

NEW SOUTH WALES ANIMAL HEALTH SURVEILLANCE

Information contributed by staff of the Rural Lands Protection Boards and the NSW Department of Primary Industries

July - September 2006 • Number 2006/3

QUARTERLY HIGHLIGHTS

Botulism in cattle

Botulism was diagnosed as the cause of mortalities in a 500-cow, pasture-based dairy herd in Kempsey RLPB during August. The first mortality occurred on 25 August, and within 14 days 43 adult milking cows had died.

Affected animals were initially stiff-gaited, progressing to sternal recumbency, often with bilateral hind leg abduction. Death due to respiratory failure occurred 24 to 48 h after the onset of clinical signs, although later in the outbreak the clinical course was considerably prolonged.

All cattle on the farm have now been vaccinated against botulism, and carcasses were buried on farm in plastic-lined pits.

This herd was very high producing (9000-L herd average), and dumping of the milk was not considered appropriate. The milk processor continued to collect milk, provided that the milk of any cows showing clinical signs of botulism was excluded from the vat.

This was the second significant case of botulism in a dairy in recent months, and a publicity campaign is occurring to raise awareness of the value of vaccination.

For further information contact Ian Poe, DV Kempsey RLPB, on (02) 6562 7822.

Listeriosis in goats and sheep

Four stud Angora goats in Moss Vale RLPB died and a further three animals in a flock became sick after eating silage that had



Cow with botulism. Photo by Ian Poe.

been made from pasture treated with sewage effluent. Older goats, which consumed the majority of the feed presented, were more likely to show illness and death. Clinical signs included inability to chew and excessive salivation. *Listeria monocytogenes* meningoencephalitis was diagnosed by bacterial culture and histopathology.

Fifteen out of 350 Angora goats on a property in the Braidwood RLPB district died with nervous signs in July. Affected animals displayed circling, twitching of the legs, general muscle fasciculations and lateral recumbency. One goat was standing with feed hanging out of its mouth, apparently unable to swallow.

Post mortem examination of two animals revealed a congested appearance of the cerebrum, with fibrinous material between cerebellum and the cerebral hemispheres.

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Severe diffuse leukoencephalitis was seen on histopathology of the brain of both animals. This is typical of listeriosis. Routine bacterial culture and *Listeria* culture were negative in both animals, but as the animals had been treated with penicillin this was not unusual.

Silage feeding was ceased and no further losses were reported.

A further case of listeriosis in sheep fed silage was reported by a private practitioner in the Central Tablelands RLPB district. Twenty-five out of 1700 sheep died after they were fed silage from a 400-t above-ground pit.

The increased risk of listeriosis developing in both goats and sheep fed silage has been reported previously. Both goats and sheep are more susceptible to this disease than cattle.

Ataxia, excessive salivation, circling, convulsions, prostration and death can occur in affected animals. Pregnant does may abort or produce kids that die soon after birth.

Suppurative meningoencephalitis affecting the brainstem can be found in affected animals.

Listeria is a soil organism that prefers pH conditions above 5.4 for proliferation. Silage that has been poorly fermented (i.e. in which sufficiently acidic conditions have not developed throughout the fodder ensilage process) or silage that has become mouldy from exposure to air before it is fed out can support the growth of *Listeria*.

Trampled silage (as occurs when animals are able to walk over the silage when feeding) can also create a favourable environment for bacterial growth.

The disease is controlled by good silage-making management and feeding practices. If there is any doubt about the quality of the silage or how it can be stored or fed effectively, then it should not be fed to goats or sheep.

Sporadic deaths in crossbred lambs and Merino ewes on a property in the Narrandera RLPB district were investigated during the quarter. Mortalities occurred over a few months on an irrigated clover paddock. An affected lamb was examined and was found to be showing signs of severe lateral torticollis with pyrexia. Previous cases had been found to be unresponsive to antibiotic treatment. Laboratory samples were taken and the cause was found to be listeriosis.

It is suspected that conditions in the pasture may have contributed to the development of the problem. Possibly the presence of a thick ryegrass sward last spring, which was left to be trampled in under the irrigated clover, may have led to conditions suitable for *Listeria* to develop. There were no other paddock options for the affected sheep flock, so strip-grazing of areas with less litter underneath was recommended.

For further information on listeriosis contact Diane Ryan, NSW DPI, on (02) 4640 6378.

Vaginal prolapse in ewes

A Dorset stud in the Forbes RLPB district reported 15 ewes out of 170 with vaginal prolapse. Two of these occurred about 1 week post-lambing and the remainder pre-lambing. Prolapses occurred in both single- and twin-bearing maiden ewes. The problem started when the ewes were on a hill paddock and continued once they were moved onto flatter ground. The ewes were not overweight and there was no genetic link between the affected ewes.

Some heavy losses (15 out of 350; 20 out of 200; and 20 out of 300) due to vaginal prolapse have been reported in very heavy first-cross ewes in the Hume RLPB district. This has usually been associated with twins and triplets, good pastures and lack of exercise.

DV Narrandera investigated mortality and prolapses in Border Leicester ewes on the point of lambing. Four out of 100 died and seven had vaginal or uterine prolapses. The serum calcium level was found to be normal in one animal tested.

The aetiology of vaginal prolapses in ewes remains uncertain but is probably multifactorial. Factors that lead to an increase in intra-abdominal pressure and a relaxation of vaginal muscles and/or pelvic ligaments increase the risk of vaginal prolapse. Such factors include previous prolapse, multiple foetuses, and grazing hilly country. Bulky low-quality feed that leads to an increase in rumen size, marked changes in the quality and quantity of feed (leading to changes in weight) during pregnancy, increased intra-abdominal fat and lack of exercise may also be contributing factors.

For further information contact Belinda Edmonstone, DV Forbes RLPB, on (02) 6852 1688.



Goat with feed hanging from mouth due to inability to swallow. Photo by Bob Templeton

Hypocalcaemia in feedlot lambs

Across the Southern and Central Slopes regions a number of cases were reported in which lambs on grain or grazing cereal crops had succumbed to clinical hypocalcaemia.

In August, DV Gundagai investigated mortalities in a mob of 200 four-month-old feedlot lambs fed a mixed grain ration (10% oats, 50% barley and 40% lupins) with calcium supplemented at 1%.

Upon handling and drafting through yards, six lambs started panting and frothing at the mouth and then sat down, unable to rise. Three died almost immediately. Three others were panting and frothing at the mouth, struggling to rise. When the lambs were returned to the paddock a further three died suddenly and three more exhibited panting, distress and collapse.

Gross pathology observed on post mortem consisted of froth at the mouth, excess pericardial fluid and some ecchymoses on the inner ventricle walls, most likely indicative of sudden death. All the bodies were very hot to touch, even though three animals had been dead for almost an hour by the time they were opened.

Affected lambs had a temperature of 40°C and rapid heart and respiration rates. They showed symptoms of extreme distress, with open-mouthed panting and frothing. They responded to treatment with subcutaneous Ca-Mg solution, vitamin ADE and movement into the shade.

Hypocalcaemia was confirmed on serum biochemistry.

Increasing the calcium level in the feed to 1.5% to 2% prevented further cases.

For further information contact Helen Crabb, DV Gundagai RLPB, on (02) 6944 1588.

Vetch poisoning in cattle

Five out of 100 Angus cows and one bull grazing woolly pod vetch 5 to 7 cm high became sick and were noticed to have alopecia around the head and perineum. The affected animals died, three relatively acutely

and two a few weeks later. On post mortem, gross pathology of the kidneys and heart was noticed. The kidneys were mottled, with multiple, pale foci up to 5 mm in diameter visible on the capsular surface. These lesions extended through the renal cortex as pale streaks and confluent nodules. The ventricular myocardium contained extensive pale areas.

Histopathology of the heart, liver, kidney, spleen and lung revealed multicentric interstitial infiltration with large atypical round cells, large lymphoid cells and small lymphocytes.

The alopecia, gross pathology and histopathology were consistent with vetch toxicosis, which has been described previously in Friesian and Angus cattle (Vetch toxicosis in cattle grazing *Vicia villosa* ssp. *dasycarpa* and *V. benghalensis*. Harper et al. 1993, Aust Vet J 70: 140–144).

For further information contact Harry Suddes, DV Murray RLPB, on (03) 5886 1203.

Nitrate poisoning in sheep and cattle

Nitrate poisoning was confirmed on five farms in Hume RLPB during July. All cases were associated with ewes recently turned onto short winter cereals (usually winter wheats) that had previously received urea applications. The long dry spell followed by a little rain in early July meant rapid uptake of soil nitrates into these pastures. Losses were generally in the order of six or seven sheep out of a mob of approximately 200.

Eight out of 50 cattle in the Maitland RLPB died after being fed two round bales of moist green oat hay. Oat hay submitted for sampling had nitrate levels of 30 000 ppm and 50 000 ppm. Since levels of nitrate above 1500 ppm can be toxic for cattle, this hay would have been unsafe to feed even if shandied with other feed.

Nitrate poisoning was confirmed to be the cause of death in five out of seventy 10-month-old cattle that had been grazing oats in the Hunter RLPB. Diagnosis was made by positive nitrate–nitrite testing of aqueous humour.

Lead poisoning

Lead poisoning continues as a regular occurrence in the Northern Slopes region of NSW, usually as a result of accidental access to old batteries.

The latest case involved steers being backgrounded for a feedlot in the Northern New England RLPB district. Eleven head died. The remaining 44 were blood tested, and three returned high blood levels for lead. The steers were removed from the stubble paddock, where broken and chewed old batteries were found. Those with high lead levels have been detained according to



Heart from cow with vetch toxicosis. Note the extensive pale areas on the ventricular myocardium.
Photo by Harry Suddes



Kidney from cow with vetch toxicosis. Note the multiple pale foci on the capsular surface.
Photo by Harry Suddes

protocol (8 months for those showing no clinical signs, and 14 months for the one survivor that did show clinical signs).

The sudden death of two 7-month-old steers out of 50 on a property in Narrandera was investigated by a private practitioner in July. A third animal was displaying blindness, head pressing and disorientation. Lead poisoning was suspected and confirmed on blood testing. An old battery in the paddock was the most likely culprit.

For further information contact Belinda Walker, NSW DPI, on (02) 6741 8363.

Renal disease in alpacas

Renal disease in eight 12-week-old alpacas in the Moss Vale RLPB was suspected to have occurred following the ingestion of bark and leaves from *Syzygium paniculatum* (magenta lilly pilly). There have been no previous reports of toxicity due to this plant, which is used both as a food source and in herbal treatments.

Acute equine respiratory disease

Two weanlings died and nine others were affected with acute respiratory disease on a large horse stud in NSW.

In June, two weanlings that had been housed at different times in a common stall developed an acute, severe respiratory disease. Clinical signs included purulent nasal discharge and pleural effusion. One of the weanlings died and the other was euthanased on humane grounds. Post-mortem findings included a large volume of fibrinous thoracic fluid in the horse that died and a large volume of fibrinopurulent thoracic fluid in the horse that was euthanased. Samples of lung, heart and thoracic fluid from the horse that was euthanased were collected for histopathology and microbiology at a private veterinary laboratory. Beta-haemolytic *Streptococcus* was isolated from the pleural fluid.

By early July a further nine weanlings had developed a similar respiratory disease. Three required hospitalisation and intensive care, four presented with fever, purulent nasal discharge, coughing and increased respiratory effort, and two were mildly affected. All nine eventually recovered with antimicrobials with or without anti-inflammatory treatment.

On the basis of clinical signs and a history of fruit bats being seen in the barn previously (although not seen during this outbreak), blood

samples were sent to AAHL for Hendra virus and equine influenza exclusion. Bacterial culture was repeated at EMAI on pleural fluid from the weanling that was euthanased. A profuse growth of *Streptococcus equi* subspecies *zooepidemicus* was cultured from the pleural fluid.

Equine rhinovirus was isolated from a nasal swab of one out of four horses. Further virus isolation results are yet to be received.

The rhinovirus may have been the primary cause of infection, with *Streptococcus* causing a secondary pleuropneumonia.

The affected weanlings had been walked in close proximity to the index cases and/or had been in contact with potentially infected fomites.

For further information contact Sarah Robson, NSW DPI, on (02) 6938 1967.

NOTIFIABLE DISEASES

Foot and mouth disease (FMD) exclusion

A beef producer voluntarily imposed quarantine and called his veterinary practitioner when he suspected foot and mouth disease in his small beef herd in northern NSW. Three days after oral drenching, most of the herd of 51 beef cattle developed ulcers of their muzzles and the cows developed similar ulcerations on their teats and udders. The owner also developed blister-like lesions around his mouth. Samples at AAHL were negative for exotic FMD virus and vesicular stomatitis virus. Pseudocowpox was suspected as the cause.

Anthrax

A single steer in the Forbes district died suddenly in a paddock near a main road. The carcass had pools of blood in the area around it, leading the owner to think it had been shot. On examination, the steer was in sternal recumbency with its head turned into its flank. Blood appeared to have passed out of the anus, as if it had an acute intestinal haemorrhage. Although the property had no history of anthrax, samples were taken for anthrax exclusion whilst DV Forbes continued investigating the possibility of plant poisoning. Anthrax was confirmed at the laboratory. The remaining in-contact cattle were vaccinated and the carcass disposed of by burning.

Anthrax was excluded as the cause of sudden death in three of a herd of 80 Angus cows in

peak lactation in the Hume RLPB. Sparse populations of clostridial-like rods were seen in the blood smears of the deceased animals. Mouldy hay was considered as a possible cause of death.

In the Hay RLPB, two of a herd of 50 steers died suddenly. Anthrax was excluded by laboratory testing; anthrax had been diagnosed on the property several years earlier. Splenic smears were negative for *Bacillus anthracis*.

**For further information contact
Barbara Moloney, NSW DPI,
on (02) 6391 3687.**

Avian influenza exclusions

A paralysed Pacific black duck was found on an artificial lake in a public park at Cherrybrook in the Moss Vale RLPB. Up to 10 ducks had died on the lake at the same time, with two live ducks described as showing signs of leg paresis. The water in lake appeared stagnant. Botulism was suspected. Serology samples were negative for avian influenza.

Avian influenza was excluded as the cause of death of four ducks and a water hen at Mount Annan and a Pacific black duck on a wetland at Blacktown, in Moss Vale RLPB. Botulism was suspected.

Two hundred 2-month-old broiler turkeys died showing signs of respiratory distress in the Moss Vale RLPB. Fibrinous air sacculitis and pericarditis, mottled livers and splenic enlargement were found on post mortem. Avian influenza, Newcastle disease and *Chlamydomphila psittaci* infection were excluded. A diagnosis of *Pasteurella multocida* septicæmia was made.

Mortality in a 20 000-breeder poultry unit in Moss Vale RLPB was investigated. Clinical signs in a small percentage of birds included depression, shrunken combs with necrotic tips and a decline in egg production, or birds were found dead with no symptoms. The flock was vaccinated for Newcastle disease. Newcastle disease virus and avian influenza were excluded by serology tests. Nephrosis was identified in submitted birds.

**For further information contact Keith Hart,
DV Moss Vale RLPB, on (02) 4655 9165.**

DISEASE SURVEILLANCE AND CONTROL PROGRAMS

National Arbovirus Monitoring Program (NAMP) and Akabane Disease

In New South Wales, although drought conditions were widespread, there was extensive transmission of akabane virus, but generally at a moderate prevalence. Infection extended beyond the endemic area, with seroconversions detected as far south as Camden. Seroconversions to Akabane virus were detected on the Northern New England Tablelands at Yarrawitch, Armidale and Inverell and on the North West Slopes at Warialda, Wallangra and Moree, probably as an extension of transmission in south-western Queensland. Clinical cases were reported in districts that were beyond the endemic region and also at the margins of the endemic area, where there was a low prevalence last year.

The diagnosis of Akabane disease relies on history, pathological findings and the demonstration of antibodies to Akabane virus in foetal fluids or serum samples taken from calves or lambs that have not fed from the mother.

Suspected and confirmed cases of Akabane disease in calves were reported in the Northern Slopes RLPB. In one case Akabane infection was confirmed as the cause of arthrogryposis of a single limb in a calf in the Gineroi area. Private practitioners reported cases of dystocia suspected to be Akabane virus-related, but confirmatory laboratory tests were not performed.

An interesting case in which Akabane disease was suspected occurred in the Gulf Creek area of Northern Slopes RLPB, about 15 km north-east of Barraba. Several calves were described as 'silly calves'—unable to suckle, ataxic and apparently blind. A post-mortem examination was performed on one well-grown calf with a grossly deformed skull. Hydranencephaly was found on post mortem. Grossly the cerebellum appeared normal in size. Seroconversions for Akabane virus occurring in the Northern Slopes RLPB were as follows:

- Warialda: two out of 12 during November–December 2005
- Wallangra: one out of 14 between January and April 2006 and two out of 15 between April and July 2006.

The clinical cases seen and reported from the field are consistent with the pattern of exposure detected in the sentinel herds.



Opened skull of a young calf. Notice the domed skull and reduced cerebral mass. Akabane infection was suspected but confirmatory laboratory tests were not performed. Photo by Andrew Thompson

Heavy calf losses from Akabane disease were expected in the Northern New England and Armidale RLPB after a number of sentinel herds seroconverted earlier in the year. Two sentinel herds are monitored quarterly on the eastern side of the Armidale RLPB as part of NAMP. Both these herds had Akabane seroconversions in April, having been negative in January. These results showed eight out of 13 positive on one farm and 17 out of 23 positive on the other.

The last serious outbreak of Akabane disease occurred in this area in 1998, with a few cases in 2002. Hence it is assumed that many, if not most, cattle were naïve going into this season.

Insect traps on these farms indicated the presence of *Culicoides* spp. from early February through until mid May.

Most heifers and cows in the Armidale RLPB area are joined in the period September through to early December. Hence the pregnancy status of these animals would have been from just pregnant up to 6 months pregnant at the time of possible exposure.

To determine to what extent Akabane seroconversion had occurred in the district another seven properties in the areas where Akabane disease has previously occurred were tested. Five of these had seroconverted at similar rates (about 50%). Two herds closer to Walcha did not show any evidence in the heifers tested.

Calving results have been collected by survey from these farms. The number of calves showing signs of Akabane disease has been very low. Both the sentinel herds lost in excess of 30% of calves in 1998, and this

year one property had two Akabane calves (out of 30 heifers) and the other nil. The worst result was on one property that joined heifers commencing 1 December: 10 Akabane-affected calves (out of 71 heifers joined) were born.

Most of the calves exhibited signs of hydranencephaly; unlike in previous outbreaks, arthrogryposis was not a feature.

There are a number of issues that can affect the incidence of abnormalities in calves, but the main ones are the stage of pregnancy, the time of infection relative to stage of gestation, and the strain of virus.

Previous studies by Peter Kirkland (Kirkland et al. 1988, Vet Record 122: 582–586) found that congenital defects occurred following infection at 3 to 6 months of gestation. Infection before the third month of gestation does not appear to cause problems. Infection in the third or fourth months of gestation results in hydranencephaly, with arthrogryposis occurring later, in the latter part of the fourth month to the sixth month of gestation. Generally, the older the foetus is at the time of infection, the lower the incidence of congenital defects. There is a variation in the virulence of the virus. Some strains cause defects in 50% of infected calves, others much less. An infection rate of 25% of calves born has been a typical average.

With the low incidence of clinical cases despite seroconversions in the sentinel herds in Armidale RLPB, it is likely that a less virulent strain was involved and it was a very early infection—a very fortunate outcome.

For further information contact

**Peter Kirkland, NSW DPI,
on (02) 4640 6331; Andrew Thompson, DV
Northern Slopes RLPB, on (02) 6729 1528;
or John MacFarlane, DV Armidale RLPB,
on (02) 6772 2366.**

Bovine Johne’s disease (BJD)-infected herds in NSW as at 30 September 2006

RLPB	DAIRY	BEEF	TOTAL
Casino	16	13	29
Coonamble		1	1
Grafton	1		1
Hume	3	3	6
Hunter	1		1
Kempsey	4		4
Maitland	2	1	3
Molong		1	1
Moss Vale	2		2
Murray	11	1	2
Northern New England		1	1
Riverina	10		10
South Coast	15	1	16
Tweed Lismore	14	13	27
TOTAL	79	35	114

Johne's disease Market Assurance Programs (MAPs) as at 30 September 2006

	Herd type	Results of status testing at each stage (number of herds)						
		MNI	MNI-V	MN2	MN2-V	MN3	MN3-V	TOTAL
AlpacaMAP	Stud	1		1		7		9
	Other	4		21		74		99
	Total	5		22		81		108
CattleMAP	Stud	60		43		38		141
	Other	74		145		228		447
	Total	134		188		266		588
GoatMAP	Stud	1		2		1		4
	Other	13		13		4		30
	Total	14		15		5		34
SheepMAP	Stud	14	8	21	6	41	2	92
	Other	16	20	29	28	135	28	526
	Total	30	28	50	34	176	30	348

MNn = Monitored negative (n = minimum number times sample tested with negative result)

MNn-V = Flocks being vaccinated (sheep only)

Transmissible spongiform encephalopathy (TSE) surveillance submissions by RLPB, 1 July 2006 to 30 September 2006

RLPB	DV sheep	DV cattle	Abattoir sheep	Abattoir cattle	Private vet sheep	Private vet cattle	Total sheep	Total cattle
Armidale		2						2
Bourke	1						1	
Braidwood	1	1					1	1
Casino		1						1
Central Tablelands	2				1		3	
Cooma	1	1					1	1
Coonabarabran	3	1					3	1
Dubbo						1		1
Forbes		1						1
Grafton					1		1	
Hume		1				4		5
Kempsey						1		1
Maitland		1						1
Moss Vale		1						1
Murray						1		1
Narrabri	3	4					3	4
Narrandera	1						1	
South Coast						1		1
Tweed Lismore		1						1
Wagga Wagga	8	3			1	1	9	4
Total	20	18	0	0	3	9	23	27

All samples were TSE negative.

Continuing submissions to the National Transmissible Spongiform Encephalopathy Surveillance Program are encouraged. Cattle over 30 months and sheep over 18 months that exhibit neurological symptoms are eligible for sampling under the program.

For further information on TSE or BJD contact Sally Spence, NSW DPI, on (02) 6391 3630

Enzootic bovine leucosis (EBL)

As at the end of September 2006, the EBL status of the NSW dairy herds was as follows:

MONITORED FREE	971 herds (95.0%)
BMT NEGATIVE	17 herds (1.7%)
NOT ASSESSED	35 herds (3.4%)
TOTAL	1023 herds

For further information contact Richard Zelski, NSW DPI, on (02) 4939 8959.

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. If you would like more specific information about diseases occurring in your part of the State, contact your local Rural Lands Protection Board District Veterinarian, Departmental Senior Regional Animal Health Manager,

Regional Health Leader, or Regional Veterinary Laboratory.

For Statewide information, contact NSW DPI's Animal and Plant Biosecurity Branch in Orange on (02) 6391 3237 or fax (02) 6361 9976.

For more information on national disease status, check the National Animal Health Information System (NAHIS) via the internet at: <http://www.animalhealthaustralia.com.au/status/nahis.cfm>

Disclaimer

The information contained in this publication is based on knowledge and understanding at the time of writing (September 2006). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up-to-date and to check the currency of the information with the appropriate officer of New South Wales Department of Primary Industries or the user's independent adviser.

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Copies of NSW Animal Health Surveillance reports are available on the internet at:
<http://www.dpi.nsw.gov.au/reader/ah-surveillance>



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