

ANIMAL HEALTH SURVEILLANCE

October–December 2004 • Number 2004/4

QUARTERLY HIGHLIGHTS

Copper poisoning in sheep

The combination of exposure to pyrrolizidine alkaloids from Paterson's curse or heliotrope, causing liver damage, and the accumulation of copper has seen a resurgence of the seasonal problem of secondary copper poisoning ('toxaemic jaundice' complex) and high mortalities in sheep across the southern region of NSW. Typical supporting evidence has been provided by histopathology and acute pathology in the liver and kidney, high liver copper levels, and mortality rates between 2% and 13%. Interestingly enough, the problem has been seen across RLP districts from Gundagai and Temora in the east to Finley, Berrigan and Deniliquin in the

west, with the majority of cases in the month of November.

The haemolytic crisis is indirectly caused by grazing of plants containing pyrrolizidine alkaloids, owing to mechanisms whereby the liver cells are damaged and store excessive amounts of copper. When animals are subjected to stress, these damaged cells release the copper, resulting in massive haemolytic effects and rapid death. Another causative factor is the relationship with dietary molybdenum: a deficiency in this element can increase the availability of copper. One situation where this can occur is under clover-dominant pastures. This has been described in Gundagai, where the mortality reached 13% during the quarter.

For further information contact Rob Walker, SFVO Wagga Wagga, on (02) 6938 1993.



A typical post mortem finding: 'gunmetal'-coloured kidney and jaundiced fat. Photo: Graham Bailey NSW DPI.

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Arsenic toxicosis in cattle

In November, six out of 18 Hereford heifers on a Lismore district property died suddenly. Anthrax was initially suspected but was excluded on laboratory testing, and the property was well distant from the known anthrax endemic area. On-property investigations then revealed that the cattle had recently gained access to an old shed containing unlabelled chemicals. Subsequent laboratory testing confirmed arsenic toxicosis as the cause of death, with liver levels of 32 mg/kg in one affected animal. Chemical and nearby soil samples were positive for arsenic. Ten of the remaining 12 heifers were clinically affected by arsenic, showing ataxia, stilted gait and minimal (if any) scouring. Two of the affected animals subsequently died. The owner was advised to prevent any further access to arsenic by the surviving animals, and to not send them to slaughter for at least 72 days.

For further information, contact Buster Neilson, DV Tweed-Lismore RLPB, on (02) 6621 2317.

Neurological disease in merino weaners and hoggets

DV Wagga Wagga and VO Wagga Wagga investigated an unusual case of neurological disease in Merino weaners and hoggets.

Approximately 16 out of 800 weaners were affected with the disease, which occurred 1 week before weaning. Three hoggets and

one crossbred lamb displayed the same signs. There was a sudden onset of clinical signs, which progressed in some animals to recumbency followed by death from starvation or misadventure. Affected animals exhibited a limb paresis syndrome without knuckling. Clinical examination indicated that the lesion could be anywhere in the upper motor neurone system from the brain to the thoracic spinal cord. A full post mortem was performed on three of the more severely affected animals. On histopathological examination a significant lesion was found in the cervical spinal cord in two of the three animals. In one animal the lesion consisted of a focal, primarily non-suppurative, vasculitis in the grey matter and a focal microabscess adjacent to affected blood vessels, with widespread Wallerian degeneration in the surrounding white matter tracts. Listeriosis was ruled out by Gram stain. In the other animal the lesion consisted of severe demyelination and



An abnormal gait is displayed due to paresis. The gait abnormality became more severe with stress.



A wide hind limb stance is evident at rest.

Wallerian degeneration of the dorsal to lateral white matter. The cause of these lesions could not be identified. Known genetic disorders, plant poisoning, bacterial infection, copper deficiency and selenium deficiency were ruled out. Trauma was suggested on the histopathological findings, but there was no history or external evidence of trauma to make this likely. Because a focal microabscess was detected in the spinal cord in one animal, antibiotic treatment was begun. The affected animals apparently responded partly to antibiotic treatment, with their clinical signs stabilising and possibly improving mildly, but not resolving. After 2 months the owner reported that the condition had resolved, with no animals displaying clinical signs; however, when the affected animals were brought in for shearing 3 weeks later the signs reappeared.

The cause of the neurological disease remains undiagnosed, and investigation will be continued if there is a recurrence in next year's weaners.

For further information contact Sarah Robson, VO Wagga Wagga, on (02) 6938 1967.

Diarrhoea and deaths of sheep

A mob of 400 weaned Merino wether lambs in the Riverina RLPB had severe dysentery. The lambs had been introduced 3 weeks before the incident and vaccinated with 5-in-1 and treated with cyromazine on introduction. A group of wethers introduced earlier and running with the affected mob until the start of the incident was unaffected.

Morbidity was 50% and case mortality was 34%. The entire group was treated with a long-acting oxytetracycline, and 80% of the affected animals recovered following treatment.

Carcasses autolyzed rapidly and there was bloodstained serosal fluid. Fresh carcasses had severe haemorrhagic enteritis with frank blood in the intestinal lumen and severe proliferative haemorrhagic lesions in the caecum. Histopathology showed severe diffuse vascular congestion of the caecum, with masses of rod-shaped bacteria adhering to the mucosa.

No causative organism was isolated. The most likely cause was *Salmonella* or *Clostridia* spp, possibly Type B *Clostridium perfringens*.

For further information contact Dan Salmon, DV Riverina RLPB, on (03) 5881 1055.

Horse mortality investigation

One of five horses in a paddock in the Scone RLPB district died after an acute illness; the other four similarly affected horses were euthanased at the owner's request. The horses varied in age. They were Thoroughbreds and Quarter Horses. The owner reported that the horses exhibited muscle tremors, intermittent recumbency and signs of pain.

The clinical presentation and the clinical pathology performed by the attending veterinary practitioners were indicative of acute muscle damage as the primary disease process. One of the three hospitalised horses developed acute enterocolitis 2 days after admission, and was subsequently euthanased at the owner's request.

A post mortem was carried out on two horses by the attending veterinary practitioners. Samples collected at post mortem were later submitted to the RVL at Menangle for histopathological analysis. Severe myositis and kidney pathology consistent with myoglobinuria was detected in the tissue samples from one horse. Fluoroacetate residue in the stomach contents was tested for, but there was no detectable residue and there were no significant findings on histopathological examination of the cardiac muscle. In the other horse, liver pathology consistent with past exposure to a sub-lethal liver toxin such as pyrrolizidine alkaloids or aflatoxin was detected. This horse also had kidney pathology consistent with myoglobinuria. This same horse had fluoroacetate residues in her stomach contents at nine times the level considered significant for possible toxicity. The significance of this in view of the clinical presentation and clinical pathology of these cases is not known.

Analysis of pastures for mycotoxins and potentially poisonous plants found no suspicious material. The results of water sample analysis are pending.

With no further samples available for testing, these mortalities remain undiagnosed. It is, however, suspected by the attending veterinarians that the cause of the horses' clinical signs was atypical myopathy (atypical myoglobinuria), a frequently fatal myopathy of unknown origin that occurs sporadically in grazing horses. Unfortunately a cardiac muscle sample was not submitted from the horse with possible fluoroacetate poisoning. Poisoning by fluoroacetate causes myocardial damage and circulatory collapse; therefore, histopathological examination of the heart muscle would have been valuable for determining the significance of the fluoroacetate detected in the stomach contents, even though none of the horses showed clinical signs indicative of circulatory failure and collapse.

There is no history of 1080 (a source of fluoroacetate used for baiting rabbits, feral pigs, foxes and wild dogs) use on the property. The total amount of 1080 dispensed by the district RLPB office in poisoned carrot or oat form to any individual was not sufficient to kill one horse. There was no evidence of carrots or grain in the gastrointestinal contents of either horse necropsied. Plants known to contain fluoroacetates (*Gastrolobium* spp., *Oxylobium* spp. and *Acacia georginae*) are not present in NSW (unless intentionally introduced) and were not present on the property.

The source of the fluoroacetate that was found in the gastrointestinal contents of one of the horses remains unidentified. RLPB and NSW DPI veterinarians are available to conduct equine mortality investigations as part of their district surveillance; we encourage private practitioners to contact us when such situations arise.

For further information contact Jim Kerr, District Veterinarian, Scone RLPB, on (02) 6545 1311.

Sporadic bovine encephalomyelitis (SBE) in a Broken Hill cattle herd

In late September 2004, shortly after a good fall of rain in otherwise dry country, a calf was seen to go down and die after 1 or 2 days. The owner called the following day with 2 more cases, concerned about a disease he hadn't seen before. Two 6- to 9-month-old calves were port-mortemed. One was in extremis (semi-conscious, some response to touch, nystagmus, increased lung sounds, muffled heart, temperature over 42°C) and the other had recently died. In the first, the stifle joint contained increased quantities of clotting yellow fluid, with some floating white material, and some generalised congestion, which raised the possibility of SBE, given the epidemiology and other signs. On opening the thoracic and abdominal cavities, widespread adhesions and fibrin tags were seen, typical of classical SBE. The lungs were partly consolidated. The surface vessels of the brain were congested. The second calf had no change in the joints but had widespread serositis similar to that seen in the first calf. It had stood in a pool of water—a common sign in rangelands cattle with fever. The calves were running with their mothers and watering on troughs. The good spring rain appeared to be part of the causation. No other cattle showed signs of SBE at the time or afterwards. Some of the cattle had previously been agisted in South Australia. SBE was confirmed on immunoassay of smears and by serology, and histopathology revealed meningoencephalitis. SBE is seen sporadically in the Western Division and is one of this area's most common serious infectious diseases. In older cattle, signs are usually shifting lameness or malaise with weight loss, increased respiratory rate and temperature, and occasionally recumbency while bright and alert. Acute signs, with encephalitis, fever and death, are usually limited to young cattle.

For further information contact Greg Curran, VO Broken Hill, on (08) 8087 1222.

Mycoplasma ovis in the Far West

Mycoplasma ovis (formerly *Eperythrozoon ovis*) killed three 4-month-old Merinos and caused severe lethargy and depression in many more lambs near Pooncarie, in the Far West of NSW. The owners reported slow mulesing recovery, a higher rate of post-mulesing flystrike than normal, and severely depressed lambs with anorexia and reluctance to move. The lambs examined were febrile, displayed mucous membrane pallor,

tachypnoea and tachycardia, and had jaundiced serum. *Haemonchus contortus* and toxic plants were ruled out on flock faecal tests and pasture examination and blood testing, respectively. Blood smears, haematology, biochemistry and post mortem findings confirmed the diagnosis. Recommendations regarding good nutrition, limiting other co-stressors (such as intestinal parasites) and not moving lambs during an outbreak were given. This was an interesting finding, because *M. ovis* is not commonly diagnosed in the Far West.

For further information contact Samantha Yorke, VO Broken Hill, on (08) 8087 1222.

Erysipelothrix polyarthritidis in lambs

Six percent of a Merino lamb flock were reported to be affected by arthritis in one or more joints. Lambs were born during an 8-week time frame from early May 2004. Marking and mulesing were carried out by a registered contractor in mid-July, and the lambs were vaccinated with 6-in-1 and their tails docked with a hot knife. The lambs were then weaned and drenched in late August. They were weaned onto self-sown oats and had access to barley in self-feeders. A number of lambs were noted to be lame at weaning. During the next 2 months the prevalence of lameness in one or more legs with concurrent loss of body condition increased.

Nine affected lambs were examined on two occasions in November and December. Joints were examined, rectal temperatures recorded and blood samples collected. Multiple joints were affected, including the hocks, stifles and carpi. Affected joints were generally consistent between the two examinations. Rectal temperatures were variable, with three out of nine being 40°C on both examinations. The significance of the increased rectal temperatures was questionable because of the high ambient temperature. All cases were serologically negative on *Chlamydia* complement fixation testing. One lamb was examined, euthanased, and then autopsied. Both left and right stifle and hock joints were submitted. Synovitis was noted in three of the four joints. *Chlamydia* tests carried out on the four joints were negative, as was serology on the sampled lamb. Bacterial culture grew *Erysipelothrix rhusiopathiae* from all four joints.

For further information contact Bruce Watt, DV Condobolin RLPB, on (02) 6895 2152.

Polioencephalomalacia in dairy heifers

An unusual outbreak of polioencephalomalacia killed seven out of thirty-eight 6- to 8-month-old heifers in a Camden area dairy herd in December. Heifers were found dead or dying within a short period of time. Clinical signs included staggering, shaking, lameness, opisthotonos, blindness and death within 2 or 3 days from disease onset. An autopsy was performed on a fresh carcass, and the gross findings included petechial epicardial haemorrhages, pale liver, patchy ecchymotic haemorrhages well distributed through the ileal mucosa, and some dark red-brown loops of colon with severely haemorrhagic mucosae. Laboratory results included high urea and albumin levels and low protein and globulin levels. The histopathology results included some minor liver and kidney changes. Severe autolysis was present in the ileum, and some suppurative crypt abscesses were present in the

small intestine. The mesenteric lymph nodes had multiple foci of severe autolysis associated with bacteria. The rostral brain stem and hippocampus had no significant findings. The outer layers of the occipital cortex were extensively and severely rarefied, with definite regional malacia with perivascular cuffs, macrophages (gitter cells), acute neuronal necrosis and vascular proliferation. Areas of the cortical margins corresponding to older lesions with gitter cells fluoresced very brightly when examined under a Wood's lamp. These findings were typical of polioencephalomalacia. A common cause of this disease is thiamine deficiency, but there are usually a large number of cases in which no cause can be found.

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

NOTIFIABLE DISEASES

Anthrax

There have been six confirmed anthrax incidents during the quarter. All six incidents were isolated, although one occurred on a Condobolin property neighbouring an incident reported in the previous quarter. Two incidents occurred in mid- to late October, one in Narrandera and the other in Condobolin (the one adjacent to the previously reported incident). Both of the October incidents involved sheep, with five deaths on each property. The third incident for the quarter occurred in mid-November in the Nyngan District, where 13 of 220 beef cattle died. The remaining three incidents occurred in early to mid-December, one each in the Narrandera, Condobolin and Nyngan districts. Sheep deaths occurred in Narrandera (five) and Condobolin (20), and beef cattle died in Nyngan (two) during December. The three affected districts are located in the known endemic anthrax area of NSW. In all cases Departmental policy on anthrax was applied. Properties were placed in quarantine, carcasses were burned or buried, sites disinfected, and in-contact animals vaccinated. One property had some potentially exposed cattle sold to slaughter, but investigations by AQIS determined that there was no compromise to certification. Additionally, epidemiological investigations on the property found that the cattle sold would have had a minimal risk of incubating anthrax.

Six other investigations during the quarter were negative for anthrax, three in sheep and three in beef cattle. An alternative diagnosis to arsenic toxicosis was found in one of the cattle investigations (see the Arsenic Toxicosis item in this issue).

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

Chlamydiosis in birds

Chlamydiosis was confirmed in three related broiler farms south-west of Sydney in November. The clinical presentation included conjunctivitis and increased mortalities. Gross post mortem examination showed peritonitis, and *Chlamydia* was confirmed by immunofluorescent antibody testing (IFAT) on smears of affected organs. On one of the farms the birds were close to the processing date and medication was not practicable. The consumption of meat from subclinically infected birds is not known to pose any risk to public health. The risks to employees during processing are controlled with appropriate protective clothing and equipment and reinforcement of personal hygiene. In addition, covering loads during transport and paying special attention to the rejection of sick, septicaemic birds or any bird with systemic lesions are added precautions.

Chlamydiosis was diagnosed in a number of wild parrots and rosellas found dead in a backyard of a semi-urban subdivision in the Moss Vale

district. The birds were in poor condition with diarrhoea. About 30 were reported to have died during a 2-month period. Chlamydia IFAT was positive in the spleen and liver, and the histopathology was consistent with

chlamydia. Two aviary parrots from the outer Sydney were also diagnosed with chlamydia.

For further information contact George Arzey, Senior VO (Poultry), on (02) 4640 6402

DISEASE SURVEILLANCE AND CONTROL PROGRAMS

Footrot workshop

October 12 2004 marked the end of an era, with SFVO Rob Walker conducting his last footrot workshop. District veterinarians, rangers and veterinary officers from the Wagga Wagga SFVO region, as well as Sydney University veterinary science students, attended the workshop. The theory session consisted of footrot diagnosis, laboratory confirmation, control, eradication, surveillance and policy issues. Steve Whittaker

(DV Hume) suitably closed the session by informally thanking Rob Walker for his enormous contribution to the control and eradication of footrot. Rob was the instigator and principal driver of the Footrot Free Campaign, seeing the campaign almost through to completion.

Practical experience was gained in foot-scoring infected sheep and differentiating footrot from foot abscess and other foot lesions.



Enzootic bovine leukosis (EBL)

The November 2004 BMT testing round has been completed, with all the vat milk test results being negative.

At the end of 2004 the EBL status of active dairy herds in NSW was:

MONITORED FREE: 1085 herds
PROVISIONALLY CLEAR: 2 herds
NOT ASSESSED: 14 herds
TOTAL: 1101 herds

For further information contact Richard Zelski, VO Tocal, on (02) 4939 8959.



Bovine Johne's disease Market Assurance Program (Cattle MAP)

At the end of the December 2004 quarter there were 743 herds enrolled in the Cattle MAP. Of these, 183 herds had MN1 status, 246 had MN2 status and 314 herds had MN3 status.

The enterprise breakdown of these herds is shown in Table 1. During the quarter, 30 MAP herds left the scheme and dropped to NA status. There were no breakdowns of MAP herds to Infected during the quarter.

Table 1. Cattle MAP herds by enterprise

| Enterprise | Total herds | Studs | Commercial |
|------------|-------------|-------------|-------------|
| Beef | 522 (70.3%) | 392 (75.1%) | 130 (24.9%) |
| Dairy | 197 (26.5%) | 116 (58.9%) | 81 (41.1%) |
| Mixed | 24 (3.2%) | 6 (25.0%) | 18 (75.0%) |
| Total | 743 (100%) | 514 (69.2%) | 229 (30.8%) |

For more information contact Yuni Yunamu, Veterinary Officer, Goulburn, on (02) 4828 6628.

Transmissible spongiform encephalopathy

For details on transmissible spongiform encephalopathy (TSE) submissions for the quarter see Table 2.

Table 2. TSE submissions by SFVO region and Rural Lands Protection Board for the quarter ending 31 December 2004

| BOARD | Government | | Abattoir | | Private | | Total | |
|--------------------------------|------------|-----------|----------|----------|----------|-----------|-----------|-----------|
| | Ovine | Bovine | Ovine | Bovine | Ovine | Bovine | Ovine | Bovine |
| SFVO DUBBO REGION | | | | | | | | |
| DUBBO | | | 6 | | | | 6 | |
| NYNGAN | | | | | | 1 | | 1 |
| Region Total | 0 | 0 | 6 | 0 | 0 | 1 | 6 | 1 |
| SFVO GOULBURN REGION | | | | | | | | |
| BOMBALA | 1 | 1 | | | | | 1 | 1 |
| COOMA | 3 | 1 | | | | | 3 | 1 |
| GOULBURN | | | 3 | | | | 3 | |
| SOUTH COAST | | 1 | | | | | | 1 |
| Region Total | 4 | 3 | 3 | 0 | 0 | 0 | 7 | 3 |
| SFVO GRAFTON REGION | | | | | | | | |
| ARMIDALE | 17 | 6 | | | 1 | | 18 | 6 |
| GRAFTON | | | | 1 | | | | 1 |
| KEMPSEY | | 1 | | | | | | 1 |
| NORTHERN NEW ENGLAND | 3 | | | | | | 3 | |
| Region Total | 20 | 7 | 0 | 1 | 1 | 0 | 21 | 8 |
| SFVO GUNNEDAH REGION | | | | | | | | |
| COONABARABRAN | | 1 | | | | | | 1 |
| NARRABRI | 2 | 5 | | | | | 2 | 5 |
| NORTHERN SLOPES | 1 | 1 | | | | | 1 | 1 |
| TAMWORTH | | | | | 1 | 3 | 1 | 3 |
| Region Total | 3 | 7 | 0 | 0 | 1 | 3 | 4 | 10 |
| SFVO MAITLAND REGION | | | | | | | | |
| GLOUCESTER | | 1 | | | | | | 1 |
| Region Total | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| SFVO ORANGE REGION | | | | | | | | |
| CENTRAL TABLELANDS | 1 | 1 | | | 2 | | 3 | 1 |
| FORBES | 1 | | | | | 1 | 1 | 1 |
| YOUNG | 1 | | | | | | 1 | |
| Region Total | 3 | 1 | 0 | 0 | 2 | 1 | 5 | 2 |
| SFVO WAGGA WAGGA REGION | | | | | | | | |
| GUNDAGAI | | | | | | 1 | | 1 |
| HUME | 4 | 1 | | | 2 | 20 | 6 | 21 |
| MURRAY | | | | | | 3 | | 3 |
| NARRANDERA | 1 | 1 | | | | | 1 | 1 |
| RIVERINA | | | | | | 1 | | 1 |
| WAGGA WAGGA | 1 | | | | | | 1 | |
| Region Total | 6 | 2 | 0 | 0 | 2 | 25 | 8 | 27 |
| Grand Total | 36 | 21 | 9 | 1 | 6 | 30 | 51 | 52 |

Getting Information on Animal Diseases

This surveillance report can only convey 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;

Department senior field veterinary officer; or
Regional Veterinary Laboratory.

**For Statewide information, contact
NSW DPI's Animal 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.aahc.com.au/nahis/>

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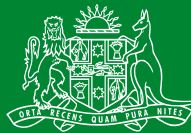
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**Copies of NSW Animal Health Surveillance reports are available on the internet at:
<http://www.agric.nsw.gov.au/reader/ah-surveillance>**



**NSW DEPARTMENT OF
PRIMARY INDUSTRIES**