Ellem

All ewes were in good body condition (score 4 to 5) at post mortem and had full rumens. The rumens of the Narrabri ewes contained grass seeds, and one had a sour odour. Both Narrabri ewes had severe pulmonary congestion, oedema and lung collapse; the livers were mottled, pale and slightly friable and the lining of the abomasum was reddened. The Tamworth ewe had a rumen pH of 5. The linings of the rumen, reticulum and omasum were blackened and sloughing. The liver was pale, yellowish and friable and the kidneys were slightly pale.

Biochemical tests revealed that the ewes had high lactic acid levels in the blood, as well as liver and kidney dysfunction; these signs are seen in sheep with lactic acidosis.

The differential diagnoses included metabolic disease, toxicosis and transmissible spongiform encephalopathy (TSE). Testing of brains under the National TSE program was negative. Levels of betahydroxybutyrate (an indicator of ketoacidosis) were normal.

Lactic acidosis was initially not considered as a differential diagnosis because there was no history of grain feeding. This condition is hard to diagnose before death owing to the non-specific nature of the clinical signs.

Lactic acidosis in these ewes was probably associated with the ingestion of highly digestible pastures that rapidly ferment in the rumen, as has been seen in pasture-fed dairy cattle. The fact that sheep are selective grazers may have played a role in the development of the disease.

For further information contact Judy Ellem, District Veterinarian, North West LLS, Narrabri, on (02) 6790 7600 and Heidi Austin, District Veterinarian, North West LLS, Tamworth, on (02) 5776 7000.

Green cestrum toxicity after a flood in the Hunter

Early in May 2015, just 2 weeks after a major flood in the Hunter, a property in the Gresford area reported that four bullocks had died over the last week with no clinical signs, and another one was down. All the cattle had been grazing in the same paddock. The paddock had a plentiful supply of feed, with a mix of kikuyu, a small amount of clover and couch.

The bullocks had not been vaccinated in the last 12 months and were in very good condition, with body condition 3 or 4. The other bullocks all appeared in good health.

The bullock that was down was struggling to get up. It was aggressive and was able to stagger only a very short distance, and it had muscle twitches. The bullock was groaning occasionally with abdominal pain and was drinking copiously.

The four dead bullocks had died 3 or 4 days beforehand and had gone off very quickly. With the flooding, the rapid new growth of feed and the history of no recent vaccination with either 5-in-1 or 7-in-1, there was concern that the sudden deaths were due to enterotoxaemia. There was also concern that the bullock that was down could have bovine ephemeral fever, as we had had a suspected case of this disease in the Hunter a few days beforehand.

After a paddock walk the possibilities widened: there were two toxic plants in the paddock, namely mother-of-millions (*Bryophyllum* sp.) and green cestrum (*Cestrum parqui*)—not to forget the red-bellied black snake that shot out at us!

There was a thick growth of mother-of-millions on the crest of the hill in the paddock and down to the river. The plants were in flower but appeared to be reasonably untouched by the livestock. For mother-of-millions to cause poisoning in livestock they have to eat about 5 kilograms of the plant. This did not appear to be the case.

Down by the river there was a dense growth of green cestrum plants. These plants had obviously been eaten, and there had been a lot of fresh, lush growth since the floods.

Carboxyparaquin, the poison in green cestrum, causes severe liver damage. The signs seen in the bullocks were classical for green cestrum poisoning, with diarrhoea, staggers, irritability, lying down, abdominal pain and convulsions in some cases but sudden death with no signs in others.

All cattle were removed from the source and there were no further problems. At last report the bullock that was down had improved slightly.

For further information contact Kylie Greentree, District Veterinarian, Hunter LLS, Maitland, on (02) 4932 8866.

Green cestrum. Photo G. Wisemantel

Mother-of-millions. Photo John Hosking

Red gut in lambs finishing on lucerne

Red gut caused a total of about 15 sporadic deaths in 2000 cross-bred lambs finishing on lucerne at Forbes in Central West NSW in May. The deaths started after good rainfall in April freshened up the growth of the lucerne. Hay was being provided roughly twice a week. Deaths appeared to occur when the hay ran out before being replenished. Necropsy examination of two freshly dead lambs revealed classic signs for a tentative diagnosis of red gut: characteristic distended dark red loops of small and large intestine. In both animals necropsied the rumen was reduced in size and displaced upward. There was also torsion of the root of the mesentery (the membrane surrounding the intestines).

Red gut is an acute intestinal inflammation with haemorrhage that can occur in sheep grazing some lucerne or clover pastures, or other fresh, young green feed.

At the time of the diagnosis 900 lambs were still on the lucerne and were due to be finished and sold within 6 weeks. The producers resolved to make sure to provide hay on a more reliable basis to prevent further deaths.

For further information contact Nik Cronin, District Veterinarian, Central West LLS, Forbes, on (02) 6850 1614.

The characteristic distended loops of intestine, along with twisting of the base of the mesentery, seen in red gut. Photo N. Cronin

Importance of vaccination for ovine Johne's disease

In December 2014, ovine Johne's disease (OJD) was diagnosed in a rising 3-year-old home-bred Merino ram on a property north-west of Albury.

Although this area is known to have a high prevalence of OJD, this particular property had been tested free of the disease (MN2 status) as part of the SheepMAP program until 2007. After 2007 all lambs born on the property had been vaccinated with Gudair. The property had had no new introductions of sheep until 2013, because they were using artificial insemination instead of buying rams.

The infected ram had been in good condition when turned out with the ewes in November, but after just 4 weeks it had developed chronic scours and was in poor condition.

The ram was euthanased for post mortem examination by LLS vets and was found to have thickening of the ilium and jejunum (parts of the intestine), which is consistent with OJD. Johne's disease was confirmed by finding signs of the bacteria in intestinal samples.

This ram had been bred on the property in 2012 and kept along with five other ram lambs as breeders. After the initial diagnosis another of these six rams was diagnosed with OJD at a post mortem in March 2015, and another died in June 2015 after showing signs consistent with OJD. A further one was culled because of hoof lesions during a footrot eradication program. Two rams remain on the property.

No sheep were introduced onto the property when these rams were young and at risk of picking up the infection.

Apart from a 6-year-old downer ewe found in June 2015, the owner has not observed any other animals with signs consistent with OJD. This included the 300 ewes that had been born on the property at the same time as the infected rams in 2012.

Because the lambs had been divided at weaning and the ewe and ram lambs had then been run separately, it's possible that the rams were exposed to a high load of OJD bacteria but the ewe lambs were not.

When the ram diagnosed in March 2015 was examined for a positive Gudair vaccine reaction (a raised lump that is very common after the vaccine), none was found. This made the LLS vet suspicious that this ram had not been vaccinated with Gudair as previously thought.

The owner has confirmed that it is possible that these six rams had accidentally missed being vaccinated with Gudair; this would have made them the only sheep on the property not protected by vaccination and would have accounted for the high rate of infection in this group.

This case highlights the importance of vaccinating with Gudair on properties in an area known to have a high prevalence of OJD. The high mortality rate in young rams (which were likely to have been the only unvaccinated sheep on the property) was not seen in the vaccinated sheep.

It is worth noting the rapid rate of infection on this farm between the time it exited the SheepMAP program as MN2 in 2007 to having 50% mortality in a cohort of presumably unvaccinated rams before 3 years of age.

For further information contact Scott Ison, District Veterinarian, Murray Local Land Services, Lavington, on (02) 6040 4210.

The case of the sheep with missing ears

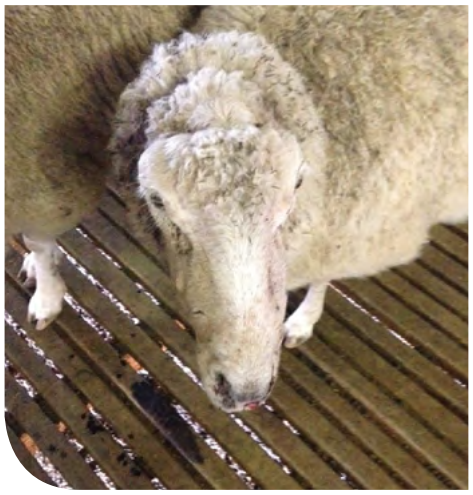
We were contacted by a local sheep farmer who had lost up to 50 sheep. The main sign was that their ears were missing. After a conversation with the farmer about the possibility of toxic plants and severe photosensitisation we elected to visit the property.

Three live ewes were in the yard, and sure enough they were missing their ears. The ear area in all three was flyblown, whereas the skin on the muzzle was normal. The dead sheep that we examined had been preyed upon, and small tooth punctures that had occurred before death were visible on the rumps of some of them.

The diagnosis was domestic (pig dog) attack. An hour later the farmer rang us back to tell us he was checking the back of the affected paddock and had found a pig dog and a Jack Russell chasing his sheep. The dogs were coming from a house that was being rented on his neighbour's property.

This just highlights the problems farmers face from irresponsible dog ownership.

For further information contact Bob McKinnon, Team Leader Biosecurity/Regional Veterinarian, North West LLS, Tamworth, on (02) 5776 7000.



Sheep with ears missing after a dog attack. Photo B. McKinnon

Rectal perforation in a yearling heifer after pregnancy scanning with a rectal probe

A mob of cross-bred beef yearling heifers were trucked to a property and processed before being released from the yards. They received a 5-in-1 vaccination and ADE (vitamins A, D and E) injection and were wormed. They were also scanned for pregnancy by a commercial operator using a rectal probe. About 4 hours later, one Charolais-cross heifer was noticed to be down in the yards and looking dull. She was able to stand when approached. The following morning she was found down and died soon afterwards, about 24 hours after the processing.

The carcass was lying on its left side. It was in good store condition, but with bruising around the anus and vulva. Inside the abdominal cavity there was a large amount of peritoneal fluid, signs of inflammation and faecal contamination towards the rear end near the right flank. The source of the contamination and the resulting inflammation was a 4-centimetre perforation on the bottom surface of the rectum about 40 centimetres in front of the anus.

Rectal perforation in a yearling heifer. Photo H. Austin

The perforation had most likely occurred during the pregnancy scanning the previous day.

For further information contact Heidi Austin, District Veterinarian, North West LLS, Tamworth, on (02) 5776 7000.

Two outbreaks of actinobacillosis in beef cattle

District Vets were called to investigate reports of cattle with excessive drooling, swelling and open lesions around the jaw and neck on an extensive grazing property near Walgett in North Western NSW. About 50 animals were affected in a mob of 600 Angus steers aged 1 to 3 years that had been grazing an oat crop for the past 3 weeks, during which time the problem had noticeably worsened. Before the oats, they had been grazing 3-year-old wheat stubble and had been weaned early because of prolonged drought on the property.

The worst-affected animals were standing with their necks outstretched and having difficulty breathing. Many animals had large masses, predominantly under the jaw, but some animals also had lesions on their flanks.

Examination of the worst-affected animals showed large, firm granulomatous masses, mainly around the jaw and upper neck. The masses ranged from golf-ball to tennis-ball size (5 to 15 centimetres in diameter) and were free moving (unattached to the bone). Some were open, with a bloody or purulent discharge, whereas others were closed, with no sign of external injury. Most of the affected animals also had some degree of 'bottle jaw' (swelling under the skin of the neck). Affected cattle had elevated temperatures, ranging from 39.5°C to 40.6°C, and several had open wounds in their mouths from the eruption of their adult incisor teeth. Several animals had mild swelling of the tongue and reduced muscle tone, causing the tongue to protrude. One animal had a small (5 centimetre diameter) granulomatous mass under the tongue.

Biopsies collected from several animals were sent to the State Veterinary Diagnostic Laboratory for testing; they returned a pure growth of *Actinobacillus lignieresii*. This bacterium causes a condition commonly known as 'wooden tongue', as severe lesions can render the tongue immobile and cause difficulty eating and subsequent loss of condition or death. *Actinobacillus lignieresii* is normally present in the mouth but can invade the tissues after trauma caused by abrasive foods or the action of the teeth while chewing.

Routine biochemical blood testing revealed no abnormalities. Antibiotic sensitivity-testing of the cultured bacteria revealed sensitivity to a range of common antibiotics, including tetracyclines.

The animals were treated with long-acting oxytetracycline and removed from the oat crop.

In a separate case on a nearby property, 15 cows in a mob of 40 with calves at foot were observed with similar lesions. The landholder reported bottle jaw and firm round masses near the jaw. The cattle were being fed oaten hay from hay feeders in a paddock, with access to sparse pasture; this property was also affected by long-term drought.

The cows had granulomatous lesions 10 to 20 centimetres in diameter under the jaw. None had lesions within the mouth or tongue damage. Their body temperatures were all normal, and none had lost any condition. They did not have a significant worm burden. They were diagnosed with wooden tongue and treated with long-acting oxytetracycline.

Actinobacillosis is common in cattle but generally affects individual animals; it's unusual to see such high numbers affected in a herd. It is important to investigate such cases to differentiate them from other, more serious causes of mouth lesions such as bluetongue and foot and mouth disease.

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

Heifer with a large open granulomatous lesion from actinobacillosis. Photo M. Davies

Affected steer calf with protruding tongue and submandibular swelling. Photo M. Davies

Tick fever on the Northern Tablelands

Tick fever can result in animal deaths, loss of condition, drop in milk production, abortion and sterility in bulls. It can be caused by any of three blood parasites, namely *Babesia bovis*, *Babesia bigemina* or *Anaplasma marginale*, which are carried by ticks. Signs include any of the following: fever, loss of appetite, loss of condition, depression, weakness and ataxia, anaemia, jaundice, red water (in the case of infection with *Babesia* spp.) and cerebral nervous signs (in infection with *Babesia*—especially *B. bovis*). *Babesia bovis* causes the majority of outbreaks.

Tick fever can be treated successfully if diagnosed early. The drug for treatment is imidocarb by injection under the skin (at different rates for *Babesia* and *Anaplasma*); oxytetracycline can also be used to treat *Anaplasma*. Chemicals should also be used to kill cattle ticks and reduce their numbers.

The owner of one property on the Northern Tablelands affected by an outbreak of tick fever immediately plunge-dipped all stock to reduce the tick burden and arranged to have the stock in the paddock treated with imidocarb. Unfortunately the stock had to be treated in appalling weather coinciding with a cyclonic weather event, and about 40 head could not be treated. (Note that withholding periods should also be observed in any such treatment, too.)

One month on, the owner reports stock losses of nine head (and a further two missing and presumed dead) from the outbreak. However, several cows have aborted, and the financial losses will include lost production from cows that fail to calve and raise a calf in the coming season. The tick fever organisms were identified in the lab to be *B. bigemina*, as was suggested by the observation of red water in the affected stock.

Although there have been several cases of tick fever in NSW in recent months, this was an unrelated case influenced not by stock introductions but more by the fact that the property was located adjacent to the Queensland border.

Cattle producers throughout NSW should always be vigilant for ticks; if you are uncertain about the identity of a tick, take it to the local LLS or DPI office for identification. A tick fever outbreak can have a marked financial impact in beef cattle herds in terms of treatment and eradication costs and potential future production losses.

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

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'.

Content Co-ordinator:
Rory Arthur, Animal and Plant Biosecurity Branch, Department of Primary Industries, Kite Street, Orange 2800.
T: (02) 6391 3608
E: rory.arthur@dpi.nsw.gov.au

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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Disclaimer

The information contained in this publication is based on knowledge and understanding at the time of writing (July 2015). 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.

The product trade names in this publication are supplied on the understanding that no preference between equivalent products is intended and that the inclusion of a product name does not imply endorsement by the Department of Primary Industries over any equivalent product from another manufacturer.

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