

# NEW SOUTH WALES ANIMAL HEALTH SURVEILLANCE

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

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## QUARTERLY HIGHLIGHTS

### Investigation of familial neurological disease in goats

Neurological disease in three closely related goats was reported from a property in the Rylstone area of NSW.

A juvenile buck was euthanased on farm due to an owner-diagnosed neuromuscular condition. Neurologic signs later developed in twin female relatives of this goat, which were born in September 2002.

One of the females developed neurological signs of incoordination, tremor and skin lesions. The brain was submitted in September 2006 for examination under the national TSE Freedom Assurance Program. Samples were found to be negative for Scrapie and no lesions were seen on histological examination of the brain and

lumbar spinal cord. The female twin to this goat also developed a nervous temperament, hind limb ataxia and proprioceptive deficits.

The second doe was transported to the RVL Orange, and on clinical examination was found to be in good body condition and ambulatory despite neurological deficits in the hind limbs. On post-mortem examination a cervical vertebral malformation was detected. This was causing severe spinal cord compression at C2-C3, which explained the observed clinical signs. Histological lesions of Wallerian degeneration were present in the cervical spinal cord but not in the thoracic or lumbar cord. The lesion was most likely congenital and may have had an inherited genetic component because the related animals showed neurological signs. Inbreeding may have played a role in this possibly inherited genetic condition.



The first doe examined had incoordination, tremor and skin lesions. Photo by David Gardiner.

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This case highlights the value of a detailed post-mortem examination of the nervous system in animals showing signs of neurological disease. As it is difficult to examine the full length of the vertebral column adequately in the field, practitioners should contact their local laboratory for advice. In the case of the second doe, a TSE was able to be ruled out, and valuable diagnostic information was provided to the owner of the goats.

**For further information contact David Gardiner, DV Mudgee-Merriwa RLPB, on (02) 6372 1866.**



*Section of cervical spine from the twin sister of the doe pictured on the previous page. This animal had displayed hind limb ataxia and proprioceptive deficits. Notice the severe spinal cord compression at C1-C2 caused by a vertebral malformation. Photo by Patrick Staples.*

### Arsenic poisoning in cattle

Mortalities of six out of 80 nine month old steers and two out of 29 young calves occurred at different times on the same paddock on a property in the Forbes district. The affected animals were well grown and in good condition at the time of death.

Initially deaths occurred in the steers in October 2006. Post mortem investigation of the steers revealed an acute suppurative cholangiohepatitis, suggestive of a bacterial cause, but the aetiological agent could not be isolated. Losses stopped when the steers were removed from the paddock. Approximately 6 weeks later a mob of cows and calves were grazed on the same paddock, and mortalities were soon noted in the calves. None of the cows showed any clinical signs. The first calf was seen with profuse watery diarrhoea and died soon after. The second calf was found dead.

Post mortem examination of the calves revealed high levels of arsenic in the liver tissues.

Further investigation of the paddock revealed a deposit of white powder that had been uncovered by the construction of a silage pit in the paddock. Testing of the powder confirmed that it contained arsenic. It was assumed that the powder was from unused animal treatment

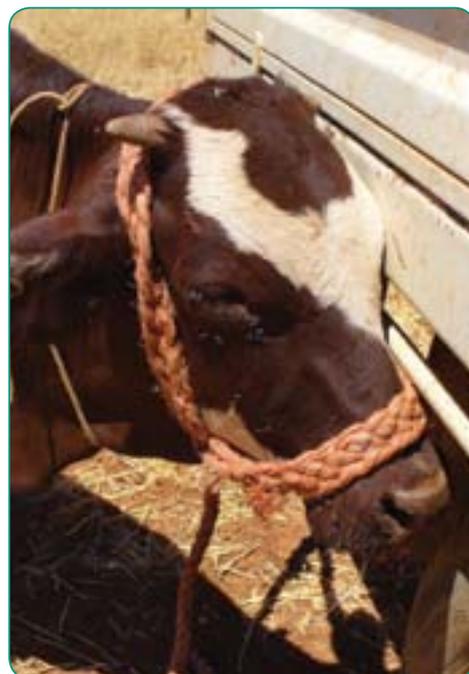
products that had been buried many years ago and inadvertently exposed by the construction of the silage pit.

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

### Lead poisoning

During the quarter a total of 17 cases of lead poisoning were investigated by District Veterinarians in NSW. The investigations involved over 2300 cattle, of which 68 had died because of the poisoning. All the animals that had access to the lead sources were detained for 8 months. Cattle that had clinical lead poisoning were detained for a period of 14 months. Cattle access to old car batteries that had been dumped at roadsides and rubbish tips was the main reason for poisoning incidents.

One of these cases took place in a mob of travelling cattle on stock routes in the Wagga and Gundagai Rural Lands Protection Board districts. Prolonged drought leading to the grazing of cattle in unusual places, together with the improper disposal of car batteries, were contributing factors in this case. Four cattle in a mob of 750 died after showing arching of the back and apparent blindness. Laboratory examination showed high levels of lead in the blood of the affected stock and in 19 other cattle. The cattle were placed under detention and will not be released for sale until blood lead levels return to normal.



*Steer with lead poisoning. Notice the depression, wasted appearance and sunken eyes. Photo by Charlotte Cavanagh.*



Steer with lead poisoning. Notice the depression, wasted appearance and sunken eyes. Photo by Charlotte Cavanagh.

Lead poisoning was confirmed on post mortem of a sick steer in the Cobar district in November. The 8 month old Santa Gertrudis steer was found away from the mob, reluctant to move and staggering when pushed. It was wasted, dehydrated and apparently blind.

Blood lead level was 4.7  $\mu\text{mol/L}$  (normal blood lead level is less than 0.2  $\mu\text{mol/L}$ ). Brain histology revealed a diffuse neuronal necrosis in the cerebral cortex; this is consistent with lead poisoning.

Unfortunately the source of lead was not identified.

Blood lead levels were measured in most of the remaining cattle to enable release from the eight month detention placed on the mob.

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

### Photosensitisation

Lantana poisoning was confirmed in a mob of 47 cattle in the Casino Rural Lands Protection Board. Affected heifers were jaundiced, febrile and sought shade. They were in pain and went down when handled. The skin around the muzzle and ears was peeling and crusting. Blood chemistry showed serious liver disease and haematology showed a few *Theileria buffeli* but no *Babesia* or *Anaplasma*. Animals recovered when denied access to lantana.

**For further information contact Phil Kemsley, DV Casino RLPB, on (02) 6662 3166.**

### Fireweed toxicity

Six of 31 Hereford cows with calves at foot died with gastrointestinal disease on the NSW south coast in October/November. The affected cows were in poor condition, and showed

scouring and straining during defecation. Rectal prolapses were evident in several prior to death. The differential diagnoses included Johne's disease, salmonellosis, internal parasites and plant toxins. Post-mortem examination showed extensive pulmonary and gastrointestinal tract oedema and a thickened, corrugated ileum. The gallbladder was enlarged and the liver was small and fibrotic and showed severe histological lesions typical of pyrrolizidine alkaloid toxicity. Dry fireweed was present in the pasture and was determined to be the cause of the deaths.

**For further information contact Ian Lugton, DV South Coast RLPB, on (02) 6492 1283.**

### Death in feedlot cattle

Aflatoxicosis was suspected as the cause of death of 35 out of 130 feedlot steers and heifers that died in the Scone district following a change in feed ration. The most consistent sign in the animals autopsied was liver pathology, although a range of signs including severe congestion of the intestines, pneumonia and neurological signs such as ataxia and mania were observed. No infective agent was isolated.

Although the ration formulation appeared suitable for feeding in a feedlot, there were areas of decomposition in the wheaten straw used in the mix.

**For further information contact Jim Kerr, DV Hunter (Scone) RLPB, on (02) 6545 1311.**

### Theileriasis

A bull introduced from Coolah to the Gloucester area in October became lethargic, inappetent and very anaemic (packed cell volume of 15%) 6 weeks after introduction.

Approximately 5% of its erythrocytes were parasitised with *Theileria buffeli*.

*Theileria buffeli* is usually considered non-pathogenic and theileriasis is not recognised as a problem in animals bred in the central and mid north coast areas of NSW. However, problems can sometimes occur with introduced stock with no previous exposure to the organism. Occasionally, such stock can develop severe anaemia, which needs to be differentiated from babesiosis. The movement of drought affected stock from western NSW areas to agistment in the coastal areas may lead to further cases of theileriasis.

**For further information contact Allan Glassop, DV Gloucester RLPB, on (02) 6553 4233.**

### Verminous encephalitis

A 3-year-old cow in the Grafton RLPB district showed Horner's syndrome (backward displacement of the eyeball into the orbit, drooping of the upper eyelid, slight elevation of the lower eyelid, and constriction of the pupil caused by paralysis of the cervical sympathetic nerve supply), ataxia, anxiety and circling over a period of 7 to 10 days. The cow was euthanased and the brain was submitted for TSE exclusion. A focal lesion was demonstrated in the brainstem and was most likely due to migrating worm larvae.

Verminous encephalitis is rare in most animals, including cattle, but a number of parasite species including both nematodes and cestodes can cause CNS lesions as a result of tissue migration.

**For further information contact Keith Newby, DV Grafton RLPB on (02) 6642 3699.**

### Calf scours

The western division of NSW reported cases of salmonellosis in calves during the quarter. Salmonellosis was suspected but not confirmed in a case at Hillston where 10 calves/ weaners died in a mob of 80 cows and calves. Diarrhoea and scouring were the predominant signs, along with depression, inappetence and weakness. A post-mortem examination of an affected calf showed an inflamed large intestine, and the bile was thickened and granular. There was also a severe tracheitis and pneumonia, suggesting that more than one clinical condition was present.

Rotavirus, coccidiosis and cryptosporidiosis were excluded as causes.

In the southern slopes region of NSW calf scour cases were investigated in Hume RLPB during October. Losses were as heavy as 12 out of 70 in one incident. In most cases affected calves were born to heifers. Common factors included nutritional stress, temperature extremes and the presence of black flies. Most cases were associated with pathogenic *E. coli*.

Five cattle herds experienced scours and deaths in calves across the southern slopes region in November. *E. coli* was diagnosed in three herds and *Salmonella typhimurium* in another. The remaining herd was negative for salmonella and rotavirus and had small numbers of coccidia in the faecal sample submitted. Morbidity ranged from 8%-50% and mortality from 2%-10%.

In December, 15 dairy calves, 2-6 weeks old, died over several weeks in a herd in the Wagga RLPB. All had scours and showed lethargy progressing to death within 48 hours. One calf was post mortemed and samples were submitted to the laboratory. *E. coli* and *Pseudomonas aeruginosa* were isolated from umbilical discharge; however there was no sign of septicaemia or enteritis. Salmonella cultures were negative.

**For further information contact Greg Curran, NSW DPI, on (08) 8087 1222 or Luzia Rast, NSW DPI, on (02) 6938 1993.**

### Ovine brucellosis testing in the Western Division of NSW

RAHL Bourke tested 1008 rams for ovine brucellosis during the quarter, 739 in Brewarrina RLPB, 240 in Bourke RLPB and 29 in Cobar RLPB. To date 135 rams have been found positive for *B. ovis* infection. A test and cull program has been initiated on properties where infection has been detected.

**For further information contact Charlotte Cavanagh, NSW DPI, on (02) 6872 2077.**

### Infectious coryza

Infectious coryza was the probable cause of high mortalities and sickness in a flock of 500 free-range poultry in the Mudgee-Merriwa region in October, 2006.

The hens were 7 months old. Thirty had died over the previous weeks and 300 were sick out of a batch of 500. Affected hens were severely depressed, huddled in corners of pens,

shaking their heads and making sneezing sounds. There was an associated drop in egg production of 75%. Dead and dying hens had congested and cyanotic wattles. Post-mortem findings included whitish exudate in the infraorbital sinuses and moist laryngeal mucosae. There were no consistent lesions in the abdominal tract or in associated organs.

The hens were on dirt due to the drought and had no access to green feed. They were vaccinated against fowl pox and other respiratory diseases. Ducks were concurrently run on the property and were apparently unaffected. *Haemophilus paragallinarum* was not isolated, possibly because of its fragile nature or the chronic nature of the lesions sampled, but coryza was strongly suspected. Both avian influenza and infectious laryngotracheitis were excluded.

**For further information contact David Gardiner, DV Mudgee-Merriwa RLPB, on (02) 6372 1866.**

### Polioencephalomalacia in lambs

Signs associated with a central nervous system disorder were found in a flock of sheep near Braidwood in November. Of the 80 susceptible lambs, seven died and 17 showed ataxia, inability to stand or maintain sternal recumbency, and paddling. The main diet was processed sheep nuts. They also had access to small amounts of phalaris grass and to a straw/molasses/grass seed mixture. Gross pathology was non-specific but histopathology revealed polioencephalomalacia associated with thiamine deficiency. The diet was changed, the lambs were injected with thiamine, and losses ceased.

**For further information contact Bob Templeton, DV Braidwood RLPB on (02) 4842 2536.**

## NOTIFIABLE DISEASES

### Hendra virus

One of two horses in a paddock in Murwillumbah NSW showed neurological and respiratory signs consistent with Hendra virus infection. The affected horse had a fever, respiratory distress, ataxia and contorted facial muscles but no frothy nasal discharge. The horse was examined by a private practitioner and was euthanased on 31 October. Samples were taken for Hendra virus testing at AAHL.

Lung tissue was PCR and culture positive for Hendra virus. The companion horse remains healthy and tested negative for Hendra virus.

The horse paddock contains trees that were roosts for flying foxes (fruit bats in the genus *Pteropus*). The horses were fed in troughs located under the trees.

NSW Health provided advice to the attending veterinarian and the horse's owner because of the zoonotic potential of Hendra virus.

There have been six previous incidents involving Hendra virus in Australia, and none has spread from the initial focus. The 1994 outbreak was confined to stables near Brisbane (Queensland), while the 1995 death of two horses from one farm near Mackay (Queensland) was an isolated incident. In the cases in 1999, 2004 and June 2006 (all in Queensland), single horses were affected in each case.

Approximately one Hendra virus exclusion test is performed within NSW each year – all previous tests have been negative.

Hendra virus is not highly contagious: horses are thought to be infected by eating material heavily contaminated with the virus (e.g. via bat urine or birthing fluids, placental material and aborted pups). Signs in horses typically include breathing difficulties, high fever, and blood-tinged foamy discharge from the nose and mouth.

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

## Anthrax

Six sporadic incidents of anthrax in sheep and cattle were reported from October to December in areas where anthrax has previously been diagnosed. Four of the incidents occurred in flocks or herds where routine vaccination had been interrupted. In October, five lambs from a flock of 1600 died after being introduced to a property at Hillston. On 12 October, four dry heifers from a herd of 600 dairy cattle at Finley died 21 days after introduction to a dry heifer feedlot. In November at Nyngan, approximately 20 sheep died out of a mob of 1860 two-year-old crossbred ewes grazing a failed wheat crop and a further 30 sheep from a flock of 1000 were affected at a Condobolin property. Another Condobolin property lost 20 unvaccinated

lambs. At Berrigan, four unvaccinated cattle were affected in December.

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

## Infectious laryngotracheitis (ILT) in poultry

Infectious laryngotracheitis was diagnosed in a poultry flock in the Hume RLPB. The enterprise consisted of show and commercial chickens, approximately 500 birds in total.

The mortality rate was around 60%. Increasing mortality rate over 2 weeks, mucopurulent nasal discharge, some ocular discharge, increased respiratory rate and coughing were the signs observed.

The birds were not vaccinated, and sourcing vaccine once ILT was confirmed proved difficult due to a supply shortage.

ILT is a notifiable disease in NSW, as the clinical signs of ILT are similar to the early stages of virulent Newcastle disease (exotic to Australia).

**For further information contact Steve Whittaker, DV Hume RLPB, on (02) 6040 4210.**

## Foot and mouth disease (FMD) excluded as the cause of tongue lesions in calves

An AQIS veterinarian detected healed ulcers on the tongues of a number of calves killed at Casino abattoir and submitted samples for diagnosis, including FMD exclusion, at AAHL. Vesicular viruses were excluded as the cause of the lesions and a diagnosis of oral dermatophilosis was made.

**For further information contact Paul Freeman, NSW DPI on (02) 6626 1214.**

## DISEASE SURVEILLANCE AND CONTROL PROGRAMS

### Sheep worms

With drought conditions over much of NSW, worm egg counts will generally remain low, but experience tells us that worms can still be important in droughts. Here are some of the reasons:

- Selection for drench resistance is probably higher if drenching is conducted under

drought conditions, which reduce survival of the free-living stages of sheep roundworms.

- Management changes in drought can create the potential for significant worm problems. Grazing sheep on small areas for the purposes of feeding means there are always large numbers of viable worm eggs ready for when moist conditions do occur, if only briefly.
- Some roundworms are well adapted to dry conditions, for example, *Nematodirus* (thin-necked intestinal worm), which has very tough eggs. Other species, notably *Haemonchus* (barber's pole worm), make the most of windows of opportunity by way of high fecundity.
- Host immunity may suffer during a drought, making even dry adult sheep more susceptible to worms.

### The basics are still important in a drought:

- Follow the principles in programs such as DrenchPlan, WormKill, and WestWorm.
- This includes monitoring sheep 'worminess' and drench efficacy by using regular worm egg count monitoring.

### Sheep worms and drench resistance

The biggest change in drench resistance Australia-wide in the last few years has been the development of macrocyclic lactone resistance in *Haemonchus* and *Ostertagia*.

Roughly two out of three farms in summer rainfall areas (northern NSW) have ivermectin-resistant *Haemonchus*. A similar proportion of Western Australian farms – and possibly one in three farms in parts of NSW – have ivermectin-resistant *Ostertagia*.

Farmers in recent years have taken refuge in moxidectin (Cydectin®) because of its persistency and potency; however there are indications that its days are numbered. Bailey and Nielsen (2005) analysed data from the Armidale-based laboratory, Veterinary Health Research. A summary of some of their data is presented in Figure 1 overleaf. This shows the percentage of farms (mostly from northern NSW) that had positive worm egg counts (WEC) at a time after drenching when egg counts should have been zero if the product if the product were still highly effective.



## Enzootic bovine leucosis (EBL)

Figure 3 below shows the EBL status of NSW dairy herds as at the end of October 2006.

**Figure 3: EBL status of NSW dairy herds**

MONITORED FREE	919 herds (95.6%)
BMT NEGATIVE	20 herds (2.1%)
NOT ASSESSED	22 herds (2.3%)
TOTAL	961 herds

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

## National Organochlorine Residue Management (NORM)

The NORM program provides added assurance to domestic and international markets that NSW beef is free of unacceptable residues of organochlorine (OC) chemicals such as DDT and dieldrin. Affected properties are given a 'T' (Test) status on the NLIS database. Cattle from 'T' status properties are subject to targeted surveillance at abattoirs; vendors are required to disclose whether any sale cattle were resident on a 'T' status property in the 6 months prior to sale.

Affected properties can advance to 'R' (Resolved) status only after audits confirm the successful implementation of a property management plan (PMP) to prevent future OC residue problems. PMP audits have been undertaken primarily by District Veterinarians. In future, producers' compliance with PMPs on 'R' status properties will be confirmed by audits done as part of industry product integrity and quality assurance programs such as Livestock Production Assurance and Cattlecare.

During the quarter, 12 desk audits and 24 field audits were carried out as part of the NORM program in NSW.

The number of NSW properties with the assigned NORM status as at the end of December 2006 was as shown in Figure 4.

## Johne's disease

The number of cattle herds in NSW infected with Bovine Johne's disease (BJD) as at 31 December 2006 is shown in Figure 5.

The number of flock or herds enrolled in Johne's Disease market assurance programs (JD MAP) as at 31 December 2006 is shown in Figure 6 overleaf.

**Figure 4: NSW properties with a NORM as at December 2006**

SRAHM District	'R'	'T1'	'T2'	'T3'	'T4'	TOTAL
Central Slopes	22		1	8		31
Northern Slopes	160	2	1	10	1	174
South Coast	43		1	5		49
Southern Slopes	15					15
Western Divisions	3					3
<b>TOTAL</b>	<b>243</b>	<b>2</b>	<b>3</b>	<b>23</b>	<b>1</b>	<b>272</b>

**Figure 5: BJD - infected herds**

RLPB	DAIRY	BEEF	TOTAL
Casino	17	13	30
Coonamble		1	1
Forbes	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	12	1	13
Northern New England		1	1
Riverina	10		10
South Coast	15	1	16
Tweed Lismore	12	14	26
Wentworth		1	1
<b>Total</b>	<b>80</b>	<b>37</b>	<b>117</b>

## 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>

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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>

### Disclaimer

The information contained in this publication is based on knowledge and understanding at the time of writing (March 2007). 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.



NSW DEPARTMENT OF  
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**Figure 6: Flocks and herds enrolled in JD MAP as at 31 December 2006**

	Herd type	Results of status testing at each stage (number of herds)						TOTAL
		MN1	MN1-V	MN2	MN2-V	MN3	MN3-V	
AlpacaMAP	Stud	5		18		79		102
	Other	1		1		8		10
	<b>Total</b>	<b>6</b>		<b>19</b>		<b>87</b>		<b>112</b>
CattleMAP	Stud	72		141		218		431
	Other	62		44		41		147
	<b>Total</b>	<b>134</b>		<b>185</b>		<b>259</b>		<b>578</b>
GoatMAP	Stud	10		15		4		29
	Other	2		0		2		4
	<b>Total</b>	<b>12</b>		<b>15</b>		<b>6</b>		<b>33</b>
SheepMAP	Stud	14	17	22	31	138	32	254
	Other	12	10	18	5	36	2	83
	<b>Total</b>	<b>26</b>	<b>27</b>	<b>40</b>	<b>36</b>	<b>174</b>	<b>34</b>	<b>337</b>

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

MNn-V = Flocks being vaccinated against OJD (sheep only)

## Transmissible spongiform encephalopathy (TSE) surveillance

TSE surveillance continued during the quarter. All samples were negative. Figure 7 shows the number of animals tested for TSE in each RLPB district during the period 1 October 2006 to 31 December 2006.

**Figure 6: TSE submissions by RLPB, 1 October 2006 to 31 December 2006**

RLPB	DV sheep	DV cattle	Abattoir sheep	Abattoir Cattle	Private vet sheep	Private vet cattle	Total sheep	Total cattle
Armidale	16	1					16	1
Bombala	1						1	
Braidwood	1						1	
Casino		1						1
Central Tablelands	2						2	
Condobolin	2						2	
Cooma	1						1	
Coonabarabran	2	1					2	1
Dubbo			8				8	
Goulburn		1	5				5	1
Grafton		1				1		2
Hume		1			3	4	3	5
Hunter		1						1
Kempsey		2						2
Moss Vale						1		1
Mudgee-Merriwa	2				10		12	
Narrabri		1						1
Northern New England		2						2
Northern Slopes	1	2					1	2
Riverina	1					1	1	1
Tweed-Lismore		1						1
Wagga Wagga	1						1	
Yass			4				4	
Young	1						1	
<b>Total</b>	<b>31</b>	<b>15</b>	<b>17</b>	<b>0</b>	<b>13</b>	<b>7</b>	<b>61</b>	<b>22</b>

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