ANIMAL HEALTH SURVEILLANCE QUARTERLY
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Preface

This issue provides an overview of the recent pilchard mortalities across southern Australia. It also includes two items on arboviruses: a six-monthly update on findings under the National Arbovirus Monitoring Program, and details of the Northern Cattle Export Enhancement Project, an initiative to enhance live cattle exports from northern Australia by better managing arbovirus risks.

Enhanced surveillance for endosulphan during the quarter is also described. This activity was put in place because of perceived increased risk associated with abnormal conditions and again demonstrates Australia's proactive and flexible approach to disease and residue surveillance.

A new national approach to mastitis control is described, and some recent updates to AUSVETPLAN are discussed. Highlights of disease surveillance activities and items of interest from States and Territories are also included.

GARDNER MURRAY
Australian Chief Veterinary Officer

Pilchard mortalities in Australia

In October 1998, reports were received of pilchards (*Sardinops sagax neopilchardus*) dying off the South Australian coastline. With consideration of the major mortality event involving pilchards in 1995 in both Australia and New Zealand, the coordination of the response to this new incident was immediately undertaken at a national level by the Australian Consultative Committee on Emergency Animal Diseases (CCEAD). The primary field investigations and responses have been performed by diagnostic and fishery agencies in the affected states and by the CSIRO Australian Animal Health Laboratory (AAHL).

A scientific working group was established under CCEAD immediately after the report of the mortalities, and is currently monitoring and studying the outbreak. Scientists and laboratories of several State and Commonwealth agencies have developed a strategic research program to gain an understanding of the mortality incidents .

Preliminary results have shown the clinical syndrome to be similar to that seen in 1995. Pilchards appear to be the only species affected, and the vast majority of dead fish are adults. However, the spread of the mortality is considerably slower than that seen in 1995.

During the 1995 incident, pilchard mortalities were seen first off South Australia and then spread as far as northern New South Wales (NSW) in the east and south-western Western Australia (WA) in the west. Most areas of this large expanse of coast experienced losses.

In 1998, reports of pilchard mortalities were received first from South Australia then from the south coast of Western Australia, off the coast of Victoria and most lately off the NSW coast north of Sydney. The geographical distribution of affected fish appears more 'patchy' than in 1995.

Contents

As seen in 1995, the main lesions in affected fish were a thickening of the gill epithelium that leads to asphyxiation. A herpesvirus was seen in 1995 and has again been associated with lesions within affected gills. This herpesvirus had never been reported before the 1995 incident and has yet to be isolated. The virus has not been reported in other pilchard populations of the world.

Two major pieces of work are aimed directly at this herpesvirus. The first is a series of transmission trials with healthy pilchards to show whether or not the virus is indeed a causal agent and the second is to develop better diagnostic tools, with the view to investigating the origin of the 1998 virus and testing its relationship to the 1995 virus and the New Zealand virus. Other areas of work are continuing, or are planned, to gain further understanding of other possible causes and the origin, dynamics and perhaps the trigger of the 1998 incident.

Where dead pilchards have been reported, fisheries authorities have placed local bans on pilchard fishing until several weeks after the cessation of mortalities. As in 1995, there do not appear to be public health implications. However, as a precautionary measure, health authorities have warned the public not to collect dead or dying animals.

The international community is being kept up to date by regular postings to the PROMED list server which provides information on emerging diseases worldwide on the internet.

Contributed by: Grant Rawlin, National Offices of Animal and Plant Health and Food Safety

Monitoring endosulfan in Australian beef

Endosulfan is a registered, effective and widely used broad-acre organochlorine insecticide. It does not persist in the environment or in animal tissues to the same degree as DDT, dieldrin or lindane. In 1995, the National Residue Survey (NRS) became aware of the potential for endosulfan contamination of cattle from its use in cotton production to control *Heliothis*, an insect that attacks the cotton boll. The Australian Maximum Residue Level (MRL) for endosulfan is 0.20 mg/kg (measured in body fat). Trade could be disrupted if endosulfan were detected in beef exports, especially in countries that use the Codex Alimentarius MRL of 0.10 mg/kg. Any instance of an endosulfan residue above half MRL is a cause for concern in the beef industry.

In 1996, a cooperative program between the cotton and beef industries, New South Wales (NSW), Queensland and Commonwealth Governments, supported by the then Residue Management Group, (now SAFEMEAT), was put in place in cotton growing areas in northern NSW and southern Queensland. The first component of the program encouraged communication between cotton and beef growers, and promoted, in conjunction with government and industry authorities, improved management practices by both industries. The second part of the program involved NRS managing a targeted survey for endosulfan in cattle sourced from cotton growing areas to assess how well the management practices were being applied. These surveys were conducted over three years (1996–99) during the summer when endosulfan use is at a peak. There was an emphasis on traceback of positive results to the farm of origin, so on-farm management of the issue could be assessed and rapidly addressed.

The results of the first two years of the program's operation (1996–97 and 1997–98) showed that endosulfan usage was being managed very effectively by the cotton industry. During this period, there were minimal traces of endosulfan residues in beef samples. However, a different pattern emerged in 1998–99.

Within a week of the start of the 1998–99 survey, it became clear that there were unexpectedly large numbers of beef samples with unacceptable levels of endosulfan (levels at or approaching half MRL). Other problems, such as buyer discrimination against cattle from target testing areas also surfaced. The increased planting of cotton (because of the failure of other crops) and weather conditions conducive to insect breeding necessitated increased use of endosulfan to protect crops. Good spraying practice by the cotton industry was not followed in all instances, resulting in an increase in endosulfan contamination of pasture and cattle. The net result was increased international and domestic beef market sensitivity to endosulfan levels in Australian beef. As a result, the NRS survey, with full

SAFEMEAT and cotton industry support, was changed to a compliance program. This involved increased sampling, traceback, and test and hold conditions operating on consignments of cattle from high-risk areas. This minimised the risk of shipments of beef containing levels of endosulfan above half MRL being exported. Despite these precautions, elevated endosulfan levels were detected by one of Australia's trading partners but, because of the corrective action already in place, no long-term market damage occurred.

By early March 1999, NRS results indicated minimal endosulfan levels in beef sourced from the cotton growing areas. However, significant issues in relation to compensation of beef producers who were innocent victims of endosulfan contamination remain to be resolved. The National Registration Authority (NRA), the body responsible for the registration of agricultural and veterinary chemicals, conducted a review of the use of endosulfan in 1997–98 and new restrictions on endosulfan use in horticulture were to be implemented in 1999. This latest episode, indicating that cattle markets can still be placed at risk by the broadacre application of endosulfan, means that NRA may need to re-examine, and perhaps revise, the new recommendations.

This episode illustrates the advantages of a combined industry–government approach to addressing a residue problem. It also shows the value of monitoring and surveillance, and the power of compliance testing, combined in protecting Australia's meat industries.

Contributed by: Terry Nicholls, National Offices of Animal and Plant Health and Food Safety

Countdown Downunder

'Coundown Downunder' — Australia's new mastitis control program — was launched in December at the Annual General Meeting of the Australian Dairy Industry Council (ADIC). Mastitis lowers farm profitability, reduces product quality and quantity, and potentially damages exports and the image of milk. It has a 'big picture' impact on the whole Australian dairy industry, and is a daily concern for everyone who milks cows or advises farmers about udder health or milk quality issues.

The cell count from a sample of milk can be used to measure the level of mastitis in a herd. Although the cell count is not a direct measure of food safety, it is indicative of a healthy production system, and is being used increasingly by customers and competitors as a measure of quality. The European Union now requires milk and milk products for human consumption to have a cell count of less than 400 000 cells/mL. This has effectively established an international benchmark that may make cell count status a significant factor in limiting access to some other export markets. New Zealand already achieves substantially lower cell counts than those reported in Australia, as do several European countries.

Countdown Downunder has set two mastitis reduction goals for 2001:

- at least 90% of Australian dairy farms supplying milk with a cell count of less than 250 000 cells/mL in all milk supply periods;
- 100% of Australian dairy farms supplying milk with a cell count of less than 400 000 cells/mL in all milk supply periods.

The program is the result of a response by the Dairy Research and Development Corporation (DRDC) to the wet winter of 1996 when many dairy farmers had problems with mastitis. Countdown Downunder has been developed by the Australian Mastitis Advisory Council (AMAC). AMAC has been endorsed by ADIC as the industry forum for issues concerning mastitis and related milk quality and has representatives from:

- Australian Dairy Farmers' Federation;
- Australian Dairy Products Federation;
- Australian Milking Machine Trade Association;
- Australian Dairy Equipment Council;
- Avcare;
- Australian Veterinary Association;
- National Herd Improvement Association;
- Australian Dairy Herd Improvement Scheme;
- State agricultural departments;
- Australian Milk Harvesting Program; and
- Dairy Research and Development Corporation.

DRDC provided most of the financial support for the development phase of Countdown Downunder. With the implementation of the program, significant contributions will also be made by:

- Queensland Department of Primary Industries;
- NSW Agriculture;
- Primary Industries South Australia;
- Tasmanian Department of Primary Industries, Water and Environment;
- Victorian Dairy Industry Authority; and
- Most dairy processors.

Countdown Downunder has several parts. A comprehensive set of farm guidelines is now available. Supporting technical information is being written and will be published as a companion book. A series of technical up-dates for advisers and farmers will also be held in all dairying regions.

The core of the Countdown Downunder program is a consistent set of 'best practice' mastitis control and milk quality guidelines. They are detailed in *Countdown Downunder: Farm Guidelines for Mastitis Control* and cover each period of the cow's milking year:

- what has to be done;
- why it should be done;
- how to do it; and
- how to check that it has been achieved.

The authors (Pauline Brightling, Graeme Mein, Jakob Malmo and Diane Ryan) consulted with more than 50 veterinarians, other advisers and farmers throughout Australia to ensure the farm guidelines truly reflect best practice. The guidelines are available from dairy processors and local veterinarians at a cost of $20. They may also be downloaded from the program's website (which is at www.byc.com.au/countdown).

More information about Countdown Downunder can be obtained from the contacts listed below.

Countdown Downunder contacts

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John Miller	Queensland	(07) 4168-1777	(07) 4168-2982	millerjr@dpi.qld.gov.au
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AUSVETPLAN updates

AUSVETPLAN is the series of technical response plans that describe the approach Australia would take in the event of an outbreak of an emergency animal disease. The documents provide guidance based on sound analysis, linking policy, strategies, operations, coordination and emergency management plans. Maintenance funding for the plans is underpinned by the Australian Animal Health Council Limited (AAHC). The manuals are revised regularly to ensure that they remain in line with contemporary policies and practices. Chris Bunn (Commonwealth), Tony Barnett (SA), Ian Douglas (Qld) and Terry Thomas (Vic.) form an Editorial Committee that oversees this process. During the quarter a number of revisions have been issued.

BSE and scrapie

A draft revision of the AUSVETPLAN Disease Strategies for bovine spongiform encephalopathy (BSE) and scrapie were circulated for comment. The suggestions received have been incorporated into the new versions that have been released after approval by Veterinary Committee.

The BSE manual seeks to take into account advances in our knowledge of the nature of the disease. This has permitted refinements to be made to the strategy for the control and eradication in the event of BSE being found in Australia. Also included are the OIE epidemiological surveillance requirements, which form the basis for sampling under the Australian National Transmissible

Spongiform Encephalopathy Surveillance Program. Although the International Animal Health Code's chapter on BSE is being revised, the current code has been included in the manual for information.

Feedlots

Feedlots account for aabout 30% of beef production in Australia. The feedlot industry has a significant potential for disease spread in the event of an emergency because of its high concentration of animals and its high throughput levels. There is thus an opportunity for disease to affect a large number of animals and for rapid spread within, into or out of the feedlot.

A revised AUSVETPLAN manual for feedlots has recently been released. The manual provides an overview of the feedlot industry and outlines the action plan that would be adopted in an outbreak either at, or in the vicinity of, a feedlot. The manual was updated in consultation with the Australian Lot Feeders' Association (ALFA) and the Feedlot Industry Accreditation Committee (FLIAC).

Feedlots accredited under the National Feedlot Accreditation Scheme (NFAS) must address disease outbreaks as part of contingency planning in their quality assurance system. The industry is moving to incorporate the updated AUSVETPLAN manual into NFAS.

Enterprise manuals

Updated Enterprise Manuals for *Aviaries and Petshops*, *Meat Processing*, and *Zoos* have also been released. Like the feedlot industry, these are all enterprises considered to pose special challenges in the event of an outbreak of emergency disease. Interim versions of the manuals were released in 1996 and these updates incorporate comments received from industry, government and other technical sources.

The Meat Processing manual focuses on emergency diseases that are of most risk of being transmitted by animal products and by-products, such as BSE, foot-and-mouth disease, and rinderpest. Discussions are being held on the incorporation of the updated manual into the quality assurance and training programs of meat processing establishments.

Zoos can pose particular problems for emergency disease management for a range of reasons:

- low level of information on susceptibility of some species to diseases;
- conservation objectives of zoos;
- animal movements between zoos;
- level of interface with international tourists; and
- public interest and concern if disease eradication involves destruction of animals.

Publishing policy

A perennial problem is ensuring that people, particularly those who might be involved in the management of emergency diseases, have ready access to current AUSVETPLAN documents. Allied to this is the cost involved of printing large numbers of documents.

This has led increasingly to an approach that concentrates on electronic publishing, on the internet and in CD-ROM format. All AUSVETPLAN manuals can be found on the internet (at http://www.brs.gov.au/aphb/aha). Pilot production is underway of a CD-ROM version that may be useful to remote users who have computers but not access to the internet.

For further information on any aspect of AUSVETPLAN contact:
Chris Bunn (02) 6272 5540 or
David Bateman (02) 6272 4962, fax (02) 6272 3372.

Tropical canine pancytopaenia

During the quarter, two cases of tropical canine pancytopaenia (TCP) or canine ehrlichiosis were found in dogs being imported into Australia. In one of the cases, where thrombocytopaenia was suspected, the dog had been recently released from post-arrival quarantine after returning from Spain, where it had been infested by a tick eight weeks previously. The second case was detected in a dog during routine testing at the Animal Quarantine Station in NSW. The dog was also carrying a species of tick that is exotic to Australia. In another investigation this quarter a suspected case in a dog

that had been travelling through northern Australia before returning to NSW proved to be negative.

TCP is a tick-borne rickettsial disease of dogs that generally occurs in tropical and semitropical regions. It is caused by *Ehrlichia canis*, which is an obligate intracellular parasite that infects canine blood mononuclear cells. It is transmitted by the common brown dog tick, *Rhipicephalus sanguineus*.

The incubation period is generally 10–15 days, although it can be longer and carrier states can ocur. There are a range of clinical syndromes from acute to chronic, but most dogs generally exhibit nervous signs, bleeding disorders or uraemia.

The disease is not considered to be endemic in Australia. There has been suspicion of *Ehrlichia*-like organisms in dogs in northern Australia causing a tick fever-like syndrome. However, despite several attempts to isolate the organism, the presence of *E. canis* has never been confirmed in these areas.

These incursions are a reminder of the importance to include exotic diseases in a list of differential diagnoses, and of how important our quarantine service is in preventing the entry of exotic diseases into Australia.

Contributed by: Evan Sergeant, NSW Agriculture

Northern Cattle Export Enhancement Project

A number of countries that import live ruminants from Australia require that they be sourced from zones where bluetongue virus transmission does not occur. To date, the potential zone of transmission has been defined by the limits of *Culicoides. brevitarsis*, the major bluetongue vector in Australia. To enhance the value of the data from the National Arbovirus Monitoring Program (NAMP), a forecasting system is being developed for the transmission of bluetongue and Akabane virus to manage risks of these viruses in the live cattle export trade. The Northern Cattle Export Enhancement Project (NCEEP), which is jointly funded by the Australina Quarantine and Inspection Service (AQIS) and Meat and Livestock Australia, commenced on 1 July 1998 with the appointment of Dr Angus Cameron as project scientist.

The goal of NCEEP is to replace the static '*brevitarsis* line' with a system of zones that are dynamic, taking into account the variability in climatic conditions that control the distribution of the vectors, and that will permit the expansion of trade under appropriate quarantine safeguards. AQIS anticipates that, under the new system, in many years it will be possible to export cattle from much of northern Australia without risk of transmitting bluetongue.

Valuable data on the epidemiology of arboviruses and their vectors have been gathered over many years by a number of government agencies. The purpose of the present project is to gather such data with climatic and other information to build a risk forecasting system to support trade.

The project has five major objectives:

1 establish a national geographical information system containing data layers relevant to arboviruses and their vectors;
2 review the historical information on bluetongue, Akabane and bovine ephemeral fever viruses and their vectors;
3 develop an area risk-forecasting system for bluetongue and Akabane viruses;
4 estimate the risk of infectious animals reaching a port of entry in selected countries; and
5 make the forecasts easily accessible to users by such means as internet and fax-back services

The first six months of the project have focused on Objective 1. This has seen the establishment of standardised national databases for serological and entomological data collected by NAMP. A new standardised reporting system has also been developed for findings of sentinel herd serology and entomology, to allow the surveillance pressure to be assessed.

Work has also commenced on Objective 2, writing a review of the distribution of bluetongue, Akabane and ephemeral fever viruses and their vectors in Australia. Dr Toby StGeorge has been appointed to assist with this review. The review will make extensive use of maps and tables based on the data that have been compiled. In addition, there will be a description of the viral and vector situation and any unusual features, year-by-year and State-by-State.

A fuller description of the project is given on the internet (at http://www.ausvet.com.au).

Contributed: Chris Baldock, AusVet Animal Health Services.

National Arbovirus Monitoring Program

Although bluetongue virus occurs in Australia, there is no evidence of clinical disease in the field. Programs are in place to monitor viral and vector activity. The National Arbovirus Monitoring Program (NAMP) is a scheme, based on sentinel cattle herds and insect trapping, that tracks the activity of major arboviruses, including Akabane, bluetongue and bovine ephemeral fever (BEF), and their vectors. NAMP is funded by the Commonwealth and State/Territory governments, and industry, and managed by the Australian Animal Health Council Limited.

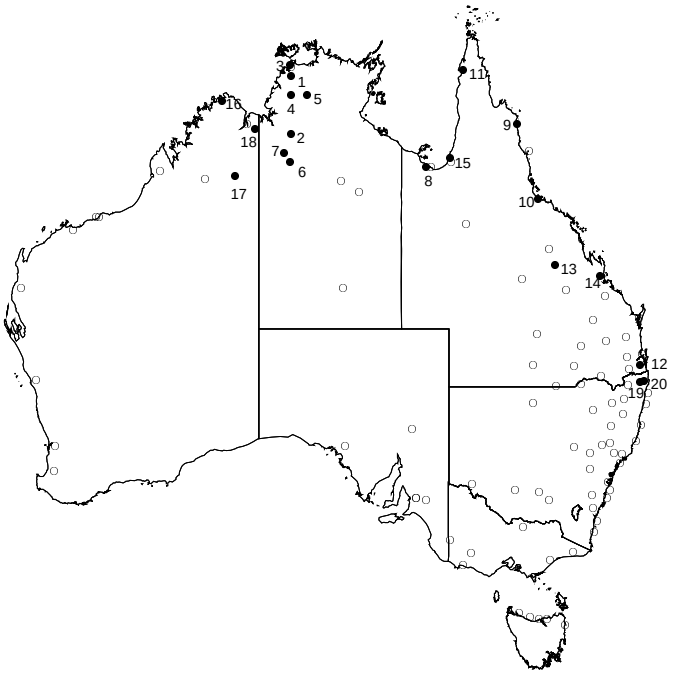
There is usually less activity with NAMP in the second half of the calendar year than in the first, because winter and spring are the seasons of reduced arboviral transmission, especially in southern Australia. During July to December, many sentinel herds from the previous monitoring season are disbanded, and preparations are made for fresh herds for the next season. Vector trapping is not undertaken in those seasonally dry or cool sites known to be unfavourable for midges.

However, there is still some cycling of bluetongue virus in those areas to which the virus contracts in less favourable seasons, and Akabane and BEF viruses are often quite active, especially in the Northern Territory. Figure 1 shows the locations of the sentinel animals, and the key lists those sites where viral activity was detected by the seroconversion of sentinel cattle in the second half of 1998.

These results illustrate the complexity of the ecology of these viruses. Not only do the three viruses circulate independently in some parts of the country, but each appears to be active at multiple foci.

Contributed by: Geoff Gard, Commonwealth NAMP Coordinator

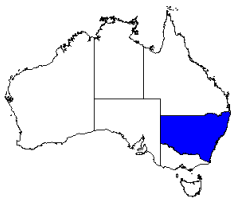
Figure 1: Location of NAMP sentinel sites.
The key to the sites (numbered) that seroconverted during the third and fourth quarters of 1998 also gives the percentage of sero-negative animals that seroconverted during each quarter



Key	Site	Akabane		Bluetongue		BEF	
		Q3	Q4	Q3	Q4	Q3	Q4
	NT						
1	Coastal Plains	67%	25%	17%	5%	42%	56%
2	Victoria River	0%	0%	75%	50%	46%	29%
3	Berrimah	80%	25%	0%	0%	0%	5%
4	Douglas Daly	21%	13%	0%	0%	5%	33%
5	Katherine	54%	67%	0%	0%	0%	5%
6	Riveren	5%	33%	0%	0%	0%	0%
7	Mt. Sanford	0%	42%	0%	0%	0%	0%
	QLD						
8	Burketown			0%	40%		
9	Cooktown	50%		92%	0%	67%	
10	Townsville			86%			
11	Weipa			31%			
12	Beaudesert	14%		0%	0%	0%	
13	Clermont	15%		0%		0%	
14	Rockhampton	78%		0%	0%	60%	
15	Normanton	67%		0%		0%	
	WA						
16	Kalumburu	35%	0%	83%	0%	0%	0%
17	Moola Bulla		60%		40%		10%
18	Kununurra	44%	33%	0%	0%	10%	27%
	NSW						
19	Casino		33%		0%		50%
20	Lismore		90%		0%		88%

State and Territory Reports

New South Wales



Contributed by:
Evan Sergeant
NSW Agriculture

Anthrax

During November, one case of anthrax was diagnosed in the Condobolin Rural Lands Protection Board. The disease presented in five sows that died suddenly. The source was suspected to be the carcase of a lamb that died on the fenceline, providing pigs in the adjacent paddock access to the carcase.

Four out of 10 dogs that may also have had access to the carcase had swollen heads and were treated with antibiotics. There have been no further cases in six other at-risk pigs. Anthrax had not previously occurred on this property, although it had been diagnosed on an adjacent property in 1984 and 1992.

This case brings the total for 1998 to 10 — seven in cattle, two in pigs and one in sheep. Laboratory examination excluded anthrax as the cause of death in nine other investigations during the quarter, bringing the total number of exclusions for the year to 33.

Newcastle disease eradicated

Following the recent Newcastle disease outbreak (see *AHSQ* Vol. 3 No. 3), decontamination was completed on all affected properties. Two of the three properties have been restocked with sentinel birds and surveillance is continuing to confirm that the disease has been successfully eradicated.

Bovine ephemeral fever virus

In early summer, there were widespread outbreaks of ephemeral fever on the NSW north coast for the first time in many years. Young animals have been affected and many herds have experienced high levels of morbidity. The mild winter of 1998 has also contributed to survival of buffalo fly and early fly activity in what are normally considered marginal areas.

Internal parasites — sheep

Apart from the south west of the State, much of NSW received well above average rainfall during the latter half of 1998. As a result, worm egg counts in sheep in the drier western parts of the State were somewhat higher than normal.

There has been increased interest in worm monitoring ('WormTest') in recent months over much of NSW. This is due in part to generally favourable seasonal conditions, but is also due to increased promotion by NSW Agriculture and Rural Lands Protection Board staff as part of the effort to increase adoption of 'integrated worm management'. Much of the impetus comes from the ever-worsening resistance problem. Resistance to benzimidazoles, levamisole and their combinations is widespread; resistance to closantel is common in *Haemonchus*-endemic areas; and resistance to the macrocyclic lactones is no longer a rarity.

Ovine Johne's disease

At the end of the quarter, 398 flocks were classified as infected, 429 as suspect and 1052 as 'under surveillance'. The large increase in the latter category is due to a change in policy concerning neighbours of infected properties There are now 30 properties in quarantine for ovine Johne's disease (OJD) in NSW and a further 133 have signed undertakings. A total of 90 properties are in the process of implementing Property Disease Eradication Plans that have been approved by NSW Agriculture.

There were 272 flocks assessed in the Market Assurance Program in NSW at the end of the quarter, a large increase from July 1998 when there were only 79 flocks in the program. During the quarter, a second flock in NSW failed its annual assessment, and is now classified as infected.

Ovine brucellosis

During the quarter, there were 212 submissions for ovine brucellosis testing under the Ovine Brucellosis Accreditation Scheme. Of these, 30 submissions had serological reactors and there were 10 inconclusive reactors. There were also 199 submissions for other reasons (generally diagnostic

or monitoring), with 80 submissions serologically positive and four inconclusive.

The number of flocks accredited in the scheme remains steady. Most reactors are from flocks in the western areas and Western Division of NSW. Many cases involved high numbers of reactors, indicating ovine brucellosis is still a significant disease problem in western areas.

Footrot Strategic Plan

Excellent seasonal conditions over wide areas of the State during late spring and early summer were ideal for expression of footrot, and therefore for evaluation of success or failure of the previous summer's eradication programs and uncovering new cases. In much of southern NSW, breakdowns were minimal. Lameness investigations by all field staff were extensive and largely in response to owner requests.

Footrot quarantines increased in each region, with most activity continuing to be in the New England area. Overall, flocks in quarantine rose from 195 to 237 for the quarter or 0.76% of the State's 31 291 flocks.

Laboratory work surged in response to the seasonal conditions with 208 footrot submissions handled through the Regional Veterinary Laboratory at Orange. Submissions were distributed evenly between north and south. Auditing continued in Narrabri and a small-scale survey in Goulburn commenced, targeting 40 flocks with a history of benign disease.

Cattle tick control program

The cattle tick examination program commenced in December in Kyogle and Murwillumbah. By mid-January, 469 herds had been examined, with 19 infestations detected within the Cattle Tick Protected Area and three infestations outside. At this stage, the rate of detection is higher than the two previous years at 3.3% of herds examined. All infestations detected to date are related to infestations detected in 1996–97 and 1997–98.

Bee diseases

There were 97 positive and 110 negative tests for American foulbrood in the quarter, making a total of 132 positive and 190 negative since July 1998. Of the 73 new notifications, 41 had positive reports during the last financial year.

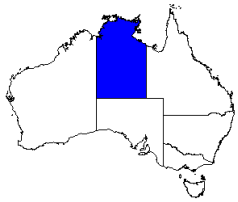
Bat viruses

During the quarter, 25 grey-headed fruit bats, two little red fruit bats and three black-headed fruit bats were examined for evidence of lyssavirus infection, with one testing positive. Two grey-headed fruit bats had serological evidence of Menangle paramxyovirus, one grey-headed fruit bat had verminous meningoencephalitis, and a black-headed fruit bat was diagnosed with streptococcal lymphadenitis and cellulitis.

A total of 187 fruit bats and 41 micro-bats have now been tested for Australian bat lyssavirus in NSW, with 12 positive fruit bats identified.

Researchers at Elizabeth MacArthur Agricultural Institute have further evidence that fruit bats are a reservoir of the Menangle paramyxovirus (see *AHSQ* Vol. 2 No. 3). Paramyxovirus have been identified in the faeces of some fruit bats by electron microscopy and has been confirmed as Menangle virus by immunogold labelling. Some of the fruit bats possess antibodies to the virus.

Northern Territory



Contributed by:
Diana Pinch
NT DPIF

Animal introductions

Serological testing of pigs for *Mycoplasma* antibodies, showed 21 reactors from 25 animals tested after an outbreak of severe respiratory disease, with deaths, but no reactors in 20 pigs bled before the outbreak. Histological findings were also consistent with a diagnosis of enzootic pneumonia (*Mycoplasma* infection) with secondary bacterial infection (*Streptococcus suis* type 2 was isolated). The history suggests that the *Mycoplasma* infection was introduced by pigs imported from interstate.

Calicivirus

Rabbit calicivirus activity was confirmed in the southern Alice Springs region during October, including the most northerly record of rabbit calicivirus disease (RCD). Rabbit numbers are still low in these areas where warren-ripping was combined with RCD infection. In areas without warren-ripping, rabbit populations are now about 20% of pre-RCD numbers.

Asian honey bees

Since the detection (and destruction) of a nest of Asian honey bees (*Apis cerana*) in June 1998, no other Asian bees have been found. More importantly, there has been no trace of any of three major exotic mite pests of bees (*Varroa jacobsoni*, *Tropilaelaps clareae* and *Acarapis woodi*) that often accompany Asian bees. In the six months since the incursion, 3324 bees and 6628 trachea have been examined from 206 hives. In addition, on comb examination from 76 hives, none of 2024 larvae and 387 pupae showed no evidence of mites. The testing will continue until June 1999.

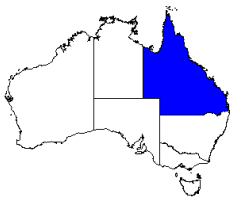
Poisonings

Fifteen of 900 recently weaned heifers died acutely. Post mortem examination of one animal showed a black, thickened rumen and dark liver and spleen. Histopathological examination showed severe rumenitis, and liver and kidney changes suggestive of a toxin. The heifers were being fed a supplement containing 25% urea and 15% ammonium sulphate. Urea poisoning (ammonia toxicity) was diagnosed.

Three deaths in a group of 30 yearling buffalo in the Darwin area were due to ironwood (*Erythrophleum chlorostachys*) poisoning, with ironwood leaves present in the rumen. Ironwood trees are found in many paddocks in the north of the Territory but do not generally cause poisonings. In this case, tree branches were downed by a storm into a pure pangola grass pasture.

Queensland

Contributed by:
Janet Berry
Queensland DPI



Surveillance communication

At the annual planning meeting for 1999, it was determined that a short, well-designed extension package would help departmental staff and producers around Queensland appreciate the importance of disease surveillance. A quarterly state newsletter, 'Surveillance Snapshot', will also be produced to circulate animal health information to all stakeholders.

Salmonella

There have been increased submissions from south region during the last quarter of samples from calves with diarrhoea. The pathogens isolated or demonstrated have been *E. coli*, rotavirus, coccidiosis, crytosporidiosis and *Salmonella typhimurium* and *dublin*. *Salmonella dublin* was isolated from an outbreak that caused 10 deaths and 12 sick animals out of 30 dairy heifer calves. In west region, salmonellosis has been diagnosed in two animals that, although single cases, showed clinical signs of the disease. *Salmonella muenchen* was isolated from duodenal ulceration in a single steer that collapsed after a mob of 140 were mustered into a yard. In another incident in the west, *Salmonella beaudesert* was isolated from a single heifer with dysentery.

High rainfall

Good summer rainfall around the State has resulted in further cases of tick fever and bovine ephemeral fever during the summer months. Ill-thrift due to internal parasitism has been reported in cattle, sheep and goats from many areas around the State. Blowfly strike has been severe in the south-west and many outbreaks of contagious ophthalmia have been reported from the same area.

Listeriosis in goats

There have been losses of 100 goats out of 700 on a property in the south-east. The goats had arrived about a month before deaths began. They were at pasture, but also fed on sorghum and fresh vegetable waste. *Listeria monocytogenes* was confirmed in a three-month-old goat kid that had been in lateral recumbency, paddling and displaying opisthotonus. Other mortalities among these goats were attributed to haemonchosis, dermatophilus infection, and lantana poisoning.

Bracken poisoning

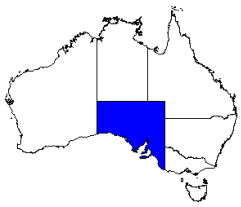
Chronic bracken fern poisoning was diagnosed on a number of dairy farms on the Atherton Tablelands. Anaemia, low albumin, red urine and frank blood in the urine were common findings. Urinary polyps were seen in many animals.

Pneumonia in pigs

Actinobacillus pleuropneumoniae was isolated from samples from three outbreaks of pneumonia in

Darling Downs piggeries. There were 70 deaths out of 2000 pigs aged 14 weeks on one piggery. Bronchopneumonia due to *Pasteurella multocida* was diagnosed as responsible for the deaths of 20 and sickness in 200 pigs in another piggery.

South Australia



Contributed by:
Kim Critchley
Primary Industries SA

Cattle deaths

Many cattle producers in the dryland country around Carrieton, report that in October–November, they lose many young growing animals. An intensive investigation was planned last year, but the problem did not occur. This year, deaths were reported from seven properties and involved 93 calves (54 from one property), 17 cows, three bulls and three yearlings. The predominant age group affected is 2–6 month old.

Freshly dead animals were submitted from three affected properties. In each case, the clinical and laboratory findings were similar. The notable gross finding was loose haemorrhagic large intestinal contents, and some had similar small intestinal contents. Generally, death had been so sudden that no scour was evident. Microscopically, there was ulceration and erosion of the intestinal epithelial lining, with villous atrophy and crypt abscesses.

Rinderpest and pestivirus serology has been negative and the lesions are not consistent with malignant catarrhal fever. The lesions suggest a viral cause, but to date no virus has been isolated although virology is continuing.

Enzootic bovine leucosis

The enzootic bovine leucosis eradication program is proceeding well, and at the end of 1998, there were seven infected cows left in the State'sdairy herd. It is expected these will be culled within the next year and herds currently carrying an Infected status will have completed a first clear whole-herd test to progress to a status of Provisionally Clear.

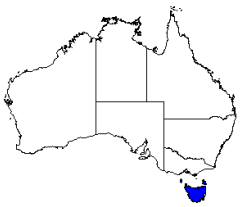
Mycoplasma gallisepticum

With the introduction of the Australian TS11 vaccine, mycoplasmal infections on laying farms have become rare. However, two farms continue to see a clinical problem in their flocks with the detection of the wild type organism, even though their birds are vaccinated. This is currently being investigated through the vaccine manufacturer and University of Melbourne, which was the original producer of the vaccine strain.

The South Australian Disease Database

Modelled on the system developed by Evan Sergeant in NSW, the South Australian Disease Database has now been operating for just over a year and is beginning to accumulate enough data to produce some interesting results. Because it is based mainly on laboratory findings, information needs to be taken in the light of the bias inherent in such a source. The information in the system shows that of the goats tested for caprine arthritis–encephalitis, about one-third of the herds had infection. With respect to salmonella typing, *Salmonella typhimurium* was the most common isolate, followed by *S. dublin*. There was also an outbreak of *S. newport* in a horse stable.

Tasmania



Contributed by:
Rod Andrewartha
DPIWE, Tasmania

Exotic disease exclusion

The Animal Health Laboratory received a case for which the presenting signs in the written history were suggestive of a possible vesicular disease. Personnel from sample reception went into 'exotic disease containment' mode and contacted the submitting practitioner to clarify details of the submission, such as the degree of clinical examination undertaken and the general herd health status and condition. There was no concern on the part of the practitioner with regard to a vesicular disease. The submitted samples were processed for liver function and confirmed the presence of liver damage, which supported the suspicion the problem was one of hepatogenous photosensitisation.

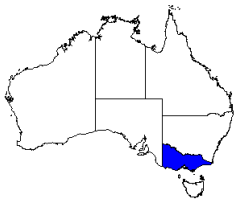
Ovine Johne's disease

OJD was first diagnosed in Tasmania on Flinders Island in June 1996 and infection has now been confirmed in 19 properties on the island. Three of these properties have destocked their sheep under a Property Disease Eradication Program. Sheep from a further 33 properties on the island have been tested for OJD with negative results. Twenty-seven of these properties remain under surveillance as they are neighbours of infected flocks.

No evidence of OJD has been found in other areas Tasmania. Thirty properties on mainland Tasmania have produced negative results from testing in response to the traces of high risk sheep. A further 19 properties have entered the Market Assurance Program.

Victoria

Contributed by:
John Galvin
Agriculture Victoria



Ovine Johne's disease

At the end of 1997, OJD had been detected in 66 Victorian sheep flocks. During 1998, 763 flocks were investigated, involving more than 58 000 blood tests (compared to 14 500 blood tests in 1996 and 1997). This resulted in the detection of a further 31 infected flocks. The level of testing and other investigation activities during 1998 was considerably higher than in the previous two years, as a result of the National Interim Surveillance Program for OJD. Despite the significantly increased number of sheep tested, the percentage of flocks found to be infected compared to flocks tested continues to fall.

Bovine Johne's disease

Victoria operates a voluntary test and control program for Johne's disease (JD) infected cattle herds, based on annual herd testing with the absorbed enzyme-linked immunosobent assay and implementing on-farm JD control measures. The program commenced in 1996 and since then 614 herds have participated (576 dairy herds and 38 beef herds). An analysis of the initial results of herd testing shows that there has been a slow reduction in ELISA reactor rates.

In 34 herds that have had four or more annual herd tests, there has been a marked reduction in the number of clinical cases occurring after herd testing began. An examination of the dates of birth of reactors at the initial herd test compared to the fourth herd test shows that animals born after the start of the program have a lower reactor prevalence than those born before the start of the program. This is the earliest indication that the program is reducing spread of disease to subsequent generations of cattle on infected farms. Reactor prevalence in 4–7-year-old cattle born before the start of the program was not significantly different between the first and fourth herd test. These initial findings are not unexpected given the nature of bovine JD and the fact that cattle born before the start of the program were probably exposed to significant infection and thus more likely to contract disease compared to cattle born after the start of the program.

Disease investigations

Cobalt deficiency was diagnosed as the cause of significant illthrift and mortality in a dairy herd and the problem was complicated by coexistent copper and selenium deficiencies. An outbreak of salmonellosis caused mortalities in a beef calf rearing farm.

Water deprivation is thought to be the cause of death of 110 sheep from a flock of 130 that were introduced in early summer into an unfamiliar 100 hectare paddock. Although there was ample water in the paddock, it is believed the sheep were unable to locate it because high grass made it impossible for them to find the water. Most carcases were located in one corner of the paddock, furthest from the water but adjacent to a nearby creek. It is believed that they stayed in this area hoping to reach the creek, without finding the water that was available in the paddock.

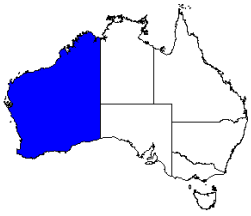
NAHIS web site

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

This newsletter is available on the NAHIS website, which provides information and statistics about animal health in Australia.

Western Australia

Contributed by:
Richard Norris
Agriculture WA



Cattle

Typical mucosal disease was seen in calves at Denmark. Scours in week-old calves in the Bunbury area were associated with clostridia in one case and viral infection in another. Fibrinous pleuropneumonia caused by *Pasteurella multocida* and parainfluenza 3 virus resulted in sickness and death in young steers at Benger. At Albany, feedlot steers had similar lesions caused by *Haemophilus somnus*. An unusual syndrome, characterised by spectacular dorsal prominence of the scapulae, was associated with atrophic myopathy and ruptured muscles of the thoracic limb-girdle in three out of 500 weaner steers at Boyup Brook. A cause was not determined.

Sheep

Annual ryegrass toxicity occurred on several properties in the north eastern wheatbelt. Haemoglobinuric nephrosis caused by *Eperythrozoon ovis* was seen in weaners at Dongara and Boddington. Copper poisoning was diagnosed in recently introduced Dorset ewes at Mount Barker, grazing pasture previously consumed safely by Merino sheep. Rumenitis was seen in 70% of a mob of 1300 sheep turned onto a frost-damaged oat crop at Narrogin. A new syndrome of nephrosis, sometimes with hepatopathy, was seen in sheep grazing canola stubbles in several locations — the cause is being investigated. Oxalate nephrosis caused by iceplant (*Mesembryanthemum nodiflorum*) ingestion was seen at Trayning and Wongan Hills.

Horses

A case of purpura haemorrhagica at Bunbury caused concern because of the clinical similarity to equine morbillivirus (EMV, now called Hendra virus). The animal had severe pulmonary oedema and haemorrhage in the terminal stages but Hendra virus was eliminated by testing at the Animal Health Laboratory, South Perth and at AAHL. The case highlighted the care that must be taken to ensure that all handlers, including veterinarians, are not placed at risk from this potentially deadly zoonotic disease. Elsewhere, annual ryegrass-contaminated hay from the 1995 outbreak again caused toxicity and deaths in horses.

Other species

African hunting dogs died at the Perth Zoo after being accidentally fed barbiturate-contaminated meat. Chytridiomycosis (probably *Chytridium confervae*) was diagnosed for the first time in frogs at the zoo. This is the second lethal fungal infection found in frogs (*Mucor amphibiorum* was identified in 1998). A fresh outbreak of mortalities in pilchards in southern waters was investigated (see page 1). *Mycobacterium avium* was responsible for granulomatous lesions in the mesenteric lymph nodes of pigs in two locations in the great southern region. Baculoviral pancreatitis was seen in red claw yabbies imported from interstate.

Practitioner seminars

Two seminars were held for private veterinarians in the Perth outer metropolitan area in November. The seminars were aimed at raising awareness of the importance of disease surveillance in a changing world with special emphasis on disease diagnosis, use of the diagnostic laboratory, and exotic disease preparedness. The seminars focused on the pig, poultry and horse industries.

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 Health Science and Emergency Management Branch, National Offices of Animal and Plant Health and Food Safety, AFFA.

Quarterly Disease Statistics

Control activities

Tuberculosis

Australia was declared a Free Area for bovine tuberculosis (TB) on 31 December 1997. The National Granuloma Submission Program is the major surveillance tool for TB. Table 1 summarises results from the Program. No cases of TB were detected in the current quarter in the 923 granulomas that were submitted. Table 2 gives the number of herds in which TB has been detected in the past nine years.

Table 1: Results of the National Granuloma Submission Program

	Granulomas submitted	TB +ve
Oct – Dec 97	855	0
Jan – Mar 98	559	0
Apr – Jun 98	615	0
Jul – Sep 98	765	2
Oct – Dec 98	923	0
NSW	239	0
NT	10	0
QLD	340	0
SA	39	0
TAS	23	0
VIC	38	0
WA	234	0

Table 2: Herds with TB detections

	1990	91	92	93	94	95	96	97	1998
NSW	1	0	1	0	0	1	0	0	0
NT	2	1	2	7	5	5	3	4	2
QLD	5	6	4	1	2	1	1	2	2
SA	0	0	1	0	0	0	1	0	0
TAS	0	0	0	0	0	0	0	0	0
VIC	0	2	1	0	0	1	1	0	0
WA	0	0	0	1	0	1	1	1	1
AUS	8	9	9	9	7	9	7	7	5

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 127 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 3.

Table 3: Surveillance for bovine brucellosis

	Abortion Investigations		Test for other reasons	
	Tests	+ve	Tests	+ve
Oct – Dec 97	169	0	2847	0
Jan – Mar 98	79	0	1285	0
Apr – Jun 98	86	0	524	0
Jul – Sep 98	218	0	2459	0
Oct – Dec 98	127	0	3278	0
NSW	17	0	227	0
NT	0	0	0	0
QLD	52	0	119	0
SA	3	0	5	0
TAS	1	0	30	0
VIC	0	0	149	0
WA	54	0	2748	0

Enzootic bovine leucosis

Enzootic 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 of EBL at the end of the quarter.

Table 4: Dairy herds tested free of EBL at 31 December 1998

	NSW	NT	QLD	SA	TAS	VIC	WA	AUS
Free	1513	0	1735	729	621	6481	455	11 534
Herds	1749	0	2026	739	683	8453	455	14 105

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 1998

NSW	NT	QLD	SA	TAS	VIC	WA	AUS
1252	0	71	533	151	740	86	2833

Johne's disease

JD occurs primarily in dairy cattle and sheep in Australia and to a lesser extent in beef cattle and dairy goats. It has also been diagnosed in a small number of alpacas in recent years. JD occurs in NSW, Victoria, Tasmania and South Australia (SA). Surveillance programs have not identified endemic JD in Queensland, Western Australia and Northern Territory, and active measures are taken to stamp-out any incursions. Table 6 shows the number of herds and flocks known or suspected to be infected. A National Ovine Johne's Disease Control and Evaluation Program for the next six years has been endorsed. Market Assurance Programs (MAPs) are in operation for cattle, sheep, and alpaca.

The number of CattleMAP assessed herds increased from about 530 in October to 564 by 31 December, with more than one-quarter of TN2/MN2 status. The status of 13 herds lapsed from TN1/MN1 to NA. One-third of the assessed herds are dairy herds and two-thirds beef herds; 92% (519) are in NSW with 23 herds in Victoria, 21 in SA and one in Tasmania.

Although the Interim Research and Surveillance Program concluded in September, the resulting momentum and market expectation helped continue to increase uptake in the SheepMAP, with more than 200 new flocks being assessed. There were 565 sheep flocks assessed as MN1: NSW 272, SA 171, Victoria 83, and Tasmania 19 .

Table 6: Herds/flocks with JD at 31 December 1998

	Cattle	Sheep	Goats	Alpacas	Total
NSW	146	398	14	0	558
NT	0	0	0	0	0
QLD	0	0	0	0	0
SA	30	20	0	0	50
TAS	36	19	9	0	64
VIC	1767	13	8	11	1799
WA	0	0	0	0	0
AUS	1979	450	31	11	2471

Since August 1998, monitoring of suspect sheep detected OJD in three flocks assessed as MN1. In Victoria, OJD was found following the investigation of thin sheep purchased from one assessed flock. The annual MAP assessments diagnosed OJD in thin sheep selected for post mortem investigation in two NSW flocks. An assessed status in the SheepMAP demonstrates that the flock has a low risk of being infected but does not confirm freedom from disease. These cases emphasise the importance of owners and approved veterinarians carefully monitoring the health of their assessed flocks.

Information about the various JD MAPs can be obtained from David Kennedy (02) 6365 6016 or Bruce Allworth (02) 6036 9233. Lists of assessed cattle herds and sheep flocks are available on a fax-back service on 1902 940 579 or on the internet (at http://www.brs.gov.au/aphb/aha/jdmap).

Laboratory testing

The results of serological testing for a range of viral diseases from routine laboratory submissions for the quarter are shown in Table 7.

Table 7: Serological testing from routine submissions to State and 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 97	2229	356	7442	322	1464	180	5228	2	710	1	462	26
Jan – Mar 98	1683	408	8005	224	2072	611	907	16	657	0	708	9
Apr – Jun 97	2951	568	9196	380	2692	316	1142	6	449	0	230	1
Jul – Sep 98	1988	572	11438	138	1622	261	525	4	594	0	576	4
Oct – Dec 98	1559	305	4976	397	957	163	3023	4	709	8	354	6
NSW	21	2	339	36	347	35	445	1	265	0	191	4
NT	1192	225	695	231	242	67	18	3	1	0	0	0
QLD	148	65	3381	120	100	50	70	0	153	8	0	0
SA	1	0	263	0	1	0	0	0	8	0	2	0
TAS	0	0	26	0	60	0	0	0	0	0	3	0
VIC	100	0	137	0	98	0	0	0	196	0	96	2
WA	97	13	135	10	109	11	2490	0	86	0	62	0

Surveillance activities

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 8 summarises NAQS activity over the past five quarters.

Table 8: Summary of recent NAQS activity

	Oct – Dec 97		Jan – Mar 98		Apr – Jun 98		Jul – Sep 98		Oct – Dec 98		Notes
	Tests	+ve	Tests	+ve	Tests	+ve	Tests	+ve	Tests	+ve	
Aujeszky's disease	0	0	0	0	58	0	21	0	78	0	
Avian influenza	0	0	0	0	157	0	35	0	15	0	
Classical swine fever	50	0	27	0	70	0	21	0	78	0	
Infectious bursal disease	0	0	8	0	147	2	0	0	0	0	
Japanese encephalitis	211	0	556	36	587	16	32	0	172	0	a
Screw-worm fly	2	0	1	0	0	0	0	0	1	0	b
Newcastle disease	0	0	12	0	167	0	35	5	16	0	
Porcine reproductive and respiratory syndrome	0	0	0	0	58	0	19	0	18	0	
Surra	250	0	236	0	98	0	7	0	144	0	
Swine influenza	0	0	0	0	58	0	21	0	78	0	
Transmissible gastroenteritis	0	0	0	0	58	0	21	0	78	0	
Trichinellosis	0	0	16	0	22	0	0	0	42	0	

Notes

a In previous years, animals at sentinel sites on islands in the Torres Strait, but not the Australian mainland, have shown seroconversions during the latter part of the wet season (March–April). In March 1998, seroconversions occurred at a number of sentinel sites on islands in the Torres Strait (Saibai, Badu, Moa and Mabuiag), and for the first time on the mainland, near Bamaga, at the tip of Cape York Peninsula.

b These figures count *ad hoc* examinations of animals with lesions consistent with for screw-worm fly. In addition, three screw-worm fly traps are located at each of 24 sites in coastal areas across northern Australia. These traps are inspected monthly and no screw-worm flies have been found.

Contact: David Banks, AQIS

Rabbit calicivirus

In arid and semi-arid areas of Australia that receive less than 300 mm of annual rainfall, the monitoring program for rabbit calicivirus disease (RCD) found that 73% of intensive and broadscale monitoring sites/ subsites recorded rabbit population declines of greater than 65%. Only 46% of sites in wetter areas recorded similar declines.

The seventh report of the RCD Monitoring and Surveillance and Epidemiology Programs was released in December 1998. The results from the 1996–98 Program are being compiled into four final RCD Program Reports, one each on the themes of viral spread and release, integrated rabbit control, biodiversity and agricultural production. There will also be an Overview Report that will draw together the key findings from these reports. These RCD Program Reports are due to be completed by June 1999.

For further information contact Helen Neave, Project Officer, RCD Monitoring and Surveillance Program, phone (02) 6272 5007

National Residue Survey

Of 4130 samples tested during the quarter for agricultural and veterinary chemicals, 10 (0.24%) had residues above the maximum residue limit (MRL): five pig samples for oxytetracycline (from 0.26 to 0.52 mg/kg) and another five pig samples for chlortetracycline (from 0.06 to 0.14 mg/kg). All 10 of these samples are below the new MRLs that have been proposed by the National Registration Authority, but have yet to be adopted into the Australian Food Standards Code. Table 9 summarises the results for the quarter.

Table 9: National Residue Survey, 1 October to 31 December 1998
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	AUS
Anthelmintics								
cattle	0 73	0 0	0 70	0 15	0 5	0 24	0 16	0 203
pigs	0 22	0 0	0 17	0 5	0 0	0 16	0 6	0 66
sheep	0 134	0 0	0 21	0 60	0 14	0 104	0 78	0 411
other	0 2	0 0	0 0	0 0	0 0	0 1	0 0	0 3
Total	0 231	0 0	0 108	0 80	0 19	0 145	0 100	0 683
Antimicrobials								
cattle	0 97	0 4	0 108	0 28	0 5	0 45	0 24	0 311
pigs	3 110	0 0	3 89	0 33	0 1	4 100	0 32	10 365
poultry	0 0	0 0	0 0	0 0	0 0	0 20	0 39	0 59
sheep	0 55	0 0	0 9	0 28	0 10	0 55	0 42	0 199
other	0 9	0 1	0 14	0 7	0 0	0 1	0 0	0 32
Total	3 271	0 5	3 220	0 96	0 16	4 221	0 137	10 966
Growth promotants								
cattle	0 132	0 11	0 156	0 34	0 26	0 74	0 42	0 475
pigs	0 5	0 0	0 5	0 4	0 0	0 6	0 1	0 21
poultry	0 0	0 0	0 0	0 0	0 0	0 2	0 4	0 6
sheep	0 76	0 0	0 8	0 36	0 11	0 55	0 58	0 244
other	0 9	0 0	0 20	0 3	0 0	0 1	0 0	0 33
Total	0 222	0 11	0 189	0 77	0 37	0 138	0 105	0 779
Insecticides								
cattle	0 151	0 10	0 143	0 32	0 13	0 87	0 22	0 458
feral	0 13	0 0	0 24	0 0	0 0	0 0	0 0	0 37
pigs	0 21	0 1	0 14	0 6	0 1	0 17	0 7	0 67
poultry	0 0	0 0	0 0	0 0	0 0	0 8	0 12	0 20
sheep	0 246	0 1	0 29	0 122	0 21	0 173	0 173	0 765
other	0 24	0 2	0 52	0 11	0 9	0 3	0 2	0 103
Total	0 455	0 14	0 262	0 171	0 44	0 288	0 216	0 1450
Metals								
cattle	3 25	0 0	1 23	0 3	0 2	0 15	0 4	4 72
pigs	1 6	0 0	0 5	0 4	0 0	1 9	0 4	2 28
poultry	0 0	0 0	0 0	0 0	0 0	0 4	0 5	0 9
sheep	0 29	0 0	0 5	1 13	0 4	0 17	6 28	7 96
other	0 1	0 2	0 1	0 0	0 0	0 0	0 0	0 4
Total	4 61	0 2	1 34	1 20	0 6	1 45	6 41	13 209
Miscellaneous								
cattle	0 46	0 2	0 48	0 7	0 7	0 17	0 8	0 135
feral	0 2	0 0	0 6	0 0	0 0	0 0	0 0	0 8
sheep	0 30	0 0	0 3	0 24	0 3	0 26	0 18	0 104
other	0 0	0 0	0 0	0 0	0 5	0 0	0 0	0 5
Total	0 78	0 2	0 57	0 31	0 15	0 43	0 26	0 252

Further 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:

- About the National Residue Survey
- NRS Staff Contacts
- NRS 1997–98 Annual Report (Summary)
- NRS 1997 Results (Summary)
- NRS Recent Publications and Papers
- Extension Materials for Residues in Meat
- Frequently Asked Questions
- Information for Laboratories
- Associated Web Sites

Full versions of Annual and Results Reports are available on request from:

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NRS, National Offices of Animal and Plant Health and Food Safety,
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Zoonoses

The National Notifiable Diseases Surveillance System of the Communicable Diseases Network Australia New Zealand collects statistics about many human diseases. *Communicable Diseases Intelligence* (CDI) is accessible on the internet (at http://www.health.gov.au/pubhlth/cdi/cdihtml.htm). Table 10 summarises some of the information for zoonoses.

Contact: Communicable Diseases Intelligence, Australian Department of Health and Aged Care

Table 10: Notifications of zoonotic diseases in humans

Disease	Q4-97	Q1-98	Q2-98	Q3-98	Q4-98	Current quarter							
	Australia				AUST	ACT	NSW	NT	QLD	SA	TAS	VIC	WA
Brucellosis	13	13	50	56	14	0	0	0	13	0	0	1	0
Hydatidosis	19	9	71	74	13	0	0	0	1	0	0	12	0
Leptospirosis	33	40	175	178	68	0	19	0	28	0	1	16	4
Listeriosis	9	18	63	41	15	0	5	0	2	1	1	5	1
Ornithosis	7	5	43	38	28	0	2	0	0	0	0	26	0
Q fever	124	114	685	680	148	0	70	0	55	4	0	16	3

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 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 NSSS. Table 11 summarises *Salmonella* isolations from animals, notified to NSSS for the quarter

Contact: National Salmonella Surveillance Scheme, Microbiological Diagnostic Unit, University of Melbourne

Table 11: Salmonella notifications, 1 October to 31 December 1998

Serovars	avian	bovine	canine	equine	feline	ovine	porcine	other	Total
S. bovismorbificans	0	2	0	0	0	0	0	0	2
S. dublin	0	47	0	0	0	0	0	1	48
S. infantis	0	0	0	0	0	0	0	0	0
S. typhimurium	6	43	1	4	1	3	4	9	71
Other	6	19	8	14	1	1	0	14	63
Total	12	111	9	18	2	4	4	24	184

Suspect exotic disease investigations

There were 24 exotic disease investigations reported during the quarter, as shown in Table 12.

Table 12: Suspect exotic disease investigations

Disease	Species	State	Reponse see key	Finding
Australian bat lyssavirus	porcine	Qld	2	Negative
Australian bat lyssavirus	fauna	Qld	3	Negative
Australian bat lyssavirus	other	WA	3	Negative
Avian influenza	avian	NSW	3	Negative
Classical swine fever	porcine	Qld	3	Negative
Duck virus enteritis	avian	Qld	2	Necrotising hepatitis and splenitis
Foot-and-mouth disease	bovine	Qld	2	Photosensitisation
Newcastle disease	avian	Qld	2	Botulism
Newcastle disease	avian	SA	3	Salmonellosis
Newcastle disease	avian	WA	3	Negative
Newcastle disease	avian	Qld	3	Negative
Newcastle disease	avian	Qld	2	Marek's disease
Potomac fever	equine	Qld	2	Negative
Rabies	fauna	Qld	3	Negative
Rabies	feline	WA	3	Negative
Rabies	canine	WA	3	Negative
Rabies	fauna	Qld	2	Negative
Screw-worm fly	bovine	NT	2	Negative
Screw-worm fly	canine	Qld	2	*Chrysomya megacephala and C. saffranea*
Screw-worm fly	canine	NT	2	Negative
Tropical canine pancytopaenia	canine	NT	2	Negative
Tropical canine pancytopaenia	canine	NT	3	Negative
Tropical canine pancytopaenia	canine	NSW	3	Confirmed in a dog recently released from quarantine (see page 5)
Vesicular disease	bovine	Tas.	2	Hepatogeneous photosensitisation

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

NAHIS contacts

The National Animal Health Information System (NAHIS) is on the Internet at www/brs/gov/au/aphb/aha . NAHIS collects summaries of animal health information from many sources. Because NAHIS does not duplicate the data in those systems, the relevant person below should be contacted if further details are required.

Name	Role	Phone	Fax	e-mail
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David **Banks**	Northern Australia Quarantine Strategy	02 6272 5444	02 6272 3399	David.Banks@aqis.gov.au
Janet **Berry**	Qld State Coordinator	07 4658 4414	07 4658 4433	BerryJ@dpi.qld.gov.au
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Paul **Crew**	CEO AAHC	02 6232 5522	02 6232 5511	aahc@ozemail.com.au
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Ana **Herceg**	Communicable Diseases Intelligence	02 6289 1555	02 6289 7791	http://www.health.gov.au
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