NSW DPI

NEW SOUTH WALES ANIMAL HEALTH SURVEILLANCE

October - December 2005 • Number 2005/4

Scours in calves

This season has been extraordinary for calf scours over much of eastern NSW. A number of pathogens have been isolated, including cryptosporidium, rotavirus, coccidia, *Yersinia*, *Salmonella*, *Escherichia coli* and *Escherichia fergusonii*.

Calf losses due to dehydration have been compounded by unusually hot weather conditions. In some cases calves have been rehydrated successfully, only to die of kidney failure a few days later. It has not been unusual for farmers to lose 5% to 10% of a calf crop, and occasionally losses of up to 30% have been reported.

Where producers have made concerted efforts to rehydrate calves using stomach tubes, losses have been lower. Reliance on antibiotics without fluid therapy has been a common mistake.

For further information contact Shaun Slattery, DV Narrabri RLPB, on (02) 6792 2553.

Below: Thirty out of 100 calves on this property died and another 10 were treated for scours. Primary cryptosporidiosis with secondary bacterial infection was diagnosed. Photo taken by Shaun Slattery.

Cryptosporidium

Cryptosporidium has been unusually prevalent amongst the many causes of calf scours this season. Compared with previous years there has been a marked increase in faecal sample submissions to laboratories.

The NSW Health Department has also reported a sharp rise in the number of humans infected with cryptosporidium in the last couple of months throughout the State, with the Hunter New England area one of the focal regions. This was of sufficient concern that a survey was arranged to investigate possible sources of infection. Early results suggest that, in about 25% of cases, contact with cattle is implicated as a likely cause.

Sheep, pigs and especially kangaroos can also shed cryptosporidium, without showing

In this issue!

NSW DEPARTMENT OF PRIMARY INDUSTRIES

signs of diarrhoea. Overflow of septic tanks can add to contamination of the environment. It is thought that heavy rains then wash the oocysts of cryptosporidium into dams that are sources of drinking water for humans.

Different strains of cryptosporidium tend to be found in different species, but cross-infection can occur. NSW Health is liaising with the NSW Department of Primary Industries Regional Veterinary Laboratories to obtain samples of cryptosporidium for typing, to further elucidate the major culprits in human infections.

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

Hepatopathy and photosensitisation

Heliotrope (*Heliotropium europaeum*) poisoning caused significant cattle mortalities in the Wagga Wagga RLPB district. On one property up to 12 cattle become ill or died from this weed, with a poor prognosis given for the remaining affected animals. Most of the initial intake of heliotrope would have occurred last summer and autumn, illustrating how chronic heliotrope poisoning can be. Cases of hepatopathy and photosensitisation due to heliotrope were also seen in sheep.

Photosensitisation on forage rape (*Brassica napus* var. *biennis*) was seen in spectacular fashion, with large numbers of lambs being affected within a few days of being put on the crop. A total of 150 out of 2000 lambs were lost. There seem to be many anecdotal reports of photosensitization on this crop. The advice not to graze it until it is mature means that there is a very limited opportunity to utilize the feed unless there is an exceptional season.

Photosensitisation was seen with low calcium levels, rickets and low Vitamin E levels in weaned lambs on grazing wheat and triticale. Approximately 30% of lambs had evidence of photosensitisation. A smaller proportion (1% to 2%) suffered paralysis, with some animals responsive to calcium or magnesium treatment. Vitamin E deficiency was confirmed on one laboratory submission. Within a week two lambs broke limbs when yarded for shearing. Rickets was diagnosed on post mortem.

In the Hume Board small numbers of cattle with severe photosensitisation were seen on at least 10 farms in the Holbrook and Cookardinia areas. As with the situation in Wagga Wagga RLPB, heliotrope had been rife the preceding summer and autumn in the areas where the cases were seen. Photosensitisation occurred when cattle with pre-existing liver damage grazed rapidly growing mixed pasture.

For further information contact Tony Morton, DV Wagga Wagga RLPB, on (02) 6923 0900, or Steve Whittaker, DV Hume RLPB, on (02) 6040 4210.

Fibrous osteodystrophy in pigs

Fibrous osteodystrophy affected 45 grower pigs in a 17-sow piggery on the Central Tablelands over a period of 4 months during spring 2005.

The problem started when the pigs were moved to the grower shed. They became listless and showed inappetence and unwillingness to move; some animals had swollen joints. After illnesses of varying durations (generally several weeks) they died or were euthanased. The pigs were on home-prepared rations.

On autopsy two pigs showed bilateral severe swelling of the shoulder and elbow joints. When the joints were opened copious amounts of yellowish, clear viscous or gelatinous joint fluid escaped. Some areas of the synovial membrane showed mild nodular thickening. The humoral head was deformed and its joint cartilage showed marked wrinkling and crevices. The elbow joint cartilages also had extensive crevices. Many ribs showed thickening at different levels. The stomach and intestines contained grains.

Culture of joint swabs revealed no significant growth.

Joint and rib lesions in the pigs were suggestive of fibrous osteodystrophy. The condition occurs in young growing pigs on unsupplemented grain rations. Deficiency in calcium and excess dietary phosphorus

Below: Lamb with photosensitisation.

lead to secondary hyperparathyroidism. In an indoor situation vitamin D deficiency might be contributing. Analysis and adjustment of the calcium and phosphorus content of the ration were recommended.

For further information contact Erika Bunker, NSW DPI Orange Regional Veterinary Laboratory, on (02) 6391 3809.

Avian encephalomyelitis in Plymouth Rock chickens

Avian encephalomyelitis affected two 2- to 3-week-old Plymouth Rock chickens from a batch of 20 to 30 birds on a property near Parkes in December.

In one of three previous batches a few birds had shown similar signs to the chickens in this batch. The birds became weak, uncoordinated and unable to walk. Both chickens were euthanased and one was submitted for autopsy. The only gross lesion consisted of tiny white spots scattered on the right ventrolateral surface of the liver. On culture of the liver no growth was detected.

Histopathological examination revealed a moderate subacute non-suppurative encephalitis, consistent with a viral infection, and abnormal lymphoid aggregates in the muscular layer of the gizzard and proventriculus. These histopathological findings are suggestive of avian encephalomyelitis. The liver showed moderate multifocal necrosis and multifocal granulocyte infiltrations. The cause of the liver lesions could not be determined. There was no evidence of peripheral nerve lesions suggestive of Marek's disease. Immunohistochemistry testing of fixed brain tissue for Newcastle disease virus was negative.

Avian encephalomyelitis is controlled by vaccination of breeder flocks to prevent infection of breeders in lay and consequent egg transmission, as well as to provide maternal antibodies to young chickens.

For further information contact Erika Bunker, NSW DPI Orange Regional Veterinary Laboratory, on (02) 6391 3809.

Footrot

An increased number of lameness reports were received by the RLPBs in southern NSW, with virulent footrot, benign footrot, foot abscess and shelly toe seen.

Warm, wet weather in southern NSW provided good challenge conditions for footrot. Footrot inspections dominated RLPB animal health work during the quarter for a number of boards. Hume and Gundagai RLPBs utilised the opportunity to submit samples for DNA testing as part of the trial work to validate the new intA test being developed by Dr Brian Cheetham at the University of New England. The test uses PCR technology to test for the presence of the intA gene in *Dichelobacter nodosus* isolates. Results to date indicate a high correlation between the

Notifiable Diseases

Avian influenza exclusion

On 21 December 2005, the Acting CVO from Victoria notified that there was a weak positive reaction to laboratory testing for the universal H (avian influenza) antigen from sick birds from a backyard flock in Wentworth in south-western NSW. Two parrots and one budgerigar had died over the previous 6 months. A number of chickens had also died over the previous 2 months. There were two ducks on the farm.

Further testing at the Australian Animal Health Laboratory (AAHL) at Geelong on 22 December supported the presence of the avian influenza H5 antigen. As a result the property was placed in quarantine and more samples were collected and sent to AAHL by air charter. On 24 December, AAHL advised that all serological and PCR tests were negative and that the first result was a false positive. As a result the property was released from quarantine. Further investigations confirmed that the poultry had died of Marek's disease.

For more information contact Greg Curran, NSW DPI Broken Hill, on (08) 8087 1222.

Foot and mouth disease (FMD) exclusion

A private practitioner attended three Hereford heifers near Wagga Wagga with mouth ulcers and fever. The heifers had been purchased 3 months previously from a property where heliotrope was present, and were now grazing lush pasture.

Although photosensitisation was the most likely diagnosis, the presence of oral lesions resembling FMD lesions could not be disregarded. DV Wagga was called to the property to exclude FMD. Samples sent to AAHL were FMD negative.

For more information contact Tony Morton, DV Wagga Wagga RLPB, on (02) 6923 0900.

Equine herpesvirus (EHV1) abortion

There were four cases of EHV1 abortion reported in NSW during the quarter. Cases were located in the districts of Hunter (one thoroughbred and one miniature pony), Central Tablelands (stockhorse) and Nyngan (thoroughbred). The two cases outside the Hunter district had tracings to known infected properties, one in NSW and the other interstate. All cases were confirmed as EHV1 by laboratory examination of foetuses.

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

Enzootic bovine leucosis (EBL) in a beef herd

EBL infection was serologically confirmed in a 7-year-old Friesian cow that was part of a herd of 85 beef and dairy/house cows. The animal was noted to have been unwell following recent weaning of two calves and was attended by a local practitioner, who noted loss of body condition and enlarged lymph nodes. The cow was humanely destroyed. Further investigation of the herd found two more animals serologically positive to EBL. One of these has since died. The other has been separated from the herd, and as soon as its calf has been weaned it will be sold for slaughter only. Progeny of affected animals have so far tested negative. The original animals in the herd had been purchased as poddy calves from various sources, including a disbanded dairy.

For further information contact Andrew Biddle, DV Northern New England RLPB, on (02) 6732 1200.

Anthrax

There were five confirmed anthrax cases during the quarter. The first case involved eight deaths in a herd of 420 beef cattle on a Northern Slopes property during September and October. Although the property is not located in the usual area endemic for anthrax, the disease was reported nearby in 1973 in the Gwydir River area around Moree.

The next three cases were on a cluster of properties near the border of the Murray and Riverina districts, where deaths occurred in early December. The properties were separate but located within a 7-km radius. Confirmations of anthrax on the three properties were made within 1 week. Two cattle and two sheep died on one property from a population of 442 beef cattle and 1650 sheep; five deaths out of 2000 sheep occurred on the next, and a single animal died in a herd of 700 beef cattle on the last property in the cluster.

presence of the intA gene and the ability of the isolate to cause virulent footrot, as assessed by field veterinary diagnosis. The test shows considerable promise in sorting out difficult cases where the gelatin gel test result indicates stable isolates but the field veterinary diagnosis suggests benign footrot.

At the NSW Footrot Steering Committee meeting in November, applications were approved from the Goulburn and Young RLPBs to progress the whole of those Boards to Protected Area status for footrot (footrot flock prevalence < 1%). This now leaves only six Boards throughout the State with footrot Control Areas (two whole, four part – see map)

The Footrot Steering Committee set the end of December 2006 as the target for the whole State to reach Protected Area status.

A new policy and procedure on Tracing for Footrot was released during the quarter to provide guidance in determining the source of footrot infection and ensuring any movements are promptly followed up. As the prevalence of footrot continues to decline, improved tracing will be more important to identify footrot-infected flocks.

For further information contact John Seaman, NSW DPI, on (02) 6391 3248.

Cattle ticks

By 31 December two infestations of cattle ticks (*Boophilus microplus*) had been detected. At the same time last year six had been detected. The planned October start to eradication programs, for infestations detected last year, was delayed on some properties west of the Richmond Range owing to drought. All eradication programs are now in progress.

For further information contact Peter McGregor, NSW DPI, on (02) 6626 1334.

Transmissible spongiform encephalopathy

Thank you very much to all of the vets who collected brains for the National Transmissible Spongiform Encephalopathy Surveillance Program (NTSESP) program during 2005. There were 140 sheep brains and 119 cattle brains submitted from NSW to the NTSESP program during the year. NSW exceeded its cattle target of 87 samples but fell a little short of the sheep target of 153 samples. Please continue to collect samples from any cattle or sheep that meet the eligibility criteria during 2006. You are particularly encouraged to submit sheep samples, as NSW often has difficulty meeting the number required by the program. The NTSESP program is essential for maintaining Australia's meat export markets by demonstrating Australia's ongoing freedom from BSE and scrapie. It will also provide early detection of those diseases should they occur.

For more information contact Sally Spence, NSW DPI Orange, on (02) 6391 3630, and see the NTSESP website at: http://www.animalhealthaustralia.com.au/aahc/programs/adsp/tsefap/tse_ntsesp.cfm

The fifth case involved 40 deaths out of 700 ewes and lambs on a Condobolin district property in late December.

All cases were managed as per NSW DPI Anthrax policy. Properties were quarantined, carcasses were burned on site, and all at-risk stock were vaccinated. Tracing of cattle movements from one of the affected properties found that stock had moved to five separate destinations in the few days previous to the diagnosis being made, and no at-risk movements were detected. The National Livestock Identification System (NLIS) cattle database proved very useful in identifying the stock movements.

Seven investigations of mortalities in the Condobolin and Molong districts excluded anthrax as the cause of death. Three cases involved cattle in which the final diagnoses were hepatopathy or ruminal lactic acidosis. No alternative diagnoses were made in the four sheep cases.

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

Strangles

During the quarter one strangles outbreak was reported. It occurred at a veterinary clinic, and six horses were affected and treated. Other horses on the property were vaccinated and immediately isolated from the affected animals.

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

TSE surveillance submissions by RLPB, 1/10/2005 to 31/12/2005

RLPB	DV sheep	DV cattle	Abattoir sheep	Abattoir cattle	Private vet sheep	Private vet cattle	Total sheep	Total cattle
Armidale	5	2	1			1	6	3
Bombala	3						3	
Braidwood	1						1	
Casino		1						1
Central Tablelands		2			1	2	1	4
Cooma	2						2	
Coonabarabran	2	1			1		3	1
Coonamble	1						1	
Dubbo					3		3	
Goulburn					1		1	
Grafton				1				1
Gundagai	2						2	
Hume	2			1	6	17	8	18
Molong	3						3	
Moree						1		1
Moss Vale		1				1		2
Murray					1	2	1	2
Narrabri	2	5					2	5
Narrandera	6	1					6	1
Northern New England	1				1		2	
Northern Slopes		2						2
Riverina	1				1	4	2	4
Tamworth						1		1
Tweed-Lismore						1		1
Wagga Wagga	6						6	
Total	37	15	1	2	15	7	53	47

Internal parasites: anthelmintic resistance in sheep

Resistance to anthelmintics is still a big issue (see 'Sheep worm control and drench resistance' at http://www.agric.nsw.gov.au/reader/sheep-internal). In fact, it is becoming increasingly important because resistance to macrocyclic lactones (MLs) seems to have accelerated in recent years. This is economically important because, although integrated parasite management is being promoted, worm control still depends heavily on the use of drenches. From an economic point of view, worms remain the number one health issue for the Australian sheep industry.

The recent, rapid increase in prevalence of resistance to the MLs is illustrated in the graph below from Dr David Hucker, a sheep veterinary consultant in Victoria.

Resistance to the MLs (to ivermectin, at least) occurs on around 50% to 60% of farms in the Northern Tablelands of NSW and in the sheep/wheat zone of Western Australia. The prevalence of resistance (resistance being defined as < 95% faecal egg count reduction on test) is probably lower for abamectin (a more potent avermectin than ivermectin) and still lower for moxidectin, which is a milbemycin and the most potent of the ML-based sheep products on the Australian market. (Avermectins and milbemycins are sub-groups of the ML group.)

Resistance is not just a feature of higher rainfall areas. Recent survey work by Drs Harry Suddes and Dan Salmon, District Veterinarians for the Murray and Riverina RLPBS, respectively, showed that around one-third of farms studied had resistance to ivermectin. This adds weight to the 'refugia theory' that environmental influences, as well as frequent usage of drenches and under-dosing, are important factors in the development of drug resistance in sheep worms. (The 'refugia theory' maintains that when few worms escape exposure to a drench, then selection for resistance in the worm population is higher. Worms in refugia are usually free-living stages on pasture or worms inside sheep that have not been drenched.) On some WA farms, ivermectin resistance appeared after just four or five uses of the drench. Drenching onto very clean pastures—or drenching unnecessarily in droughts—might give excellent worm control (because of low rates of reinfection), but a likely cost is a higher likelihood of selection for drench resistance.

Most farmers have little or no objective information on which drenches work on their farms, despite ongoing DPI extension advocating drench resistance testing (DrenchTests) or—at the very least—periodic DrenchChecks (a worm egg count (WormTest) shortly after routine drenching of a mob of sheep).

The single most effective thing producers can do to improve their worm control is to start regular WormTesting. This will have a number of effects:

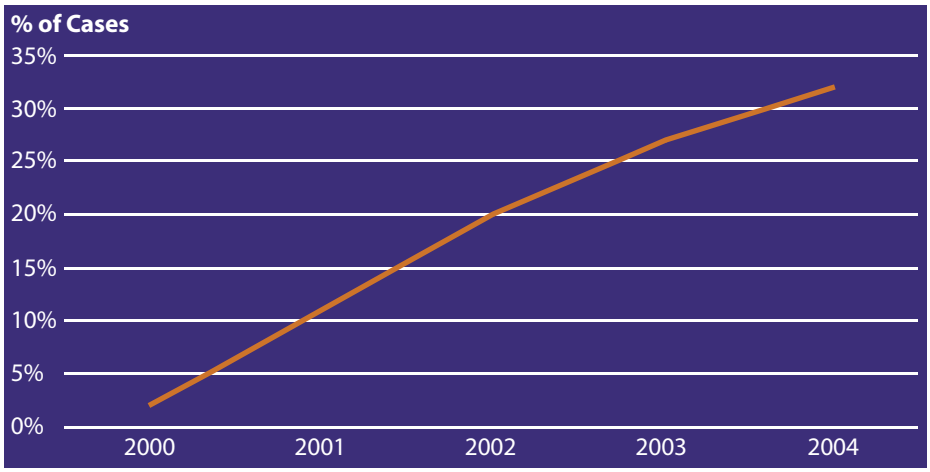
- Farmers will have objective information rather than 'guestimates' on which to base drenching decisions.
- Using WormTest as a DrenchCheck, farmers will build up objective information on what their drench options are.
- WormTesting will improve the 'feel' for how worms work on a particular farm— or parts of a farm—and how well that farm's worm control program is working.
- Regular WormTesting helps to shift worm control from the 'abstract' to the 'concrete'.
- WormTesting gives more power back to the farmer (wresting some from experts, marketers and resellers).
- WormTesting encourages farmers to get better educated on worm control.
- WormTesting can help avert overt disasters and (more importantly) covert, silent

How wormy at slaughter?

(WA abattoir study)

	Lambs	Hoggets	Adults
Average Worm Egg Count	1,525	1,159	486
Scouring Mobs	55%	48%	52%

Worm egg counts in sheep at slaughter (adapted from Besier et al., Department of Agriculture, WA)



Above: Prevalence of resistance to MLs is increasing by year (Victorian data, source: D Hucker)

Left: Resistance to drenches is a big issue. (Note: 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 NSW DPI over any equivalent product from another manufacturer.) Photo courtesy J Bailey/ Veterinary Health Research.

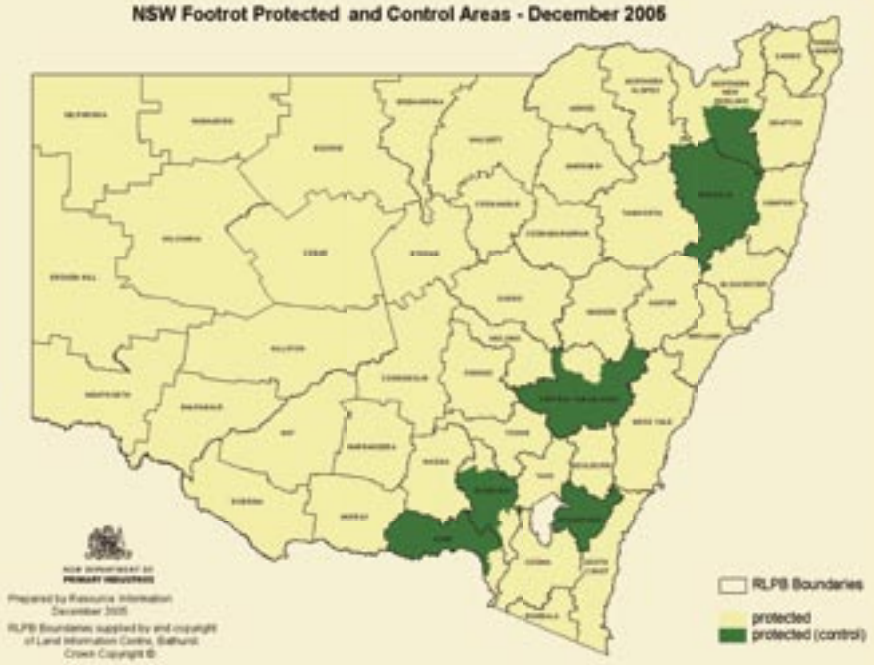
production losses. (See the graph at left for an indication of egg counts at slaughter in a WA study. Some of these sheep were prime lambs. The production losses could be quite substantial.)

Internal parasites: anthelmintic resistance in cattle

Resistance of cattle worms to drenches seems to lag behind that of sheep worms, although 'next door' in New Zealand there is resistance in cattle *Cooperia* to ML-based cattle drenches. In Australia there are a small number of reports of resistance in cattle worms (in the stomach hair worm *Trichostrongylus axei* to benzimidazole drenches).

However, resistance to the MLs almost certainly is developing, especially where there is intensive use of MLs (for example to control cattle tick). ML resistance arose in NZ in intensive vealer production systems with frequent drenching. Whether environmental influences, such as unnecessary drenching of cattle (especially adults) in dry years or dry areas, will also be a factor in the emergence of ML-resistant cattle worms in Australia is unclear.

For further information contact Stephen Love, NSW DPI, on (02) 6773 2480.



Above: There are six remaining RLPBS in NSW that have Control Areas for footrot. In four of these the Control Area covers only part of the RLPB.

Getting Information on Animal Diseases

This surveillance report can only convey a very limited amount of information about the occurence 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 & 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

Prepared by:

Barbara Moloney
Technical Specialist, Disease Surveillance and Risk Management
Locked Bag 21, Orange NSW 2800
Phone (02) 6391 3687 or fax (02) 6361 9976
e-mail: barbara. moloney@dpi.nsw.gov.au

and

Sarah Robson
Regional Animal Health Leader , Wagga Wagga Agricultural Institute, Wagga Wagga NSW 2650
Phone (02) 6938 1967 or fax (02) 6938 1995
e-mail: sarah.robson@dpi.nsw.gov.au

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

NSW DEPARTMENT OF
PRIMARY INDUSTRIES

30/01/06 - 6412