ANIMAL HEALTH SURVEILLANCE QUARTERLY
Newsletter of Australia's National Animal Health Information System

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Quarterly Report for 1 October to 31 December 1997

Preface

An article about recent international recommendations that all countries institute surveillance programs for transmissible spongiform encephalopathies leads this issue of the *Animal Health Surveillance Quarterly*. The eradication campaign against bovine tuberculosis entered a new phase with the declaration of Australia's freedom from the disease. There is also an article on the recent virulent avian influenza outbreak in poultry near Tamworth in New South Wales, as well as highlights of disease surveillance activities, and items of interest from States and Territories.

This issue summarises the findings of disease surveillance and monitoring activities reported to the National Animal Health Information System (NAHIS) for the period from 1 October to 31 December 1997. Only summary information is recorded in NAHIS, with detailed data being maintained by the source organisation. The information included in this report is accurate at the time of publication but, because of the short reporting and production time, minor discrepancies may occur.

I commend this report as a reference document and am sure that you will find it useful.

GARDNER MURRAY
Australian Chief Veterinary Officer

Surveillance Program for Transmissible Spongiform Encephalopathies

In 1988, the United Kingdom reported that it had identified a new disease in cattle and called it bovine spongiform encephalopathy (BSE). It was postulated that the disease was caused by a scrapie-like agent and was being spread by the feeding of rendered meat meal and bone meal to cattle. In rapid succession, spongiform encephalopathies were recognised in ruminants in zoos, and in domestic and wild cats.

In March 1996, the United Kingdom reported cases of Creutzfeld–Jakob disease (CJD) that did not fit the classical description of that disease. Affected people were younger and the clinical signs and pathology were different to classical CJD. Although the causative agent of new variant CJD was not known at the time, the possibility was raised that it may have arisen from the consumption of BSE-infected meat.

In April 1996, the World Health Organization advised countries on precautions to prevent the spread of a transmissible spongiform encephalopathy (TSE) in countries with and without BSE and other TSEs such as scrapie in sheep. The advice for countries like Australia and New Zealand was to:

- ban the feeding of meat meal and bone meal (rendered ruminant protein) to ruminants; and
- review the rendering practices in the country.

In May 1996, industry placed a voluntary ban on the feeding of rendered ruminant proteins to ruminants. The Australian Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) agreed that States and Territories impose a regulatory ban on the feeding of rendered

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ruminant protein from 1 November 1996. A review of the standards in the rendering industry demonstrated that all plants have treatments in place that will destroy anthrax and *Clostridium perfringens* spores — no plant had treatments that would destroy the BSE agent (133°C for 20 minutes at 3 bar pressure when processing pieces less than 50 mm size). Given that Australia is free of animal TSEs, there is no reason to require inactivation of the BSE prion protein in Australian rendering processes, particularly as there is a ban on feeding rendered meat meal and bone meal to ruminants.

In May 1997, the Office International des Epizooties (OIE) — the world animal health organisation — recommended that all member organisations institute a monitoring and surveillance program that would detect a BSE-like condition before it became established in cattle populations. The recommended program included:

- compulsory notification and clinical investigation of suspect cases, namely adult animals showing signs of nervous disease;
- undertaking a risk assessment to identify potential hazards for BSE occurrence in the country;
- initiating a continuous surveillance and monitoring program for BSE that addresses the risks identified in the point above;
- examining brain material of animals older than 20 months displaying progressive neurological signs for TSE at approved laboratories using approved diagnostic techniques; and
- recording the results of the monitoring and surveillance investigations and maintaining the records for at least seven years.

In early October 1997, two research papers reported that new variant CJD in humans is caused by an agent that is either very closely related to or identical with the agent causing BSE in cattle. Even though Australia has never recorded BSE, it is important for Australia to partake in the international quality assurance program demonstrating that there is no BSE or scrapie in Australia.

Accordingly, Australian animal health authorities have developed a surveillance program for TSEs in livestock. The Australian Surveillance Program comprises:

- field investigations by an official veterinarian of cases where veterinary practitioners and/or abattoir veterinarians suspect a TSE on the grounds of clinical signs of nervous disease;
- laboratory veterinarians screening the case histories of all laboratory submissions with a clinical history of nervous disease, to exclude the diagnosis of a TSE; and
- veterinary histopathologists, trained in the diagnosis of TSEs, screening the brains of all animals over the age of two years with a clinical history of nervous disease to detect lesions of TSE and establish an alternative diagnosis.

The surveillance program has been structured so that there is a 90% probability of finding infection of BSE or scrapie if it occured in 1% of the nervous conditions occurring in cattle and sheep in Australia. Taking account of the livestock populations in Australia, it is necessary to investigate at least the number of cases shown in Table 1.

Table 1: Number of sheep and cattle to be tested in a normal year

State	QLD	NSW	VIC	TAS	SA	WA	NT	AUST
Cattle	84	54	36	6	9	13	11	213
Sheep	20	79	40	7	24	55	0	225

In the first year of the program, Australia will raise the sampling levels to 500 cattle and sheep to provide a 95% probability of finding a 0.5% level of infection. Australia is committed to ensuring that neither BSE nor scrapie establish in either its cattle or sheep populations. Future trade in beef and sheep meats will require certification that there is an effective surveillance program operating for TSEs in Australia.

The Australian Surveillance Program for TSE requires the cooperation of primary producers, private veterinarians, government field and abattoir veterinarians and laboratory veterinarians. Where animals are targeted for laboratory investigation, it is very important that appropriate specimens be collected to establish the cause of an animal's disease condition as well as establishing that there were no histopathological lesions of BSE or scrapie in the brain.

Contributed by A. J. Turner,
Chief Veterinary Officer, Victoria;
Convenor, Working Group,
TSE Surveillance Program

Avian Influenza Outbreak

An outbreak of virulent avian influenza (AI) occurred in three properties near Tamworth, New South Wales (NSW) during November/December 1997.

Outbreak description

An increase in daily mortality was first noticed in one shed of a broiler-breeder operation on 16 November and thought to be due to a bacterial infection. However, after increased mortalities in other sheds from 21 to 24 November, avian influenza (AI) was suspected. This was confirmed by viral isolation at the Australian Animal Health Laboratory (AAHL) on 25 November. The mortality rate in affected sheds ranged from about 40 to 100% over about seven days.

A second infected broiler breeder enterprise was situated about 3 km south of the first infected flock. Following confirmation of AI on the first property, and identification of a potential link through a dead bird pick-up contractor, the second property was placed under a high level of surveillance. On 3 December 1997, daily mortality in one shed increased from 2 to 22. Gross pathology observed at post mortem examination was suggestive of AI, a diagnosis confirmed by testing at AAHL.

Infection was also confirmed in emu chicks, located on a property about 1 km to the south-east of the first case. There were 261 emu chicks present, ranging from one to three months old. This property also had a broiler growing enterprise, although the broiler sheds were empty at the time of the outbreak. AI virus was isolated from cloacal swabs collected from the emu chicks as part of routine surveillance activities on 5 December. At no time was there any evidence of clinical disease in any of these emus. Adult emus on a related property about 20 km away were serologically negative for AI virus.

AI virus serotype H7N4 was isolated from all three cases. Extensive investigation and surveillance was undertaken on both commercial and residential poultry flocks in the area, without detecting any additional infected flocks.

Response

Following the confirmation of virulent AI, Commonwealth and State Chief Veterinary Officers agreed that an eradication program would be implemented in accordance with the Australian Veterinary Emergency Plan (AUSVETPLAN).

NSW Agriculture coordinated operations with the assistance of Rural Lands Protection Boards and local emergency operations organisations. A local disease control centre was established at Tamworth to coordinate operations in the area, and a State disease control centre was established in Orange to coordinate policy, resources and finances. More than 100 people operated from the local centre at the peak of the campaign, with a further 10–12 in the State control centre. As specified in the AUSVETPLAN guidelines, action commenced immediately to prevent the spread of the disease, eliminate infection on infected properties, and undertake surveillance to detect any additional cases.

At the start of the outbreak, a 3-km restricted zone and a 10-km control zone were declared around the outbreak area, to allow strict controls on the movement of poultry and poultry products. All commercial poultry flocks within these areas were closely monitored for evidence of disease, including regular post mortem examination of dead birds, and serology for evidence of AI antibodies. Domestic backyard poultry in the restricted zone were also checked for evidence of AI virus.

All birds on infected premises were destroyed and buried, litter was removed and buried, and sheds were thoroughly cleaned and disinfected. The last of the infected birds were slaughtered on 13 December, and decontamination operations continued until early January 1998. After completion of cleaning and disinfection, sheds were left empty for a further three weeks before restocking. Surveillance will continue on the restocked farms for a further six months to ensure that the virus has been successfully eliminated. Area movement restrictions were revoked on all but the three previously infected properties in late January.

During the outbreak, a total of about 310 000 broiler breeders and progeny, 1.2 million fertile chicken eggs, 261 emus and 147 emu eggs were destroyed. All direct costs of eradication will be met under the Commonwealth–States Cost Sharing Agreement for eradication of certain exotic diseases. Under this

agreement, the Commonwealth Government and State/Territory governments meet the cost of eradication for any of 12 specified exotic diseases, including virulent avian influenza. This agreement covers the cost of compensation to the owner for stock and equipment destroyed as part of the eradication program, as well as operational costs for the program.

Suspected Source and Epidemiology

Extensive tracing and investigation identified contaminated river-water as the most likely source for infection on the first property. All water for the enterprise is pumped from the Peel River, and filtered and chlorinated before use. Investigations suggest that filtration and chlorination of the water was inadequate, potentially permitting the persistence of AI virus in the water. A survey of wild bird in the area upstream of the water intake identified a number of water bird species that could present a high risk source for AI.

Spread of the virus to the second property appears to have been due to either mechanical transfer by the dead bird pick-up truck, or possibly by aerosol transmission. Spread to the third property was probably via aerosol or flies.

Extensive investigations on all infected properties, and surveillance of both commercial and backyard poultry failed to identify any other infected flocks or any other likely sources of infection for the three infected flocks.

Contributed by Evan Sergeant, NSW Agriculture

Australia's Cattle Industry Achieves TB Freedom

Australia's declaration of freedom from bovine tuberculosis (TB) on 31 December 1997 places the nation at the forefront internationally in eradication of this major cattle disease. A sustained commitment to TB eradication by the cattle industry, State/ Territory governments and the Commonwealth Government has made this significant national achievement possible.

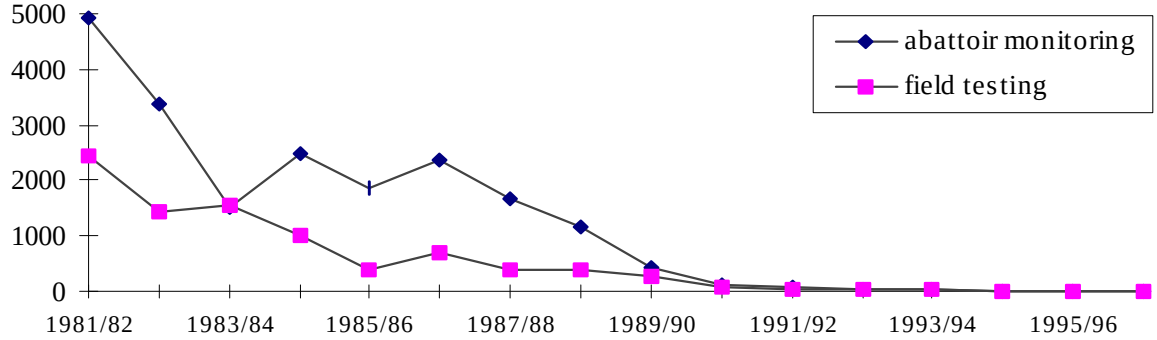
Efforts to control the disease in Australia began more than 100 years ago with the main focus on preventing people contracting TB from the milk supply. In the 1960s the beef and dairy industries faced the threat of losing essential export markets because of the continuing presence of TB and another disease, brucellosis, in Australian cattle. The national response was the initiation in 1970 of the Brucellosis and Tuberculosis Eradication Campaign (BTEC), aimed at eradicating both diseases from Australia. BTEC coordinated and expanded existing programs in all States and Territories.

Effective eradication strategies were developed for all types of cattle enterprise — from small dairy farms in high-rainfall areas to the vast, sparsely stocked cattle runs of remote, arid regions. The large feral buffalo population in the Northern Territory, with high levels of TB in some areas, had to be included in the campaign because TB can pass between cattle and buffalo.

Freedom from brucellosis was declared in 1989; subsequent monitoring has confirmed that it no longer exists in Australia.

Figure 1 shows how the number of tuberculous cattle detected each year by abattoir monitoring and

Figure 1: Tuberculous cattle detected: progress towards eradication



field testing decreased during the 1980s. National 'impending freedom' from bovine TB was declared on 31 December 1992. At that stage, no infection was known to remain but further testing was needed to confirm that some herds were clear of TB. Because of deficiencies in the available tests and the ability of TB to remain dormant for long periods, it was also recognised that further cases would be detected in a small number of herds that had reached confirmed free status.

The definition of TB freedom applied in Australia includes a requirement that impending freedom was attained no less than five years previously. As a result, 31 December 1997 was the earliest possible date for the new declaration. Other requirements are that the number of discoveries of TB in confirmed free herds since impending freedom has been acceptable, these 'breakdowns' have been handled effectively, and all TB is believed to have been eradicated. Approved systems for monitoring for the disease must be in place.

These provisions, which have all been met, are stricter than those employed by the world animal health organisation — the Office International des Épizooties (OIE) — to define freedom from bovine TB. Australia reached the OIE standard some time ago. Key features of the OIE definition are requirements that 99·8% of herds have been officially TB-free for at least three years and an effective surveillance program in place.

Nevertheless, it is recognised that a small number of tuberculous cattle or buffalo may remain undetected in Australia. Maintaining an efficient abattoir monitoring system was crucial to the success of BTEC and remains essential to the Tuberculosis Freedom Assurance Program that now replaces it. Most of the TB cases in confirmed-free herds have been detected through meat inspection, and abattoir monitoring will almost certainly be how any TB still present in cattle or buffalo in Australia is found. Consequently, monitoring for TB through meat inspection at abattoirs will continue for at least a further five years. A National Granuloma Submission Program was established in 1992 to maximise the efficiency of the monitoring system. Its goals are to ensure that lesions possibly signifying TB are detected at meat inspection and then subjected to laboratory examination to provide a definitive answer on whether or not the disease is present. This program will remain in operation and cattle identification systems tht allow any infection discovered to be traced back to the originating herd will be maintained. In addition, a program of testing to monitor herds considered the most likely sources of any future TB detections will continue.

The continuing TB monitoring program also involves tuberculin testing of herds with a low rate of turnoff to abattoirs and those in which the risk of further TB cases appearing is considered greatest.

Based on a brochure 'Australia's Cattle Industry Achieves TB Freedom', by the National Brucellosis and Tuberculosis Campaign Committee, DPIE, Canberra. Further information about the Tuberculosis Freedom Assurance Program can be obtained from Bill Scanlan, 02 6272 5103.

Bovine tuberculosis

Bovine TB is caused by infection with the bacterium *Mycobacterium bovis*. This is closely related to *M. tuberculosis*, the main cause of TB in humans, and to *M. avium*, which affects many bird species. *M. bovis* produces disease in humans, pigs and occasionally other animals, as well as cattle and buffalo. However, in Australia only cattle and buffalo have been shown to maintain and spread bovine TB to other species.

Cattle become infected by inhaling or ingesting bacteria shed by tuberculous animals. Disease development begins with the formation of a characteristic primary lesion. Infection can then spread to the nearest lymph node, to other nodes, and eventually to the bloodstream, resulting in wide dissemination. Clinical signs of advanced TB include a chronic cough and progressive emaciation.

The rate of progression of the disease varies greatly. In some cases it can be very rapid. In others, TB can remain dormant for a decade or more before spreading through the animal; such cases accounted for many of the TB detections in the final years of BTEC.

NATIONAL ARBOVIRUS MONITORING PROGRAM

The Australian National Arbovirus Monitoring Program (NAMP) is an integrated national program jointly funded by industry and governments to monitor the distribution of economically important insect-borne viruses of livestock — bluetongue, Akabane and bovine ephemeral fever (BEF) — and their insect vectors.

Background

NAMP has three objectives — trade support, bluetongue early warning, and risk management. Technical information on arboviruses facilitates scientifically based development of protocols for the international trade in Australian livestock and animal products, and also assists the trade in meeting export certification requirements.

Active surveillance of the northern bluetongue endemic area is designed to detect new incursions and provide early warning of any southern spread of the strains present. This surveillance provides confidence within Australia and internationally that any change in bluetongue status would be detected. Epidemiological advice on the seasonal distribution of arboviruses nationally helps producers and exporters to manage any risk arboviral infections pose to their livestock enterprise.

NAMP data are gathered by monitoring cattle in sentinel herds throughout the country. At sentinel locations, groups of 10 young cattle previously unexposed to arboviral infections are blood-tested at regular intervals to detect infection with the various viruses. Sampling frequency is proportional to the probability of arbovirus activity. Insect traps located near these animals indicate whether *Culicoides* vectors are present during the period.

Sentinel sites are selected to allow plotting of the distribution of infections. Hence most are positioned in areas along the border between expected infected and uninfected areas, or where infection occurs irregularly. Expected free areas are monitored to verify their free status. Known infected areas are sampled to assess the seasonal intensity of infection with each virus. At one site in the Northern Territory, viral isolation is conducted to detect any incursion of viruses from overseas.

Transmission patterns in 1996–97

In 1996–97, seasonal conditions were very variable. In the northern regions of Western Australia, most of the Northern Territory and the northern half of South Australia, record rainfalls were recorded during the summer months. In contrast, in other mainland areas, especially on the east coast of Queensland and NSW, conditions were generally not conducive to vector activity, with a relatively low rainfall pattern and often drought conditions for much of the year.

Bluetongue virus

Transmission of bluetongue viruses was largely confined to the far north of Australia, in areas north of the 19th parallel, with a second area of transmission on the central part of the eastern seaboard. In the 1996–97 season, there were seroconversions in the northern half of the Northern Territory (NT) and the far north of Western Australia. In these areas, infections were found only with serotypes 1, 16, 20 and 21. Viral transmission was also recorded in far northern Queensland, at sites on the coast of south-east Queensland and the north and lower north coast of New South Wales (NSW). Serotype 1 was the only serotype detected in Queensland and NSW. Therefore, not only are all of the southern vector-free areas confirmed as bluetongue-free but there was also only limited evidence of infection in most of Queensland and the vector zones in NSW, with the exception of a narrow coastal strip in northern NSW and south-east Queensland. As a consequence, the bluetongue free area that was defined in the previous year will not be greatly altered again this year , with all regions in southern Australia and most regions in eastern Australia remaining free of bluetongue viruses.

From the patterns of bluetongue transmission observed in the 1996–97 season, there is again no evidence of movement of more pathogenic viruses out of the far northern ‘high risk’ zone, even though seasonal conditions appeared to be extremely favourable in the north. In the 1996–97 season, there was no evidence of the incursion of any new serotypes or vectors into Australia. There was no evidence of bluetongue viruses near any of the major sheep populations.

Akabane virus

Akabane viral activity was again quite limited and confined to the established vector areas in northern Western Australia, the northern most parts of the Northern Territory, south-east Queensland, and the north and central coast of NSW. With such a reduction in activity, for the rest of the year there should be more young cattle suitable for trade into markets where this virus is of concern. In many areas, stock up to at least two years of age are likely to be negative.

Bovine ephemeral fever virus

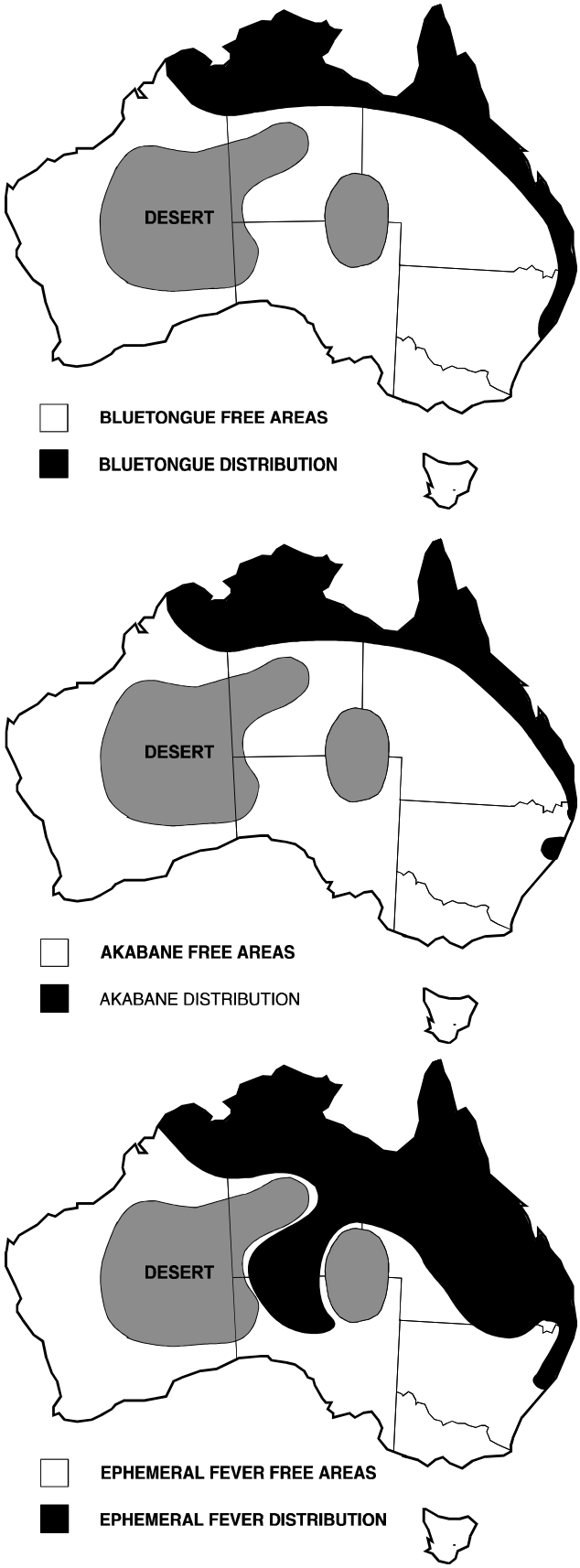
BEF has been extremely widespread this season. Disease outbreaks in the Northern Territory have affected export shipments and evidence of infection was found throughout the Territory, south beyond Alice Springs. This is consistent with clinical cases and positive serology in the northern sector of South Australia. Infection was widespread in Queensland, especially in southern regions, both coastal and inland. In NSW, BEF was widespread on the coast and inland. There were also moderate numbers of cases in the north-west of the State from Narrabri to Bourke. Spread along the coast extended south to the Hunter Valley and inland to Singleton.

Vector monitoring

In many of the vector areas, especially in northern Australia, the numbers of *Culicoides* were higher than usual. In some cases, where there has been exceptional rainfall, breeding habitats have probably been washed away, reducing numbers temporarily. In the eastern and western coastal areas of non-tropical and southern Australia, the main vector of interest is *Culicoides brevitarsis*, and to a lesser extent, *C. wadai*. *C. brevitarsis* was collected at each site where bluetongue virus activity was detected by the sentinel herd system, but *C. wadai* was found only in far north and southern Queensland. There is again a close relationship between the arbovirus and vector-free areas of southern Australia, with the distribution of the viruses less expansive than that of their vectors. The vector-free areas expanded last year and appear to have largely been maintained this year.

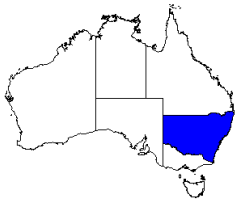
Based on the 1996–97 NAMP annual report. Further information about NAMP can be obtained from David Banks, 02 6272 5444.

Figure 2: Limits of bluetongue, Akabane and bovine ephemeral fever virus, 1996–97



State and Territory Reports

New South Wales



Contributed by:
Evan Sergeant
NSW Agriculture

Paramyxovirus infection of pigs

A detailed report on this new virus affecting pigs was given in the last issue of *AHSQ*. Continuing investigations have confirmed that the virus is still present in grower pigs on the piggery, although there have been no clinically affected litters for some months. The owner is planning a voluntary program to attempt to eradicate the virus from one unit, using segregation and management to break the transmission cycle. If this is successful, progressive eradication will be attempted from all units on the piggery. Testing on contract grower piggeries indicates that the virus has died out in one, but is still circulating in the other. Further testing has provided increasing evidence that fruit bats are probably the natural host for this virus.

Anthrax

Four cases of anthrax were diagnosed during the current quarter, all in sheep. This brings the total number of cases for 1997 to nine. Anthrax was excluded as the cause of death in three other laboratory investigations during the quarter, making a total of 49 anthrax exclusions for the year.

Ovine brucellosis

An ovine brucellosis eradication program has been conducted over the past two years in the Hillston, Balranald and Wentworth Rural Lands Protection Boards. So far, 238 flocks have been checked across the three Boards, with 17 509 rams examined. Some 73 flocks are still to be assessed.

Good progress is being made. Eradication of ovine brucellosis in all flocks in these areas is expected soon. The next step will be to continue monitoring ram flocks to make sure nothing has been missed, and to prevent the reintroduction of the disease.

Egg drop syndrome

One isolated case of egg drop syndrome was diagnosed in October on a large farm using dam water. This brings the total number of farms affected by the syndrome in NSW from November 1995 to October 1997 to 22.

Bovine Johne's Disease Market Assurance Program

There are now 410 herds enrolled in the cattle Johne's Disease (JD) Market Assurance Plan (MAP) in NSW, with 311 at TN1 status, 16 MN1 and 39 TN2 . The remaining 44 herds are still awaiting confirmation of their status. To date, 48 995 cattle have been tested, with 105 reactors (0.2%) requiring follow-up in 73 herds. Sixty-five reactor herds have been resolved, with only one infected herd identified by MAP testing so far.

Ovine Johne's disease surveillance

During the quarter, 14 new infected properties were identified, bringing the total number of detections for 1997 to 72, compared to 68 for 1996. Ovine JD has now been diagnosed on a total of 229 properties in NSW since 1980. Of these 229 flocks, 200 are still classified as infected. A further 11 properties have been destocked, and 18 have not reported a case for more than five years.

There are also 189 suspect properties in NSW, including 18 properties on which the disease was diagnosed before 1992, and a further 11 properties are 'under surveillance'.

Enzootic bovine leucosis

Another round of bulk milk testing was carried out during November, with 1684 (94%) of 1800 herds negative on bulk milk testing. Of the 116 positive herds, 49 had an estimated within-herd prevalence of less than 5%, 49 were between 5 and 15 % and 18 greater than 15%.

These results compare very favourably with the beginning of the program in November 1992, when 23% of herds were BMT positive.

Salmonella enteritidis accreditation of layer hen flocks

The NSW *Salmonella enteritidis* Accreditation Scheme for commercial layers is gaining momentum. More than 75 flocks are in the process of applying for accreditation. This scheme shows that egg-producing flocks are free of *Salmonella enteritidis*, a food safety pathogen that has caused major problems overseas. Other States have expressed interest in the Scheme.

Transmissible spongiform encephalopathy surveillance

Brain tissues from three sheep were examined histologically for exclusion of scrapie during the quarter, with negative results.

Avian tuberculosis

Tuberculosis was diagnosed in a male kakariki parrot from the Moss Vale area, during October. Granulomatous inflammation was detected at the tracheal bifurcation and throughout the liver. A *Mycobacterium avium* complex organism was isolated from the liver.

Bat viruses

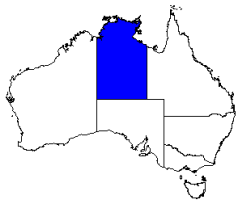
During the quarter, 12 fruit bats were examined for evidence of lyssavirus infection, with negative results. A total of 124 fruit bats have now been examined for lyssavirus, with nine found to be infected. All 29 micro-bats examined have been negative.

Three fruit bats and three horses were examined for evidence of bat paramyxovirus infection during the quarter, all with negative results. A total of 90 fruit bats, 12 micro-bats and five horses have now been examined for evidence of paramyxovirus infection, with onr fruit bat serologically positive, and one virologically positive.

Bee diseases

During the quarter, testing for American foulbrood resulted in 111 tests negative and 152 tests positive. Of the 278 positive reports since July 1997, 202 were new cases, and the remainder were repeat tests on previously confirmed cases. Fifteen reports of chalkbrood were received during the quarter.

Northern Territory



Contributed by:
Diana Pinch
NT DPIF

Cattle

Anaplasmosis was diagnosed as the cause of cow deaths occurring over several weeks in a herd in the Douglas Daly area. Mortalities were unusually high in the outbreak, but the cows were heavily pregnant or early lactating in stressful climatic conditions and this may have contributed to the severity of the disease. It is worth noting that the property is well north of the 'tick line', but the animals were susceptible to tick fever due to continually low tick burdens resulting from good ectoparasite management.

Based on laboratory tests, pestivirus was diagnosed as the cause of chronic ill-thrift in two heifers from a group of 24. In the extensive conditions under which most NT cattle are run, diagnoses such as this, when only a small proportion of the herd are affected, can be difficult. This appears to be the first case in the NT where pestivirus has been confirmed as the cause of ill-thrift.

Poultry

A number of young turkeys in a flock in the Darwin rural area became depressed and showed swelling of the head. Clinical examination indicated poxvirus, and this was confirmed by electron microscopy of lesions.

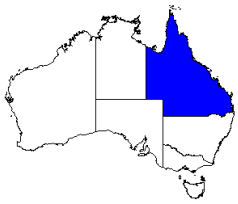
Exotic disease awareness course

An exotic disease awareness course was held in Darwin at the end of November. Invitations were extended to all NT veterinarians, and speakers were from interstate as well as NT.

New veterinary laboratory

During March 1998, staff at the DPIF's Berrimah Veterinary Laboratories will be moving to their new purpose-built facility. The new building means the various sections of the veterinary laboratories will now be housed under one roof, and that microbiological containment facilities will be upgraded. The official opening will be in mid-April.

Queensland



Contributed by:
Gavin Ramsay
Queensland DPI

Neurological diseases

Scrub ataxia syndrome, which is characterised by persistent diarrhoea, loss of condition and hair loss, was diagnosed as the cause of death of seven four-month old calves near Maryborough. This syndrome occurs sporadically with cattle grazing on softwood scrub soils in south-east Queensland

A Boer goat introduced from South Australia was diagnosed with meningoencephalitis. Laboratory results also revealed slight leucocytosis, marginal hyperbilirubinaemia, and muscle damage. No antibodies to lentiviruses were found, although there were lesions of the central nervous system similar to those caused by caprine arthritis virus. This animal was ataxic with neck and back curvature. It would eat only if food was placed in its mouth, developed intense pruritus, and scratched at its neck and head.

Cases of unilateral facial paralysis or 'droopy face syndrome' continue to be diagnosed in central Queensland. One case died after treatment but another has improved dramatically with treatment. Investigations into the aetiology of this syndrome are being carried out at Rockhampton Veterinary Laboratory.

Cerebellar hypoplasia was diagnosed in a bovid on a property north of Charters Towers. The property has had previous diagnoses and more intensive monitoring is being undertaken.

Clostridial diseases

There have been continuing cases of blackleg throughout the State. One herd in the Monto area recorded six deaths and another herd in the Camboon area had sporadic losses.

Occasional cases of botulism have been reported from most regions in Queensland. In an unusual case, a small dairy herd at Wowan lost two cows from botulism. A possum had died in the auger and the owner had removed as much of the dead possum as possible from the corn it contaminated but sufficient existed to contaminate the corn with fatal levels of toxin. A test of the contaminated corn revealed botulinum toxin. The rest of the herd was vaccinated after the first cow became sick and no further losses occured.

The Charleville area had more than the usual number of tetanus cases in the past year, both in horses and dogs. Vaccinating dogs against tetanus is now recommended in the area.

Tick fever

Disease caused by *Babesia bovis* has been reported for the south-east and north regions, and anaplasmosis in the south-east. *Babesia bovis* was diagnosed in heifers being assembled for shipment to the Solomon Islands. Investigations revealed the property had low numbers of ticks and vaccinated introduced animals and steers but not heifers. Numerous tick fever inquiries are coming in throughout the north region following good rainfall in early December after many years of drought.

Bovine ephemeral fever

Bovine ephemeral fever has been seen in the Innisfail and Bowen areas. No deaths were reported but Stock Inspectors indicated weaner stock from western areas were coming to the coast for the live cattle export trade at a younger age and with lower weights. This could be a factor in the lower mortality and less severe signs reported.

Pestivirus

Ongoing investigations are being conducted on a herd in central Queensland with continuing problems arising from pestivirus infection. A field day for DPI animal health staff and private vets proved a worthwhile experience with good feedback from all concerned. Post mortem examination of two of the worst affected calves demonstrated few gross lesions other than very small ulcers on the nose and in the mouth. No other calves have died in this herd. Pestivirus positive calves are noticeably unthrifty compared to their normal healthy herdmates.

Poisoning

One piggery at Wowan reported problems with food refusal, scouring and scurfy skin after exposure of pigs to suspect feed infected with *Claviceps africana*. Four affected pigs were sent live to the Animal Research Institute, Yeerongpilly, for more intensive post mortem examination for ergotism.

Nardoo poisoning occurred when heifers died in an airstrip paddock where the plant was growing in the gilgaies. The cattle were seen staggering and the only abnormality at post mortem was an enlarged liver.

Ironwood poisoning caused the death of seven cows on a property at Mitchilba, west of Mareeba. They were bred on ironwood country, had poor nutritional status and were being fed a urea supplement lick.

Six of eight, 12 to 18-month old heifers that had access to *Bowenia* species died. There had shown signs of loss of coordination and abnormal behaviour. The dairy property near Yungaburra on the Atherton Tablelands has introduced more control of stock on the property's creeks and scrub.

Lyssavirus

There were 17 examinations of bats for lyssavirus (10 associated with human scratching or biting) with one isolation from a flying fox collected at Laidley (with no human contact).

Poultry diseases

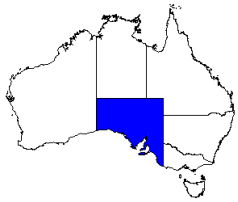
Infectious avian laryngotracheitis was diagnosed in two poultry flocks near Maryborough during October and December and on a hobby farm near Cairns in October. Vaccination of the flocks was instituted after diagnosis. Fowl cholera was diagnosed as the cause of the deaths of 700 six-week old broilers at Murgon.

NAHIS web site

http://www.brs.gov.au/aphb/aha

This newsletter is available on the NAHIS website which is being developed to provide information and statistics about animal health matters in Australia.

South Australia



Contributed by:
Kim Critchley
Primary Industries SA

Rainfall in South Australia has been below average in most areas and summer conditions began earlier than normal. A number of the disease incidents reported were partly attributable to this.

Sheep deaths in the mid-north

Often in October–November, a number of properties in the pastoral area around Carrieton in the mid-north of the State report cattle deaths. In anticipation, funds were put aside to carry out an in-depth investigation but the cattle deaths did not occur this year. Instead, properties reported weaner lambs with paresis and death. Investigation indicated the deaths tended to occur about three weeks after locust and grasshopper plagues had been through the area. Examination of affected lambs suggested that the probable cause was a combination of the onset of hot weather and the complete removal by the locusts of any digestible feed. Necropsy and biochemichal examination supported these views.

Annual ryegrass staggers and Wirrega blotch

Annual ryegrass staggers was reported from sheep properties much further west than is normal on Eyre Peninsula. Concern was raised, although no cases were reported, regarding possible toxicity on wheat and other stubbles from Wirrega blotch (*Drechslera wirreganensis*), which produces Cytochalasin B. The organism is usually present but this year levels were higher than normal. Expected findings are subcutaneous oedema, dermatitis, blepharospasm, diarrhoea, ruminal and gastric ulcers and a drop in production if lactating.

Lyssavirus and ghost bats

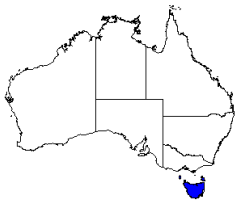
Blood from four ghost bats recently arrived at the Adelaide Zoo were sent to AAHL, which found no evidence of bat lyssavirus. The bats were received from a park in the NT and their history indicated they had been reared in captivity.

Ovine footrot

The usual seasonal increase in footrot reports from the south-east occurred. The disease was also reported from Eyre Peninsula.

Tasmania

Contributed by:
Lis Lloyd-Webb
DPIF, Tasmania



Possible exotic disease investigations

A 14-year-old goat exhibited signs of ataxia, similar in appearance to animals suffering from TSE. Subsequent examination of the brain at AAHL showed some spongiform change in the brain but not in the neurones, and AAHL did not consider that the changes were associated with a TSE. There was pigment in the neurones, possibly age-associated. Phalaris staggers is associated with pigment accumulation in certain neurones.

A northern private veterinary practitioner recently included vesicular disease as a possible cause of muzzle lesions in a single cow that also had ulcers on the tip of the tongue and leg and coronet lesions. Mucosal disease or photosensitisation were more probable causes, and clinical pathology tests in the end provided some support for recovered photosensitisation. Regular property checks have been maintained with no further cases.

Anaemia in lambs

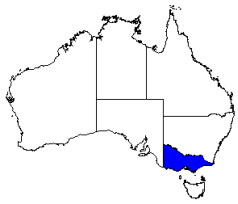
Several 13-week-old lambs died 4–6 after mulesing. The one lamb submitted for laboratory examination was weak, unable to stand, and appeared to be blind. It was very anaemic with a packed cell volume of 9% with evidence of a regenerative haemolytic anaemia. *Eperythrozoon ovis* was the most likely cause but no unequivocal parasites were detected on blood smears. However, blood smears from 11 ten-week-old lambs on the same property were made, and *E. ovis* was detected on three smears with a very heavy parasitaemia in one.

Ovine Johne's disease

The first round of private practitioner training for the Market Assurance Program has occurred.

Victoria

Contributed by:
John Galvin
Agriculture Victoria



Anthrax

As a result of the major unusual outbreak of anthrax in north central Victoria during February and March 1997 (see *AHSQ Vol. 2, No. 1*), the Department and the Victorian cattle industries developed a three-year preventive program to minimise the risk of a recurrence of the problem. The program is based on a preventive vaccination strategy — properties on which anthrax occurred during the outbreak and properties adjoining an infected farm are required to vaccinate all cattle before summer each year. In addition, all cattle introduced onto these farms are required to be vaccinated against anthrax.

From the end of March 1997, when the outbreak was declared over until 31 December 1997, more than 50 000 cattle were vaccinated on 291 properties under this preventive program. During the October to December quarter there were five deaths from anthrax: four cattle and one horse. Since the vaccination program was completed, no further cases of anthrax were reported to the end of December. It is planned to begin active surveillance for anthrax by monitoring deaths in the area at a local knackery beginning in early January 1998.

Investigations of avian mortalities

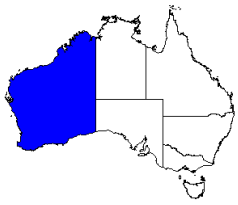
Following the occurrence of virulent avian influenza at Tamworth in NSW, significant avian mortalities were investigated in three Victorian flocks. In all cases, virulent avian influenza was ruled out as the cause, with diagnoses of histomoniasis in partridges and erysipelas in emus. On another property, avian encephalomyelitis was the cause of unusual mortalities.

Bovine Johne's disease

An industry–government funded test and control program for bovine JD was launched in Victoria in early 1996. This program provides subsidised whole herd testing and written disease control advice to participating cattle owners. It has been widely

adopted. During 1997, some 520 herds containing 107 500 cattle were tested and 1557 (1.45%) reactors were identified and slaughtered. This compares to a reactor rate of 1.86% in 1996 and, more importantly, there has been a marked reduction in the reactor rates in those herds undertaking their second year of whole herd testing.

Western Australia



Contributed by:
Richard Norris
Agriculture WA

Sheep

There were several cases of summer nutritional diseases, with vitamin E deficiency myopathy chief among them. Some cases presented as ill-thrift rather than lameness or muscle weakness. Cobalt (vitamin B12) deficiency was seen in adult ewes at Beverley. Annual ryegrass toxicity was reported on several farms in the wheat belt. Haemonchosis was seen on some farms in December. Also seen was allergic enteritis due to ingested helminth larvae in a ram with a wasting syndrome. Two animals were submitted for TSE (scrapie) exclusion as part of the national surveillance scheme — both had cerebral listeriosis with no lesions of spongiform encephalopathy. Echinococcosis was seen in a sheep at Esperance.

Cattle

There were again several cases of genital campylobacteriosis from the south-west coastal region around Bunbury. Mucosal disease was also diagnosed in the Bunbury area. Vesicular stomatitis was excluded in a case at Albany in which mouth ulcers were present — mucosal disease and malignant catarrh were also excluded from the diagnosis and the cause was not determined. An unusual finding of infarcted psoas muscles was seen in specimens collected from an abattoir.

Pigs

There were heavy mortalities in weaners due to streptococcal pericarditis, endocarditis, encephalitis and peritonitis on one farm. Another case of interstitial pneumonia was checked for porcine respiratory and reproductive syndrome since this is the mostly likely initial presentation of this exotic disease. Other cases involved bacterial meningitis, swine dysentery and probable K88 positive *E.coli*-induced leucoencephalomalacia.

Poultry

A case of infectious laryngotracheitis was detected at Narrogin and proventriculitis was seen in metropolitan birds. *Pasteurella multocida* caused heavy mortalities in 16-week-old ducks. A cassowary imported from Queensland was diagnosed with avian tuberculosis. Diagnoses in other avian species included candidiasis in Gouldian finches, colisepticaemia in ostrich chicks, megabacteriosis in a pet-shop bird, and aspergillus pneumonia in a rainbow bee-eater.

Other species

Amongst other diagnoses were pyrrolizidine alkaloid-induced pulmonary fibrosis in horses, algal (*Prymnesium* sp.) toxicity in finfish at Vasse, pox in a kangaroo, myocardial necrosis in camels and encephalitozoal myocarditis in rabbits. An extensive epidemic of frog deaths at the Perth Zoo was thought to be caused by the fungus *Mucor amphibiorum*. Several thousand fish were killed when insecticide accidentally leaked into the Swan River.

Disease Watch Hotline – 1800 675 888

The Disease Watch Hotline is a toll-free telephone number that connects callers to the relevant State or Territory officer to report concerns about any potential exotic disease situation. Anyone suspecting an exotic disease outbreak should use this number to get immediate advice and assistance.

Contact: Chris Bunn, Animal Diseases/Incidents, DPIE.

RCD Update

There have now been over 780 RCD releases in Australia. Based on information collected by State and Territory vertebrate pest control agencies, RCD activity was obvious on 381 (48%), not obvious on 201 (26%) and the impact is not known for 205 (26%). Recent activity during hot weather in December 1997 was reported in central Australia.

The effects of RCD on rabbit numbers have been recorded at 61 sites across Australia. At 84% of sites in areas with less than 300 mm annual rainfall the disease has led to declines in rabbit numbers of at least 65%, whereas declines of at least 65% have only been recorded at 41% of sites in areas with higher rainfall.

At least twelve months after the arrival of RCD, rabbit numbers remain low at seven of eight sites where RCD impacts are being intensively monitored. This is despite the fact that rabbits have been breeding at all the sites over the last four months.

RCD has been detected on a range of fly species including blowflies (*Calliphora albifrontalis*, *C. dubia*, *C. varifrons*, *Chrysomyia rufifacies*, *Ch. varipes*, *Hydrotea rostrata* and *Lucilia cuprina*) and the bushfly *Musca vetustissima*.

Some regeneration and recruitment of native plant species has been observed in the Flinders Ranges in South Australia associated with the RCD induced decline in rabbit numbers.

Source: Mary Bomford, National RCD Monitoring and Surveillance Program, Bureau of Resource Sciences

Quarterly Disease Statistics

Laboratory testing

The results of serological testing from routine laboratory submissions for the quarter are shown in Table 2.

Table 2: Serological testing from routine submissions to State/Territory laboratories

	Akabane		Bluetongue		Bovine ephemeral fever		Enzootic bovine leucosis		Equine infectious anaemia		Equine viral arteritis	
	Tests	+ve	Tests	+ve	Tests	+ve	Tests	+ve	Tests	+ve	Tests	+ve
Oct - Dec 96	1042	210	10287	100	1535	481	3130	39	494	0	240	8
Jan - Mar 97	729	197	5064	281	851	203	3256	147	416	0	287	4
Apr - Jun 97	796	144	6925	463	1426	528	5860	140	398	3	240	0
Jul - Sep 97	1011	285	7797	182	944	171	3231	28	348	0	279	1
Oct - Dec 97	2229	356	7442	332	1464	180	5228	2	710	1	462	26
NSW	58	20	581	32	322	3	140	0	420	0	286	9
NT	23	2	475	88	444	108	420	0	0	0	0	0
QLD	1043	332	4343	190	313	67	3558	2	58	1	14	0
SA	20	0	63	0	5	0	0	0	12	0	2	0
TAS	3	0	14	0	3	0	1109	0	0	0	0	0
VIC	810	0	872	0	48	0	0	0	154	0	96	17
WA	272	2	1094	12	329	2	1	0	66	0	64	0

Suspect Exotic Disease Investigations

There were 21 exotic disease investigations reported during the quarter, as shown in Table 3.

Table 3: Suspect exotic disease investigations

Disease	Species	State	Reponse (key below)	Finding
Rabies	feline	NSW	3	Negative
Rabies	canine	NSW	3	Negative
Rabies	feline	NSW	3	Negative
Rabies	canine	NSW	3	Negative
Avian influenza	avian	NSW	6	Avian influenza
Screw-worm fly	canine	NT	2	Negative
Avian influenza	avian	NT	2	Fowl cholera
Bat lyssavirus	fauna	QLD	2	Negative
Bat lyssavirus	fauna	SA	3	Negative
Transmissible spongiform encephalophathy	caprine	TAS	3	Negative
Avian influenza	avian	VIC	1	Histomoniasis
Avian influenza	avian	VIC	1	Erysipelas
Lumpy skin disease	bovine	VIC	1	Cutaneous lymphomatosis
Avian influenza	avian	WA	1	Negative
Bat lyssavirus	fauna	WA	3	Negative
Bat lyssavirus	fauna	WA	3	Negative
Porcine reproductive and respiratory syndrome	porcine	WA	3	Negative
Rabies	canine	WA	3	Negative
Porcine reproductive and respiratory syndrome	porcine	WA	3	Negative
Bat lyssavirus	fauna	WA	3	Negative
Infectious bovine rhinotracheitis	bovine	WA	3	Negative

KEY**:**
Highest level of response:
1 Field investigation by Government Officer
2 Investigation by State or Territory Government veterinary laboratory
3 Specimens sent to the Australian Animal Health Laboratory (or CSIRO Division of Entomology)
4 Specimens sent to reference laboratories overseas
5 Regulatory action taken (quarantine or police)
6 Alert or standby

Control activities

Enzotic bovine leucosis

Enzotic bovine leucosis (EBL) accreditation programs have been operating in the dairy industries in Queensland and NSW for several years. Victoria, South Australia, Western Australia and Tasmania are undertaking a program of bulk milk testing of all dairy herds. Table 4 shows the number of dairy herds tested free at the end of the quarter.

Table 4: Dairy herds tested free of EBL at 31 December 1997

	NSW	NT	QLD	SA	TAS	VIC	WA	AUST
Free	1442	0	1735	781	719	5291	455	10 423
Herds	1806	0	2026	808	810	8453	467	14 370

Ovine brucellosis

Accreditation programs for ovine brucellosis freedom are operating in most States. Table 5 shows the number of accredited flocks at the end of the quarter.

Table 5: Ovine brucellosis accredited free flocks at 31 December 1997

NSW	NT	QLD	SA	TAS	VIC	WA	AUST
1280	0	71	547	162	772	86	2918

Tuberculosis

Table 6 summarises the results of the national Granuloma Submission Program. The stock inspected come from some domestic abattoirs as well as export abattoirs. As mentioned earlier in this newsletter, Australia declared freedom from bovine TB on 31 December.

Table 6: Results of the National Granuloma Submission Program

	Granulomas Submitted	TB +ve
Jul - Sep 96	1205	0
Oct - Dec 96	1144	2
Jan - Mar 97	1041	0
Apr - Jun 97	923	1
Jul - Sep 97	1338	3
NSW	247	0
NT	99	2
QLD	576	1
SA	53	0
TAS	47	0
VIC	121	0
WA	195	0

Bovine brucellosis

Although bovine brucellosis is now exotic to Australia, surveillance is maintained through abortion investigations and miscellaneous testing of cattle for export or other reasons. A total of 169 abortion investigations were performed during the reporting period — all with negative results for bovine brucellosis. The results of recent brucellosis surveillance are shown in Table 7.

Table 7: Surveillance for bovine brucellosis

	Abortion Investigations		Test for other reasons	
	Tests	+ve	Tests	+ve
Oct - Dec 96	163	0	4365	0
Jan - Mar 97	122	0	2288	0
Apr - Jun 97	142	0	4336	0
Jul - Sep 97	196	0	3956	0
Oct - Dec 97	169	0	2847	0
NSW	28	0	111	0
NT	0	0	85	0
QLD	76	0	2137	0
SA	0	0	69	0
TAS	0	0	44	0
VIC	0	0	232	0
WA	65	0	169	0

Johne's disease

JD is seen primarily in dairy cattle but occurs occasionally in beef cattle, sheep and dairy goats, and has been diagnosed in a small number of alpacas. JD occurs in NSW, Victoria and South Australia. Surveillance programs support the view that cattle in Queensland, Western Australia and the Northern Territory are free of JD, and active measures are taken to stamp-out any incursions. Table 8 shows the number of herds and flocks known or suspected to be infected.

Table 8: Herds/flocks with JD at 31 December 1997

	Cattle	Sheep	Goats	Alpacas	Total
NSW	149	219	7	2	377
NT	0	0	0	0	free
QLD	0	0	0	0	free
SA	26	0	0	2	28
TAS	33	8	9	0	50
VIC	1779	15	8	11	1813
WA	0	0	0	0	free
AUST	1987	242	24	15	2268

Industry-based JD market assurance programs are either in place or under development for cattle, sheep, alpaca, deer and goats. At the end of December 324 herds that had reached the status of Tested Negative 1 or Monitored Negative 1 in the Cattle Market Assurance Program (MAP). A further 27 herds had reached the status Tested Negative 2. In the Australian Sheep JD MAP, 24 flocks had a status of Monitored Negative 1.

There was considerable discussion on a national program for ovine Johne's disease (OJD) during the quarter and several reviews and proposals to deal with it were commenced. The outcome of these will be summarised in the next edition of *AHSQ*. There has already been considerable activity on OJD. Last summer, Victoria commenced a State-based program involving destocking of OJD-infected flocks. A number of producers in NSW have commenced approved voluntary eradication plans. States with little or no OJD have tightened their restrictions on inward movement of sheep.

Further information about the various JD Market Assurance programs can be obtained from David Kennedy 02 6365 6016 or Bruce Allworth 02 6936 9233. Lists of assessed beef and dairy hedrs and sheep flocks are available on a fax-back service on 1902 940 579.

Salmonella surveillance

The National Salmonella Surveillance Scheme (NSSS) is operated and maintained on behalf of the Commonwealth and States/Territories by the Microbiological Diagnostic Unit at the University of Melbourne. Data on isolates of salmonellae and other pathogens are submitted to the NSSS from participating laboratories around Australia.

Quarterly newsletters and annual reports of both human and non-human isolates are published, and detailed data searches are provided on request to the NSSS. Table 9 summarises *Salmonella* isolations from animals, notified to the NSSS for the previous quarter.

Contributed by National Salmonella Surveillance Scheme, Microbiological Diagnostic Unit, University of Melbourne.

Table 9: Salmonella notifications, 1 July to 30 September 1997

Serovars	avian	bovine	canine	equine	feline	ovine	porcine	other	Total
S. bovismorbificans	0	19	1	0	0	0	0	0	20
S. dublin	0	16	0	0	0	0	0	0	16
S. infantis	0	2	0	0	0	0	0	0	2
S. typhimurium	6	119	1	1	2	1	0	10	140
Other	1	13	1	4	0	0	6	34	59
Total	7	169	3	5	2	1	6	44	237

Zoonoses

The National Notifiable Diseases Surveillance System of the Communicable Diseases Network Australia New Zealand collects statistics about many human diseases. The CDI is accessible on the worldwide web at http://www.health.gov.au/hfs/pubs/cdi/. Table 10 summarises some of the information for zoonoses.

Contributed by Communicable Diseases Intelligence, Department of Health and Family Services

Table 10: Notifications of zoonotic diseases in humans

Disease	Q4-96	Q1-97	Q2-97	Q3-97	Q4-97	Current quarter							
	Australia				AUST	ACT	NSW	NT	QLD	SA	TAS	VIC	WA
Brucellosis	13	12	4	13	13	0	1	0	10	0	0	2	0
Hydatidosis	17	6	13	22	19	0	0	0	2	1	0	15	1
Leptospiros	55	31	40	20	33	0	9	1	8	0	0	14	1
Listeriosis	19	23	22	14	9	0	2	0	2	3	0	2	0
Ornithosis	24	22	12	5	7	0	0	0	0	1	0	4	2
Q fever	142	139	166	136	124	0	46	0	67	4	0	6	1

Northern Australia Quarantine Strategy

In recognition of the special quarantine risks associated with Australia's sparsely populated northern coastline, AQIS conducts an animal disease surveillance program as an integral component of the Northern Australia Quarantine Strategy (NAQS). The NAQS surveillance program provides early warning of disease threats to livestock industries, and in some cases human health. NAQS surveillance activities include both offshore and onshore components. Table 11 summarises NAQS surveillance over the past year.

Table 11: NAQS surveillance activity

	Jan - Mar 97		Apr - Jun 97		Jul - Sep 97		Oct - Dec 97		
	Tested	Positive	Tested	Positive	Tested	Positive	Tested	Positive	Notes
Avian influenza	0	0	41	3	0	0	0	0	a
Aujeszky's disease	0	0	25	0	14	0	0	0	
Classical swine fever	0	0	50	0	14	0	0	0	
Infectious bursal disease	0	0	43	1	0	0	0	0	a
Japanese encephalitis	271	3	230	2	55	0	69	0	b
Newcastle disease	0	0	48	0	0	0	0	0	
Porcine reproductive and respiratory syndrome	0	0	26	0	14	0	0	0	
Swine influenza	0	0	25	0	14	0	0	0	
Surra	61	0	81	0	70	0	67	0	
Canine ehrlichiosis	0	0	29	0	30	0	32	0	
Transmissible gastroenteritis	0	0	25	0	14	0	0	0	

Notes

a) Migratory birds that show no clinical signs of disease but are serologically positive are occasionally found during NAQS surveys (for example, wandering whistle ducks trapped on Cape York Peninsula). Nevertheless, Australian domestic poultry flocks remain free of these diseases.

b) The sentinel sites that showed seroconversions are on islands in the Torres Strait, and not the Australian mainland.

National Residue Survey

Table 12 summarises the results for the quarter. Information about the National Residue Survey (NRS) can be found on the worldwide web at *http://www.brs.gov.au/residues/residues.html* where there are sections on:

- NRS Business Plan 1997–98;
- NRS 1996 Randomised Sampling Results;
- Recent publications;
- Frequently asked questions;
- Information for laboratories; and
- Associated web sites.

Recent publications by the NRS include

- NRS Annual report 1996–97;
- Report on the 1996 NRS Results;
- Report on the 1995 NRS Results; and
- Report on the 1993–4 NRS Results.

Copies available from Dr Rusty Branford, NRS, PO Box E11, Kingston, ACT 2604

Phone 02 6272 5096
Fax 02 6272 4023
E-mail Rusty.Branford@brs.gov.au

Contributed by National Residue Survey, Bureau of Resource Sciences

Table 12: National Residue Survey, 1 October to 31 December 1997

Each pair of figures gives the number of samples above either the maximum residue limit or the maximum permitted concentration and the number of samples tested.

	NSW		NT		QLD		SA		TAS		VIC		WA		AUST	
Antimicrobials																
Cattle	0	101	0	4	0	116	0	21	0	6	0	77	0	21	0	346
Pigs	3	108	0	0	1	61	1	30	0	0	6	57	0	25	11	281
Poultry	0	21	0	24	0	19	0	16	0	0	0	17	0	0	0	97
Sheep	0	44	0	0	0	3	0	42	0	2	0	31	0	44	0	166
Other	0	3	0	0	0	17	0	6	0	0	0	8	0	1	0	35
Total	3	277	0	28	1	216	1	115	0	8	6	190	0	91	11	925
Anthelmithics																
Cattle	0	61	0	3	0	67	0	11	0	9	0	60	0	22	0	233
Pigs	0	21	0	0	0	17	0	8	0	0	0	11	0	5	0	62
Sheep	0	89	0	0	0	13	0	65	0	9	0	56	0	79	0	311
Other	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Total	0	171	0	3	0	98	0	84	0	18	0	127	0	106	0	607
Growth promotants																
Cattle	0	97	0	3	0	131	0	29	0	10	0	68	0	38	0	376
Pigs	0	7	0	0	0	5	0	2	0	1	0	1	0	1	0	17
Poultry	0	0	0	2	0	1	0	1	0	0	0	0	0	0	0	4
Sheep	0	88	0	0	0	11	0	70	0	5	0	63	0	76	0	313
Other	0	3	0	0	0	13	0	3	0	0	0	4	0	3	0	26
Total	0	195	0	5	0	161	0	105	0	16	0	136	0	118	0	736
Insecticides																
Cattle	0	312	0	11	0	446	0	75	0	47	0	292	0	90	0	1273
Feral	0	0	0	0	0	15	0	0	0	0	0	0	0	0	0	15
Pigs	0	66	0	0	0	29	1	18	0	7	0	31	0	16	1	167
Poultry	0	6	0	6	0	3	0	4	0	0	0	3	0	0	0	22
Sheep	0	127	0	0	0	24	0	107	0	10	0	87	0	105	0	460
Other	0	2	0	1	0	7	0	33	0	11	0	8	0	1	0	63
Total	0	513	0	18	0	524	1	237	0	75	0	421	0	212	1	2000
Metals																
Cattle	1	18	0	0	1	20	0	2	0	2	0	13	0	2	2	57
Pigs	2	13	0	0	0	5	0	3	0	0	0	3	0	4	2	28
Poultry	1	3	0	3	0	1	0	2	0	0	0	0	0	0	1	9
Sheep	1	19	0	0	0	1	1	17	0	0	1	11	2	17	5	65
Other	0	0	0	0	0	0	4	10	0	0	0	0	0	1	4	11
Total	5	53	0	3	1	27	5	34	0	2	1	27	2	24	14	170

NAHIS contributors

Name	Organisation	Phone	Fax	e-mail
Chris **Baldock**	NAHIS Program Manager	07 3255 1712	07 3278 1953	ausvet@eis.net.au
David **Banks**	Northern Australia Quarantine Strategy	02 6272 5444	02 6272 3399	David.Banks@dpie.gov.au
Chris **Bunn**	Animal Diseases/ Incidents, DPIE	02 6272 5540	02 6272 3372	chris.bunn@dpie.gov.au
Paul **Crew**	CEO, AAHC	02 6239 5727	02 6239 5713	aahc@ozemail.com.au
Kim **Critchley**	SA State Coordinator	08 8207 7908	08 8207 7852	critchley.kim@pi.sa.gov.au
John **Galvin**	Vic. State Coordinator	03 5430 4517	03 5430 4520	galvinj@goldy.agvic.gov.au
Graeme **Garner**	NAHIS Coordinator, BRS	02 6272 5369	02 6272 4533	graeme.garner@brs.gov.au
Ana **Herceg**	Communicable Diseases Intelligence	02 6289 1555	02 6289 7791	http://www.health.gov.au
Diane **Lightfoot**	National Salmonella Reference Laboratory	03 9344 5701	03 9344 7833	
Lis **Lloyd-Webb**	Tas. State Coordinator	03 6336 5289	03 6336 5374	lis.lloyd-webb@dpif.tas.gov.au
Bill **Matthews**	National Granuloma Submission Program	02 6272 5042	02 6272 3307	William.Matthews@dpie.gov.au
Richard **Norris**	WA State Coordinator	08 9368 3637	08 9367 6248	richardn@aidpo.agric.wa.gov.au
Melanie **O'Flynn**	National Residue Survey, BRS	02 6272 4549	02 6272 4023	melanie.oflynn@brs.gov.au
Diana **Pinch**	NT Coordinator	08 8999 2354	08 8999 2024	diana.pinch@dpif.nt.gov.au
Gavin **Ramsay**	Qld State Coordinator	07 4936 0270	07 4936 2453	RamsayG@dpi.qld.gov.au
Evan **Sergeant**	NSW State Coordinator	02 6391 3687	02 6361 9976	Evan.Sergeant@smtpgwy.agric.nsw.gov.au
Peter **Thornber**	Office of the Aust. CVO, DPIE	02 6271 6343	02 6272 5697	Peter.Thornber@dpie.gov.au