Volume 9 Issue 3

Animal Health Surveillance

1 July to 30 September 2004 QUARTERLY REPORT

ISSN 1445-9701

CONTENTS

AnimalHealth AUSTRALIA
Australian Animal Health Council Ltd ACN 071 890 956

Preface

This issue includes details of several of the ongoing initiatives designed to enhance Australia's ability to detect and respond to emergency animal diseases. Articles include news of activities resulting from the Australian Government's implementation of the *Review of Rural Veterinary Services* (Frawley report) and the first semi-annual update on the activities of the Australian Biosecurity Cooperative Research Centre for Emerging Infectious Disease (AB-CRC).

Other topics include highlights of disease surveillance activities, items of interest from States and Territories, and summaries of disease monitoring and surveillance programs reported to Australia's National Animal Health Information System (NAHIS). 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. The *AHSQ* is available on the Animal Health Australia website (at www.aahc.com.au/nahis).

Gardner Murray
Australian Chief Veterinary Officer

The Australian Veterinary Reserve

More than one thousand applications have been received from veterinarians around Australia to participate in the Australian Veterinary Reserve program, an initiative arising from the Australian Government implementation of the *Review of Rural Veterinary Services* (Frawley report; see AHSQ Vol. 9, No. 1). Over the next three years, one hundred vets will be trained for membership in the Australian Veterinary Reserve, forming an important resource for state responses to animal health emergencies. This group represents a more formal integration of private and public veterinary services to ensure a coordinated emergency capability to protect Australia's disease freedom status.

Twenty non-government veterinarians will commence the first training course in November. Selection of the veterinarians who are offered paid training for emergency animal disease surveillance activities is based on location (remoteness), previous training or experience in emergency animal disease situations, and registration with the Accreditation Program for Australian Veterinarians, which enables private sector veterinarians to integrate more effectively with their public sector colleagues to work in government-coordinated programs. Delivery of training is being managed by Animal Health Australia for the Department of Agriculture, Fisheries and Forestry (DAFF). This will be the first nationally accredited Emergency Animal Disease Training package offered under the Australian National Training Authority competency based training framework.

Contributed by: Jane Bennett, Strategic Policy Unit, DAFF

Towards an integrated National Animal Health Surveillance System

Other initiatives from the Australian Government implementation of the Frawley report involve developing avenues for animal health surveillance that enhance our capacity to detect emerging diseases of trade, human health and biodiversity significance.

The Frawley Surveillance Steering Committee (chaired by Mike Nunn, OCVO, DAFF) has met to develop a work plan to progress initiatives in this area. A number of smaller projects have already commenced:

- a consultancy to evaluate baseline data in human health/zoonoses is being finalised
- a report on data retrieval from private veterinarians is under discussion
- another report on the potential contribution of wildlife agencies to surveillance is being circulated
- State Coordinators of the Australian Wildlife Health Network have met to discuss future needs and recommendations from the consultancy report
- a reference group will soon be established to explore prioritisation, syndrome surveillance, and triggers for investigation in wildlife
- a pilot trial involving approximately twenty private veterinary practices across a range of practice types and locations will commence in 2005 to test various systems of data retrieval.

The Steering Committee on the Utilisation of Diagnostic Laboratories (chaired by Kevin Dunn) met in September and agreed terms of reference, identified background documents, outlined a workplan, and listed a series of tasks to be undertaken by mid-November 2004. National standards and access to surveillance data are critical elements of Australia's surveillance capacity and this committee will be working in concert with the Surveillance Steering Committee as well as the Integration of Non-Government Veterinarians Steering Committee to progress towards a more integrated National Animal Health Surveillance System for Australia.

Contributed by: Jane Bennett, Strategic Policy Unit, DAFF

Wildlife Surveillance in Australia

Global changes have many impacts on our environment, including an increasing interface with wildlife as habitats fragment, climate changes, and wildlife, humans and vectors come into closer association. In recent years, a number of emerging diseases either have originated from wildlife or have a significant wildlife component in their epidemiology. Examples include human immunodeficiency virus–acquired immune deficiency syndrome (HIV–AIDS), sudden acute respiratory syndrome (SARS), Hendra virus, Nipah virus, Menangle virus, and Australian bat lyssavirus. In response to these changes, and in recognition of the need for wildlife surveillance to focus on assisting management of risks to trade, human health and biodiversity, the Australian Wildlife Health Network (AWHN; the network) has been established to improve communications between the individuals and agencies working with wildlife health. The Australian Government's Wildlife Exotic Disease Preparedness Program funds the network. Its vision is a nationally integrated wildlife health system for Australia.

Together with support from the Frawley Surveillance Steering Committee, the AWHN is advancing its key objective of improving wildlife surveillance capacity by developing guidelines to build a more robust system for the future. The network operates a general surveillance system based on reporting by state and territory coordinators. These coordinators meet quarterly by teleconference and supply the information presented in AHSQ to support (amongst others) the National Animal Health Information System (NAHIS), the National Enteric Pathogen Surveillance Scheme (NEPSS), and fulfill Australia's OIE (World Organisation for Animal Health) wildlife reporting obligations.

State coordinators met face-to-face in Canberra for the first time in September 2004, to discuss their roles, as well as contribute to a vision of the future of wildlife surveillance in Australia. Representatives from animal health agencies, zoos, diagnostic laboratories and conservation agencies brought a wealth of experience and passion for the subject to the issues faced in this area. Some key areas to be addressed in the future were identified by the group as:

- interagency communication and links
- resources for diagnostic work (human and funding)
- overcoming the 'not my core business' mentality
- lack of dedicated resources (for example, wildlife positions in animal health agencies), and funding.

In the short term, Frawley funding will support a reference group from AWHN to further develop

prioritisation for wildlife surveillance, including syndrome investigation and triggers for investigation. This will assist animal health agencies to channel appropriate resources to the task of building our wildlife surveillance capacity to manage trade and human health risks.

AWHN is due to launch a web-based wildlife health information system (WHIS) early in 2005 that uses international standards and technology for web-based reporting. This will enable integration of data from a variety of agencies through the network, and is a pivotal part of improving our capacity in this area. WHIS has been developed in consultation with the national information management technical group, and is planned to be compatible with mainstream surveillance data.

Contributed by: Rupert Woods, Coordinator, Australian Wildlife Health Network, and Jane Bennett, Strategic Policy Unit, DAFF

Australian Biosecurity CRC

The Australian Biosecurity Cooperative Research Centre for Emerging Infectious Disease (AB-CRC) was one of 30 CRCs funded by the Federal government in the 2002 CRC selection round, and was launched by the Federal Minister for Science, The Hon Peter McGauran, in November 2003.

OBJECTIVES

The AB-CRC was established to build national capacity for prevention, preparedness and response to emerging infectious disease threats such as foot-and-mouth disease. Achieving this goal requires multidisciplinary research capacity in microbiology, molecular biology, nanochemistry, geographic information and spatial science, mathematical modelling and applied epidemiology. The value of the AB-CRC is in bringing together the key capabilities of each of our partners from across the research, government and industry sectors to enhance our capacity to deliver research, education and training. Our partners are:

Core and Supporting

- Animal Health Australia
- Australian Government Department of Agriculture, Fisheries and Forestry
- Australian Pork Ltd
- CSIRO
- Curtin University of Technology
- Department of Agriculture, Western Australia
- University of Queensland
- AusVet Animal Health Services
- James Cook University
- Murdoch University
- Queensland Department of Primary Industries & Fisheries
- Queensland Department of Health
- University of Sydney
- Western Australian Centre for Pathology and Medical Research

Associate and International

- Agen Biomedical Ltd
- Australian Government Department of Health and Ageing
- Meat and Livestock Australia Ltd
- Northern Territory Department of Business, Industry and Resource Development
- PANBIO Ltd
- Consortium for Conservation Medicine (USA)
- National Center for Foreign Animal Diseases (Canada)
- OIE South-East Asian Foot-and-Mouth Disease Campaign Regional Coordinating Unit (Thailand)

RESEARCH PORTFOLIO

Our Research Program is built around three integrated sub-programs:

1. **Technologies to enhance detection:** involves developing new and improved detection methods for significant emerging infectious disease threats. Speedy detection of a pathogen and/or antibody has a major impact on the success of disease response. Novel laboratory-based technologies will permit faster detection of pathogens, with enhanced sensitivity and specificity. Hand-held devices allow an immediate response following on-site detection of a pathogen and, in the absence of sophisticated laboratory tests, can be readily used for pre-border surveillance. Implantable biosensors to detect antibodies or pathogens offer the possibility of real-time surveillance in sentinel animals.

2. **Ecology of emerging infectious diseases:** aims to elaborate the disease ecology of prioritised emerging infectious disease threats. Effective emerging infectious disease preparedness requires an understanding of the ecology of the natural host of the disease, and of the disease agent. To reflect this, the projects in this research sub-program generally cover:

- host range and interactions, and
- mode of transmission, maintenance and dispersal

This research sub-program emphasises the role of wildlife in disease transmission, as infectious agents of wildlife represent an increasing proportion of emerging infectious diseases in humans and livestock species. This phenomenon is widely attributed to increased exposure of humans and domestic animals to wild animals, associated with ecological change.

3. **Advanced surveillance systems:** aims to integrate the outcomes of sub-programs 1 and 2 and, along with new and existing technologies, develop new methods for:

- systematic and efficient data capture,
- organising and linking data from an expanded range of data sources, and
- developing new decision support tools and systems that exploit the potential of spatial analysis and computer modelling.

Effective surveillance is essential for early detection of new and exotic diseases, management of disease outbreaks, and for endemic disease control. Research projects in this sub-program are designed to enhance our surveillance capacity. They are developed to capture surveillance data and other information, including host population distribution, and disease information from remote regions. They will gather new and existing data into readily useable and broadly accessible information systems, and provide tools to analyse this data to detect disease more quickly and/or to provide evidence of freedom from disease.

The AB-CRC is putting a portfolio of projects in place that will enhance our national disease response capacity. Nine well-integrated research projects have commenced across all three sub-program areas. Research project topics include new diagnostic tests, vector studies, and new surveillance tools. Two of the shorter projects are already coming to successful completion, and other project applications are under consideration. For more information about specific research projects visit our website www.abcrc.org.au, e-mail info@abcrc.org.au, or contact Corinna Lange by telephone on (07) 3346 8864.

Contributed by: Corinna Lange, Communications Officer, AB-CRC

Regional Workshop on Aquatic Animal Health Emergencies

The United Nations Food and Agricultural Organization (FAO), in partnership with the Government of Indonesia, the Network of Aquaculture Centres in Asia-Pacific (NACA) and the WorldFish Centre, hosted a Regional Workshop on Preparedness and Response to Aquatic Animal Health Emergencies. The workshop was held in Jakarta, Indonesia from 21–23 September 2004. Many regional countries were represented, including Australia, Indonesia, Vietnam, Laos, Philippines, Sri Lanka, Bangladesh and Japan.

The purpose of the workshop was to assist regional countries to draw on practical experiences to strengthen preparedness and response to serious aquatic animal disease emergencies. The workshop also provided valuable information to assist countries of the region to identify actions to reduce the impacts of koi herpesvirus on aquaculture and small-scale fisheries.

The workshop followed from the many serious disease outbreaks that have severely affected aquaculture production in parts of the region over recent years. Examples include koi herpesvirus which has affected carp in Indonesia and Japan, the spread of whitespot syndrome of prawns through Asia, and the recent introduction of Taura syndrome of prawns in Thailand, China and Indonesia. (These three diseases have not spread to Australia.)

More than 90 per cent of world aquaculture production comes from the local region, and production is continuing to rapidly expand and diversify. Aquaculture is an important source of animal protein, employment, rural community livelihood and export income for the region. The recent experiences with disease emergencies in aquaculture have had a significant impact on food availability and economic development in many Asian countries.

There were workshop sessions on ‘Experiences and Lessons Learnt’, ‘Control and Management’ and ‘Institutional Arrangements and Capacity Building’. Topics of papers presented included national and international perspectives, practical examples, trade impacts, legal frameworks and the FAO terrestrial animal experience. After these sessions, discussion groups looking at early warning, early response, and regional coordination, in which the groups identified the national capabilities, institutional structures and capacity building requirements of an effective preparedness and response system.

Participants were enthusiastic about the need for improved preparedness and response capabilities and were keen to make local improvements. There was a strong desire for a follow-up workshop after a few years to review progress and refocus efforts, and the proceedings of the workshop are to be published.

Contributed by: Peter Beers, Animal Biosecurity, DAFF

AUSVETPLAN news

AUSVETPLAN (Australian Veterinary Emergency Plan) is a series of technical response manuals that describe the Australian approach to an exotic or emergency animal disease incident. The manuals provide guidance based on sound analysis, linking policy, strategies, implementation, coordination and emergency management procedures. Internationally recognised as best practice, the collection has grown to include over 40 manuals. Over the past 12 months, AUSVETPLAN has undergone some behind-the-scenes changes to streamline the processes involved in keeping the manuals up-to-date. Animal Health Australia, the custodian of AUSVETPLAN, is planning further changes for 2004–05.

Animal Health Australia recently gained endorsement for a Publication Management Plan to ensure the integrity of the editing process. This included the identification of manuals to be reviewed on a risk priority basis; the review of the manual, including project management, selection of writers and reviewers, technical advice and editing, with role descriptions for all parties involved; the endorsement process for the changes; and the process for final publication on the Animal Health Australia website. An important feature of these role descriptions is the separation of the technical and administrative functions. This allows technical experts to focus on reviewing the technical aspects of the document, while all administrative tasks are undertaken by a dedicated resource within Animal Health Australia. All manuals currently under review are being migrated to this new publication management process, with completion expected within a year.

Information management technologies have advanced dramatically since the first editions of AUSVETPLAN were published in 1991. A priority for Animal Health Australia over the next year is to determine whether the AUSVETPLAN information can be managed, maintained, and presented in a more efficient format. This will involve extensive stakeholder consultation as the new publishing process is put into place.

AUSVETPLAN is available on the internet (at www.aahc.com.au/ausvetplan).

Contributed by: Jamie Penrose, Animal Health Australia

National Animal Health Performance Standards

Animal Health Australia's mission is to ensure that Australia's national animal health system delivers a competitive advantage and preferred market access for Australia's livestock industries. Key contributors to the national animal health system include livestock producers, the federal, state and territory governments, private animal health service providers, educational institutions, and research and development organisations as well as other participants in the livestock production and value chains. In order to ensure that contributors under the national animal health system perform to appropriate standards in all activities that impact on the national animal health system, the National Animal Health Performance Standards were developed. These standards were agreed on by the members of Animal Health Australia, and by the Primary Industries Ministerial Council.

In 2003, members of Animal Health Australia assessed performance against version 2 of the standards in terms of compliance with measures required to achieve outcomes of the following nine major functions of the national animal health system:

- consumer protection
- international services
- national services
- border assurance
- disease surveillance
- disease control
- emergency preparedness and response
- animal welfare
- innovation and research

From March to June 2004, the assessments were discussed in detail, on an individual and confidential basis with relevant officers in each jurisdiction, and collectively with senior industry representatives. Good progress in addressing identified non- and partial compliances has since been reported by respondent organisations.

The outcomes of performance assessment provide an indication of the status of Australia's national animal health system and an indication of the challenges and opportunities facing the system.

Opportunities for improving the process of performance assessment have been identified,

including integration of a risk assessment process to identify priority measures and progressive implementation of independent audit of assessment results. Animal Health Australia will pursue implementation of these improvements in consultation with its members. The process for future assessment of performance against version 3 of the standards will be discussed at a workshop to be held in early March 2005.

Ultimately, the National Animal Health Performance Standards and the assessment process will improve community, consumer and competitor awareness of, and confidence in, Australia's animal health status and system.

For further information regarding the performance standards process, please contact Peta Hitchens at Animal Health Australia on 02 6203 3912.

Contributed by: Peta Hitchens, Assistant Program Manager, Animal Health Australia

The minimum national list of notifiable animal diseases

Animal Health Committee (AHC, previously known as Veterinary Committee or VetCom) has agreed on a minimum list of animal diseases that are notifiable in all Australian states and territories.

Diseases are selected for the list based on the following criteria:

- the disease is exotic to Australia
- the disease is endemic, and there is a national or state control program
- the disease is endemic, and there are export certification requirements, including certification of area freedom
- the disease is of public health significance, or is zoonotic
- Australia has international obligations for reporting our status with respect to the disease.

The current national list has 83 terrestrial animal diseases, six bee diseases or pests, and one bee pest species.

All states and territories have lists of diseases that are notifiable within their jurisdictions. Their lists contain additional diseases that vary, depending on the prevalence in the area, the perceived needs for the individual jurisdiction and the structure of their legislation. However, each state or territory list includes the nationally agreed diseases.

Recently, AHC agreed that the national list should be updated biennially to ensure that emerging diseases and changes in animal health status are reflected. AHC is considering both additions and deletions to the list, and expects to finalise the updated list at their meeting in late October 2004.

The list is accessible to the public on the DAFF website on the Animal Health Committee page at www.daff.gov.au/ahc. Links to state and territory notifiable disease lists are also maintained on the Animal Health Committee page.

Contributed by: Animal Health Committee Secretariat, Strategic Policy Unit, DAFF.

Aquatic animal health

NODAVIRAL INFECTION IN AUSTRALIAN BASS

Detection of viral encephalopathy and retinopathy (VER) in Australian bass (*Macquaria novemaculeata*) at the New South Wales Department of Primary Industries facility at Port Stephens during the quarter highlighted one of the emerging problems with disease in aquatic animals. VER is a betanodavirus with an RNA genome, and isolates have been recovered from over 30 species of marine fish. However, this was the first report of VER in this species. This particular viral isolate showed a 13% difference in genome sequence from the isolates found in barramundi (*Lates calcarifer*). This infection in Australian bass highlights the wide host range to which this virus has adapted and also raises the possibility that further species of native fish will be susceptible to VER. In future, screening of broodstock for VER may be required to avoid further significant losses in native fish hatcheries. The Australian Chief Veterinary Officer notified the OIE (World Organisation for Animal Health) of the incident, because it involved both a new strain of the virus and a new susceptible host species.

NODAVIRAL INFECTION IN BARRAMUNDI

In an unrelated incident, a hatchery in South Australia recently had a mortality event due to an outbreak of VER. There had been some interstate movement of stock from the affected batch, however the majority of facilities receiving the affected stock were closed system farms utilising water-recycling technology. This level of biosecurity prevented any threat of discharge of the virus into surrounding waterways. The

event led to the National Aquatic Animal Health–Technical Working Group being tasked to examine the adequacy of the current health certification requirements for interstate movement of live fish. This incident is a timely reminder about the need for translocation protocols for aquatic animals, an issue currently being addressed by a Fisheries Research and Development Corporation Project led by Brian Jones of the Western Australian Government Department of Fisheries.

EXERCISE TETHYS RECOMMENDATIONS ENDORSED

In November 2003, all Australian States and the ACT and three aquaculture industry bodies participated in *Exercise Tethys*, Australia's first multi-jurisdictional simulation exercise focused on the aquaculture industry (see *AHSQ* Vol. 8, No. 4). In September 2004, the Primary Industries Standing Committee endorsed the 'Final Report on the Outcomes of *Exercise Tethys*' and implementation of the recommendations contained in the report. The report makes 17 detailed recommendations aiming to improve pre-existing frameworks and resources to develop more robust communication systems and procedures for emergency responses. In addition, the report includes jurisdictional-specific recommendations arising from the debriefings held in each participating State and Territory and within the Australian Government. Copies of the final report are available (e-mail aah@daff.gov.au).

ENDORSEMENT OF AQUAPLAN 2005-10

The new National Aquatic Animal Health Strategy (*AQUAPLAN 2005–10*; see AHSQ Vol. 9, No. 1) has been endorsed by major industries and governments at Aquatic Animal Health Committee and by the chief executives of the government departments of primary industries at Primary Industries Standing Committee. A workshop of industry and government stakeholders will take place in Perth on 4–5 November to resolve issues around the funding of the implementation of AQUAPLAN 2005–10.

One of the seven strategies within *AQUAPLAN 2005–10* is 'Enhanced Integration and Scope of Aquatic Animal Health Surveillance in Australia'. This strategy is directed at ensuring that surveillance systems meet specific industry requirements, especially for those industries developing an increasing export focus over the period to 2010. Governments will benefit from more efficient use of resources. The strategy also addresses the need for Australia and its industries to satisfy recent changes to the OIE standards on meeting surveillance requirements for recognition of freedom from infection. These new guidelines shift the emphasis to output-oriented surveillance, permitting countries to use scientifically justifiable techniques to undertake surveillance. This challenges OIE Member Countries to meet quantifiable and demonstrable standards of proof for disease status claims, while at the same time encouraging innovative approaches to providing this proof. Implementing the strategy will ensure that Australia can satisfy these requirements.

AUSTRALIAN AND NEW ZEALAND STANDARD DIAGNOSTIC PROCEDURES FOR DISEASES OF AQUATIC ANIMALS

The National Aquatic Animal Health–Technical Working Group (NAAH–TWG) recently endorsed a new process for the production of Australian and New Zealand Standard Diagnostic Procedures (ANZSDPs) for diseases of aquatic animals. The process sets time frames for each step of the review and editing process and this should result in the more timely production of ANZSDPs. The process will be further assisted by the appointment of a dedicated technical executive officer to NAAH–TWG who will be able to drive the process of editing and endorsement of the current backlog of ANZSDPs. Finalised ANZSDPs will be published on the SCAHLS website (www.scahls.org.au).

Contributed by: Iain East, OCVO, DAFF

Australian Wildlife Health Network

The Australian Wildlife Health Network (AWHN) receives reports of wildlife incidents and definitive diagnoses of cause of death in wildlife in Australia. The Network appreciates and acknowledges the contributions from organisations and individuals that have been received. All contributions are recorded in the AWHN database (the Wildlife Health Information System: WHIS), with details about selected incidents provided here. For information on other cases, contact the Network (e-mail awhn@zoo.nsw.gov.au).

The Network held its annual general meeting (AGM) in October. This year, the Network undertakes an independent major milestone review, reviews its strategic plan, and rewrites its business plan based on the needs identified by the national community and international influences. The focus of Network activities remains surveillance and the investigation and provision of information to managers and field staff to help support trade, human health and biodiversity. A highlight of the AGM was a demonstration by Paul Prosee of WHIS, which has been aligned with the national information management technical group platform and the National

Animal Health Information System (NAHIS). eWHIS, the web-enabled version of WHIS, will be accessible early next year.

The AHWN was represented at the annual NAHIS coordination meeting in August by the national coordinator. At this meeting, the Network's role in facilitating collection of Australian bat lyssavirus (ABL) data was reviewed. The NAHIS group considered it appropriate that these data will now be collated by NAHIS state coordinators. The Network is currently loading historical bat viral disease testing data onto WHIS, and we are interested in receiving copies of current or historical ABL, Menangle, Hendra, or Nipah virus test results.

An important area supported by the Network is wildlife contingency planning. Work on the Australian Antarctic Division (AAD) Unusual Mortality Response Plan has now been completed and will soon be available on the AAD website. The AAD will hold an emergency test of the response plan early next year.

The Network is distributing weekly bulletins to members of the Association of Avian Veterinarians, Birds Australia, wildlife carer groups, and the Network, advising them of the world avian influenza situation, with particular reference to matters relating to wild birds.

The Network published its first newsletter last quarter. This, and the weekly electronic digests, is intended to improve information transfer and thus management of wildlife health issues in Australia. To obtain a copy of the Network newsletter, please contact Amy Jones (e-mail awhn@zoo.nsw.gov.au).

FREE RANGING WILD ANIMALS

Chlamydiosis (chlamydophilosis) was detected in a variety of psittacine species at Tamworth (NSW) in July, and in a crimson rosella (*Platycercus elegans*) from Healesville (Vic.) in September.

Dinoflagellate intoxication involved various species of wild teleost and elasmobranches fishes in the Arafura Sea and several surrounding estuaries near Maningrida (NT) in August. Hundreds to thousands of animals were affected. Histopathology on tissues from 12 animals of several species did not suggest the involvement of a significant infectious disease. The algal bloom may have been precipitated by unseasonably cool water temperatures.

A case of salmonellosis has been diagnosed in an Australian pelican (*Pelecanus conspicillatus*) from SA. The source of infection is suspected to be dumped domestic chicken chicks ingested by the animal, however further investigation is required before an association can be made. The organism is currently undergoing speciation.

Contributed by: Rupert Woods, Coordinator, Australian Wildlife Health Network, and Chris Bunn, OCVO, DAFF

State and Territory reports

New South Wales

Contributed by:
Barbara Moloney
NSW Agriculture

ANTHRAX

Two cases of anthrax were confirmed during the quarter. The properties are situated 60 km apart in the known anthrax endemic area. Sheep were affected in both cases, and mortalities were low, with 4 and 5 deaths in flocks of 560 and 1500, respectively. The properties were placed in quarantine, carcases were burned, and in-contact animals were vaccinated. There had been no stock movements from either property in the previous six weeks.

During the quarter there were 14 mortality investigations that were negative for anthrax. Ten of these were in cattle where diagnoses included hepatotoxicity and hypocalcaemia. Four investigations were in sheep, one of which was diagnosed with intestinal torsion (red gut).

CHLAMYDIOSIS

Chlamydiosis continues to be a problem in poultry in the Moss Vale District. A layer property (see *AHSQ* Vol. 9, No. 2) had clinical cases persisting in one of a number of sheds despite four weeks in-feed medication with chlortetracycline. The flock responded well to doxycycline in the drinking water. Bantams from a correctional centre had severe conjunctivitis and mortalities (initially suspected to be fowl coryza) that were confirmed as chlamydiosis. Although not a commercial flock, medication with chlortetracycline was recommended for the bantams. A breeder flock with increased mortalities of up to 20% was diagnosed with chlamydiosis. Gross pathology showed perihepatitis, pericarditis and fibrinous peritonitis, air sacculitis, but no conjunctivitis. Compulsory medication was instigated.

Chlamydiosis was detected by IFAT on liver or splenic smears in aviary birds (budgerigars from the Hume District, ring-necked parrots from the Moss Vale District) and wild cockatoos from the Tamworth District. However, the clinical significance of chlamydial infection in these cases is not clear.

CATTLE EXPOSED TO HERBICIDE-TREATED WHEAT CROP

During September in the Narrabri district, a number of cattle broke into a paddock of wheat that had been treated two days previously with an herbicide containing 500 g/L MCPA (2-methyl-4-chlorophenoxyacetic acid). The herbicide had been applied at a rate of 1 litre/hectare. As soon as discovered, the cattle were removed from the wheat paddock, within 24 hours of first access. Review of residue data suggested that the MCPA levels on the foliage at the time the cattle entered would not likely have exceeded 10–15 mg/kg. Resulting residues in the stock would have been low and would have fallen rapidly to non-detectable levels once intake ceased. It was concluded that the cattle would have no detectable levels of MCPA residues after seven days, but that the owner would need to consider likely marketing implications, arising from the need to answer 'Yes' to Question 7 on the National Vendor Declaration, if the stock were sold within 60 days of exposure. A copy of the National Vendor Declaration can be found at www.safemeat.com.au.

LEAD POISONING IN CATTLE

In July, a 12-month-old angus steer from Coonabarabran was diagnosed with lead poisoning. The animal had sudden onset of blindness and profuse watery diarrhoea. It was one of 46 steers that had been running on native pasture and that had recently been given access to a paddock adjacent an abandoned house. A search for a possible source of lead revealed a small lawn mower battery with 3 plates missing. No other cattle in the herd showed clinical signs. Whole blood from the affected steer confirmed lead poisoning, with lead level of 6.4 µmol/L. The remaining steers were tested for exposure to lead, and all were below the upper limit for normal (1.2 µmol/L).

PIMELEA POISONING IN CATTLE

During August, 25 of 38 eight-month-old weaners from Narrabri had submandibular oedema that was initially suspected to be secondary to hypoproteinaemia due to gastrointestinal parasitism. However, the animals did not respond to treatment with eprinomectin. On mustering, the animals had reduced exercise tolerance, and two of them were found dead. Post mortem examination was conducted on one of the dead animals, revealing severe hydrothorax and some ascites. Histopathological examination of the liver showed peliosis hepatis, consistent with *Pimelea* sp. poisoning ('St. George Disease'). One sample of plant was identified at the Royal Botanic Gardens, Sydney as *Pimelea microcephala* subsp. *microcephala*.

BOVINE MALIGNANT CATARRHAL FEVER

During August, three of about 50 mixed-age cows from Gundagai had corneal opacity and ocular discharge. The most severe case showed salivation, and encrusted lesions on nose, mouth, teats and coronets. This animal was euthanised. Vesicular diseases were considered in the differential diagnoses. Foot-and-mouth disease virus and vesicular stomatitis virus were excluded by virus isolation, antigen capture ELISA and PCR. Histopathology showed non-suppurative inflammation in liver and kidney, and ulcerative inflammation in oesophagus and tongue, consistent with (but not necessarily pathognomonic for) bovine malignant catarrhal fever. The diagnosis was confirmed by PCR testing on blood for malignant catarrhal fever virus.

Northern Territory

Contributed by:
Dick Morton
DBIRD

BOTULISM IN CATTLE

On a station near Katherine, 58 of 1400 heifers died over a month. The remaining sick animals were yarded, and the healthy cattle moved to another paddock. No supplements were available, and old carcasses were in the paddock. Affected cattle had varying degrees of ascending paralysis, ranging from slight hind leg ataxia to recumbency. Post mortem examination of two heifers showed no visible pathology. Blood samples from 20 of 45 cattle tested did not have protective antibody levels against botulinum toxin. The owner reported that not all of the cattle had been vaccinated against botulism, and that no booster vaccinations had been administered.

IRONWOOD POISONING IN GOATS

The leaves from the ironwood tree (*Erythrophleum chlorostachyum)*, are highly toxic when ingested. The toxic ingredient is erythrophleine. Ironwood toxicity is the likely cause of the sudden death of 18 of 100 goats placed in a small riverside paddock on a Katherine property. Post mortem examination revealed extensive cardiac haemorrhage and hyperaemic small intestines. Surviving goats had sunken, pale staring eyes and painful abdomens.

Queensland

Contributed by:
David Pitt
QDPI&F

BOVINE EPHEMERAL FEVER

Diagnoses of bovine ephemeral fever (BEF) were made throughout winter along the coastal strip of central and north Queensland. Individual cases were diagnosed by PCR in recumbent animals on properties in the Fitzroy, Livingstone and Banana shires. Private veterinarians from Mackay, Proserpine and Townsville areas reported cases that had clinical signs consistent with BEF. Morbidity has been low, but the case fatality rate has been high as a number of animals that developed permanent paralysis were euthanised.

A 16-month-old steer on a property in the Sarina shire was diagnosed as having BEF by paired serology, with a significant rise in titre over a one month period after initially being recumbent, with marked hypocalcaemia (a common finding in cattle with acute BEF).

BOVINE PESTIVIRAL INFECTION

Bovine pestiviral infection (bovine viral diarrhoea or mucosal disease) was diagnosed as the cause of salivation, fever and anorexia in one of a group of 50 six-month-old cattle on a property in the Banana shire. It was positive to the pestiviral antigen capture ELISA test. Four of 500 eighteen-month-old steers from a second property in the Belyando shire were sick, with one testing positive for bovine pestiviral antigen. On a property in the Peak Downs shire with 800 cattle, eight of a group of 200 steers died. Two further sick steers were examined. One animal had signs of weight loss, skin problems, and had difficulty walking. At post mortem examination it had osteochondrosis-type lesions in the joints, and was positive to the pestiviral antigen capture ELISA. The animal was TSE negative.

INFERTILITY IN CATTLE

Infertility has been a major reason for disease investigation this quarter. Numerous investigations by both private veterinary practitioners and DPI&F staff across West and North Queensland have uncovered serological evidence of a variety of infections capable of causing herd infertility, particularly bovine pestivirus and leptospirosis (*L. pomona* and *L. hardjo*). In addition, there have been occasional seroconversions for *Campylobacter fetus* var. *venerealis*, Akabane virus and *Neospora* sp. As vaccines for some of these diseases are commercially available, appropriately designed vaccination programs may be cost-effective for some producers.

MISCELLANEOUS CONDITIONS OF CATTLE

An 18-month-old steer that died near Beaudesert had acute, severe, necrotising fibrinopurulent broncho-interstitial pneumonia. *Mannheimia (Pasteurella) haemolytica* was cultured. At the same time, some companion animals on the property were febrile with signs of respiratory distress. A similar case occurred in Boonah Shire where three of twelve 8 to 12-week-old calves died.

Botulism was diagnosed as causing the deaths of two Friesian milking cows in Monto Shire. Blood samples tested positive by ELISA for *Clostridium botulinum* toxin. Hay being fed was described as rodent-infested.

Salmonella sp. (Salmonella Group B) was cultured from a Friesian milking cow near Gympie. The cow, one of a herd of 100, had depressed milk production for two days prior to becoming recumbent. She had watery diarrhoea, a heart rate of 50, rapid respiration, rumen stasis, inflamed mucous membranes and dehydration.

In Monto Shire, a Santa Gertrudis weaner in good body condition was found in lateral recumbency. The animal (one of a group of 60) appeared blind, and had convulsions with dorsiflexion of the neck and stiffening of limbs. There was laminar cortical necrosis of the grey matter of the brain, indicative of polioencephalomalacia syndrome.

POISONING

In the Aramac Shire, arsenic poisoning resulted in seven dead cattle and two ill ones in a herd of 73. Tests on liver and kidney samples, and on a white powder suspected to be the source, confirmed the diagnosis. Arsenic poisoning also caused the sudden deaths of three of 90 cattle being weaned in an old dip yard near Maryborough. The kidney contained 10.40 mg/kg fresh weight (FW) arsenic and the liver had 5.2 mg/kg FW.

On a property in the Fitzroy shire with 200 cattle, two from a group of 11 animals died from lead poisoning. Blood lead levels from two animals were 0.1 and 0.7mg/L. Lead poisoning was the likely cause of death of six calves on a property in Kolan Shire. A post mortem examination was performed on one animal. The kidney contained 47.7 mg/kg FW lead and the liver had 11.4 mg/kg FW. A further unconfirmed, but highly likely, case of lead poisoning occurred on a property in the Emerald shire. Twelve of 300 yearling steers died. They had access to an old dump that had been burnt, exposing the lead plates on batteries, and the cattle had been eating the lead plates.

Ten cattle being fed in the yards of a property in the Banana shire died. Deaths occurred overnight and appeared to be sudden. Nine were from a group of 86

cattle recently purchased from one saleyard, and the other was one of 70 purchased from another saleyard. The cattle were being held on the property and fed forage sorghum hay prior to trucking to their new destination. The hay contained 3.2% potassium nitrate (KNO3) equivalent in dry matter (greater than 1.5% is potentially toxic). Samples of aqueous humour were submitted from six animals and contained more than 50 parts per million (ppm) nitrate. Urine samples from two animals had more than 500 ppm nitrate and 300 ppm nitrite. The apparent clustering of deaths can be explained by normal dominance and social behaviour of cattle, as the nine cattle that died in the first group were all from one property of origin.

INFERTILITY IN SHEEP

During an investigation for infertility in sheep in Paroo Shire, one ram in a group of 55 was serologically positive for *Brucella ovis*. Infertility is an ongoing issue in the far south-western sheep country, and a project is being developed to investigate the problem.

PIGS

Polyarthritis due to *Streptococcus equisimilis* was found in two weaner pigs that died suddenly in a piggery in Tiaro Shire in late July. Pericarditis was also present on post mortem examination.

ALPACA

Melioidosis due to *Burkholderia pseudomallei* was diagnosed in a yearling alpaca on a second Lockyer Valley property. (Melioidosis in alpacas on the first property was reported in *AHSQ* Vol 9, No. 1 and 2.) The alpaca exhibited severe dyspnoea prior to death. At post mortem examination, there were multiple abscesses on the face and neck and histological examination showed bronchopneumonia and severe acute multifocal hepatitis.

Nitrate poisoning resulted in the sudden deaths of four of 29 alpaca at Esk. One sample of aqueous humour contained 25 mg/kg nitrate. Oaten hay fed to the animals contained 3.20 % KNO3 (dry matter).

GOATS

Bovine strain Johne's disease (JD) was first diagnosed in a dairy goat herd in south-east Queensland after a doe with weight loss and diarrhoea was autopsied in 1996. The six-year–old-doe had been bred in New South Wales and introduced into Queensland in early 1994. After the diagnosis, the herd underwent four rounds of serological testing with no further JD detected. The property was released from Stock Act quarantine in August 1998. In June 2004, surveillance testing for JD was performed on the herd. Two of 126 goats tested positive using the AGID test, and one was considered suspect. Faeces were collected from these three animals and submitted for culture for bovine JD. The two AGID-positive animals were autopsied in early August 2004, and on histological examination were found to have changes consistent with JD. Intestinal culture samples from these goats, and faecal cultures from all three goats, were found to be positive for JD with detection of DNA consistent with *Mycobacterium paratuberculosis*. One of the autopsied goats was born on the property in April 1996, just prior to the detection of the original case. The other autopsied goat had been bred in Queensland in the South Burnett region, and had been introduced to the property in March 2000 at two years of age. The AGID-suspect doe was born on the property in September 2000. This is the first confirmed case of bovine JD spread in a goat herd in Queensland. The property was re-quarantined in August 2004.

POULTRY

Yolk sac infection due to non-haemolytic *Escherichia coli* was the likely cause of death of 180 of 5200 chicks aged from day-old to 6 days in Redlands shire. Salmonella group B was also cultured, but there was no evidence of septicaemia, the usual manifestation of this infection in young chicks.

In Brisbane, the Qld Parks & Wildlife Service investigated several cases of chemical poisoning of wild birds. Fenthion was found in poisoned crows, magpies and pee-wees. Diazinon was associated with the deaths of 24 ducks at Karana Downs.

South Australia

Contributed by:
John Weaver
PIRSA

FOOT-AND-MOUTH DISEASE (FMD) EXCLUSION IN THE ADELAIDE HILLS

A private veterinary practitioner visited a herd of 28 steers in the Adelaide Hills. One steer was observed with a blister on its muzzle and a mild inflammation of the coronary bands. There were no other animals affected at that time, but by the following morning, six other animals had erosive oral lesions. There was no obvious irritant feed, but prolific weed growth had followed recent heavy rains in the area. The owner was issued with an Order under the Livestock Act, restricting movement of livestock and products from the farm until further notice. A preliminary negative foot and mouth disease result on electron microscopy and antigen capture ELISA was followed by a final, conclusive negative tissue culture. The Order on the property was rescinded. Further testing was negative for mucosal disease and malignant catarrhal fever, but blood biochemistry indicated elevated liver enzyme levels consistent with moderate liver damage. The final

diagnosis was photosensitisation. Although foot and mouth disease was excluded, this case highlighted the vital role of both rural producers and veterinary practitioners when emergency diseases are suspected.

BOTULISM INVESTIGATION IN CATTLE IN THE PASTORAL REGION

A pastoral cattle property in the far north of South Australia had been experiencing a higher than normal death rate in cattle for the past two years. Cattle had also been observed bone and hide chewing. With recent rains in the area, and the consequent pasture improvement, the cattle appeared to be in good condition. Some young cattle showed mild ataxia, which was exacerbated when they were driven. About half of the cattle tested had been vaccinated with a long acting botulism vaccine, and licks containing phosphorous were available to the cattle. Nothing abnormal was found during post mortem examination examination of an affected animal, or on histopathological examination of tissues, and the animal tested negative for transmissible spongiform encepahopathy (TSE). Sera from 60 cattle were tested for phosphorous levels, botulism antibody levels, and a range of other diseases and syndromes of interest in this area. The majority of the adult cattle were considered to be phosphorous deficient, although they had not demonstrated the classical symptoms of phosphorous deficiency (such as lameness, soft bones and dull coats). Botulism antibodies were detectable in 19% of unvaccinated cattle. However, more than 16% of animals vaccinated against botulism had no detectable serum antibodies. It was concluded that the low serum phosphorous levels were indicative of general undernourishment, which is common in cattle in these areas. Botulism was diagnosed as the cause of mortalities on the property, and general advice has been given on vaccine handling and administration techniques, as well as the importance of vaccinating all animals. Advice on the specific vaccine has been sought from the vaccine manufacturer. The lick supplement has been analysed and found to contain adequate amounts of good quality phosphorous. All cattle on the property have now been vaccinated, and the deaths have since ceased.

ILL THRIFT AND WASTING IN EWES IN THE PASTORAL AREA

A flock of 400 ewes was affected by a wasting condition in the Hawker/Carrieton district in northern South Australia. This syndrome had been observed to a lesser extent in previous years, but was now affecting up to 8% of the flock. Over the previous summer, potato weed (*Heliotrope europaeum*) had been prolific on the property. An affected ewe in very poor body condition with some neurological changes was autopsied. The liver was mottled in appearance, but of a normal size and consistency. There were several large abscesses in the lungs. The caecum was thickened with a large ulcer in the mucosa. Histological examination of the tissues showed large thick-walled abscesses in the lungs, and mild purulent pneumonia. There were changes in the abomasum and small intestine consistent with severe parasitism. The caecum was ulcerated and had multifocal submucosal abscessation. The liver was abscessated and fibrosed, with moderate bile duct proliferation, consistent with exposure to pyrrolizidine alkaloids. Examination of the brain, as part of the national transmissible spongiform encephalopathies (TSE) surveillance program, revealed a prominent bilateral and symmetrical spongiosis of the white matter consistent with a hepatic encephalopathy. No lesions suggestive of TSE were detected. Caseous lymphadenitis (*Corynebacterium pseudotuberculosis*) was diagnosed as the cause of the multiple organ abscessation. This, in conjunction with high levels of parasitism and chronic liver damage, was thought to explain the syndrome affecting the flock. Vaccination and parasite treatment has not been a common practice throughout the area, as pastoral producers have believed these issues to only affect livestock in the more intensive, higher rainfall areas to the south. However, this case demonstrates the need for pastoral producers to incorporate management of these diseases into their husbandry practices.

INFECTIOUS LARYNGOTRACHEITIS IN MOULTED LAYERS

A flock of recently moulted layer birds was moved to an open sided barn layer shed, in the Adelaide Hills, in close proximity to a high-rise laying shed in which pullets recently vaccinated for infectious laryngotracheitis (ILT) had been placed. About two weeks after placement, the moulted birds exhibited a severe respiratory disease that included gaping, swollen eyes, and a drop in egg production. Morbidity was about 30%, and mortality less than 1%. Clinical and post mortem examinations were consistent with ILT with the presence of a diphtheritic plug in the trachea of many of the autopsied birds. The recently vaccinated birds also had a mild respiratory problem with a mortality rate of two to three per day in a 14 000 bird flock. Post mortem examination of two dead birds revealed similar lesions to those of the older, moulted flock. The exhaust fans for the high-rise sheds were venting into the air space between the two sheds, and it was postulated that the moulted birds may have been infected with a vaccine strain as a result of their probable low immune status (they had not been vaccinated for at least a year) and the stress of a moult. However, strain typing of an ILT virus cultured from samples submitted indicated it was more likely to be a wild-type virus than a vaccine strain.

STAPHYLOCOCCOSIS IN REARING PULLETS

A 15 000 bird flock of 6-week-old brown layer pullets near Echunga was examined because of a constant but low mortality problem. Many birds were lame in one leg. Post mortem examination revealed most to have a purulent arthritis in the hock or stifle joint. Culture of joint swabs grew a pure *Staphylococcus aureus* sensitive to amoxicillin and a 5-day water medication regime with this antibiotic resolved the problem. There was no obvious trauma to the feet or skin that might have permitted entry for the organism. It was thought the dry and dusty conditions in the shed might have led to airborne spread.

Tasmania

Contributed by:
John Elliott
DPIWE, Tasmania

LABORATORY ACCESSIONS AND NOTIFIABLE DISEASES

During the quarter, there were 94 aquaculture accessions, 634 livestock accessions, 62 companion animal accessions, 73 wildlife accessions, and 8 accessions from other sources.

The following investigations into possible cases of notifiable diseases were undertaken during the quarter:

Disease	Investigations	
	+ve	No.
American foul brood	1	2
Anthrax	0	10
Avian psittacosis	0	6
Bacterial kidney disease	0	39
Bluetongue virus	0	2
Brucella ovis	0	19
Clinical salmonellosis	37	127
Contagious agalactia	0	1
Enzootic bovine leucosis	0	2
Iridovirosis of shellfish	0	2
Johne's disease	16	113
Leptospira hardjo	0	12
Leptospira pomona	0	12
Listeria	1	9
Marine aeromonad disease	4	45
Negative finfish bacteriology*	0	35
Nocardiosis of shellfish	0	2
Oncorynchus masou virus disease	0	1
Perkinsosis of shellfish	0	10
Pullorum disease (*Salmonella* Pullorum)	0	10
Salmonella Abortusequi	0	5
Salmonella Abortusovis	0	14
Salmonella Enteritidis	0	11
Verotoxic *Escherichia coli*	8	144

**Aeromonas salmonicida* subsp. *salmonicida*, goldfish ulcer disease, streptococcosis of salmonids

ACUTE BRACKEN FERN POISONING

Thirty-five cattle died and 10 were ill in a group of 106 on a property south of Hobart. The herd had been put in very rough cocksfoot pasture that had bracken fern margins. One carcase was examined. The other carcases were inaccessible. Mucous membranes were pale, the liver was swollen and the carcase was jaundiced. The main histopathological findings were hepatic necrosis and necrotic nephrosis. These findings, and the history of access to bracken fern, suggest acute bracken fern toxicity. Toxins from bracken fern have been shown to cause renal tubular necrosis.

DRENCHING TRAUMA

Twelve of 1300 sheep died during the month following drenching. When the property was visited, another 6 sheep were ill and had bloody nasal discharges. One live sheep was submitted for laboratory examination. A subcutaneous abscess in the pharyngeal region, consistent with a drenching injury, extended dorsally through the soft tissues to involve the atlanto-occipital joint and spinal canal.

PREGNANCY TOXAEMIA

Twenty percent of the sheep became ill, and 30 died, in a flock of 2200 three-year-old Merino ewes in the last two weeks of pregnancy. The ewe submitted for laboratory examination was thin and had little or no food in her digestive tract. She was carrying twin lambs. Fatty changes were seen in the liver and ketones were present in the urine. These findings are consistent with pregnancy toxaemia.

LAMB DEATHS

Fifty of 400 lambs born to aged ewes died in three weeks. Some of the deaths were associated with rough weather, but most occurred around marking. One lamb was examined. Its gut was empty, there were no fat reserves, the heart and skeletal muscles were atrophied, and the adrenals were congested and haemorrhagic. These changes are consistent with end-stage exhaustion, most likely due to mismothering. Mismothering can be associated with older ewes, even if previously they have been good mothers. Poor condition, metabolic stress, broken mouths and mastitis all play a part. In this case, the additional stress due to marking lambs in marginal condition may have contributed to the losses.

PADEMELON DEATHS

Twelve pademelons (also known as rufous wallabies) died in a period of approximately five weeks on a property at St Helens on the east coast of Tasmania. One animal showed signs of neurological disturbance, and may have been blind. The Nature Conservation Branch submitted two pademelons for laboratory

examination, specifically for toxoplasmosis. A non-suppurative encephalomyocarditis was seen in both carcases. In marsupials, this can be due to toxoplasmosis. Serology for toxoplasmosis was negative in one animal, and the other pademelon had a low microagglutination titre for toxoplasmosis. As immunoperoxidase staining demonstrated toxoplasma cysts in the brains and heart muscle, toxoplasmosis is the likely cause of death and the serological results are consistent with recent infection.

Victoria

Contributed by:
Tristan Jubb
DPI, Victoria

BABESIA GIBSONI IN A PIT BULL TERRIER

Near Warrnambool in south-west Victoria, *Babesia gibsoni* was diagnosed in a two-year-old female pit bull terrier that had been treated symptomatically for two weeks for lethargy associated with anaemia. The diagnosis was based on a positive fluorescent antibody test and the presence of the parasite in blood smears. The dog improved and relapsed intermittently. She was later euthanised, in part because there had been no permanent improvement in her condition, but also because she was considered a potential risk to her cohorts. This is the third dog from the Warrnambool district to have laboratory confirmation of *B. gibsoni* infection in the past two years, but is the first to show signs of clinical disease.

ENCEPHALITIS IN A RISSO'S DOLPHIN (*GRAMPUS GRISEUS*)

A large male Risso's dolphin was found stranded in an estuary at Point Impossible on the south-west coat of Victoria. The dolphin appeared disorientated and when returned to the water it rolled to the right and preferred to beach itself. It was in good condition with abundant reserves of blubber. There were recent and old superficial abrasions over the trunk, flippers and tail, that did not penetrate the dermis and were consistent with wounds commonly induced by other dolphins. Serum chemistry indicated dehydration, starvation and possible renal disease. Post mortem examination showed no solid ingesta in the stomach or the small intestine. Histologically, there were severe multifocal lesions in both the brain and proximal spinal cord, with thick perivascular cuffs of lymphocytes, plasma cells and a few foci of macrophages. These lesions were largely confined to the grey matter or vessels of the grey-white matter interface. Infectious agents were not seen. Diagnosis was sub acute non-suppurative polioencephalitis and myelitis of cause unknown.

PYRROLIZIDINE ALKALOID TOXICITY IN PIGS

Pyrrolizidine alkaloid (PA) toxicity killed 100 of 3000 grower pigs on a farm north of Bendigo in north-west Victoria. At first, pigs died suddenly with no signs of illness noted before death, but later some pigs were seen to be dull and depressed. Six of the dead animals were autopsied. The most outstanding feature was jaundice, with the liver having a classic yellow to orange colour with very firm parenchyma and reddened centrolobular areas due to periacinar necrosis. The histological findings were hepatic necrosis with karyomegaly and cytomegaly. Differential diagnoses included fungal toxins or PAs. The Queensland Department of Primary Industries and Fisheries laboratory (Brisbane) confirmed the diagnosis by direct demonstration of alkaloids in the liver. This particular property home-mixes its feed and incorporates by- products. All suspect feed was disposed of. The source of the PA was not found. The cost to the farmer in mortality alone was $15 000. Many of the survivors would have had suboptimal growth, at least doubling the cost of the disease. This case shows why it is of the utmost importance to have a Quality Assurance scheme in place to audit all suppliers and supplies of ingredients used in home-mix operations.

MACROCARPA ABORTIONS IN CATTLE

On a dairy farm near Lockington in northern Victoria, nine calves were born dead over a three day period in a group of 30 pregnant Friesian heifers. The full-term calves had not been dead long, and had been delivered readily and normally. The adult herd was calving in a different paddock and had no dead calves. The paddock with the heifers had a shelterbelt of mature cypress trees (*Cupressus macrocarpa*, Monterey Cypress). These trees were more than 30 metres high. The mature cows were not exposed to these trees. It was presumed that recent windy weather had blown leaves into the paddock and that these leaves had been ingested by the heifers, leading to the foetal deaths. The heifers had been in the paddock for one to two weeks before the delivery of the first dead calves. Tests for infectious agents were negative and there was no other likely cause of the deaths, which stopped within three days of removing the heifers from the calving paddock. Macrocarpa trees are a recognised cause of abortion in coastal areas where they are common, but they are uncommon in the irrigated dairying areas of northern Victoria.

MALIGNANT CATARRHAL FEVER IN YOUNG BULLS

Malignant catarrhal fever (MCF) resulted in the death of two of 50 Angus yearling bulls on a farm near Beaufort in south-west Victoria. The first bull was

affected in July, and the second in early August. Bovine viral diarrhoea virus serology was negative, and a later sample was PCR positive for ovine herpes virus 2 (MCF). The second bull had pyrexia, bilaterally ulcerative corneal opacities, nystagmus, circling and thickened, crusty skin lesions. Histopathology was characteristic of MCF. Sheep are run on the property and commenced lambing in August, about a week after the second bull developed clinical signs. The bulls are run separately to the sheep, but may graze the same land.

ARSENIC POISONING IN CATTLE

Six pregnant dry cows in a South Gippsland dairy herd died as a result of arsenic poisoning. The clinical signs included profuse watery diarrhoea, salivation and indications of severe abdominal pain. A packet containing about 20 kg of a greenish-yellow powder with a faded label saying 'Coopers Sheep Dip' was found in an old shed to which the cattle had access. A tentative diagnosis of arsenic poisoning was made. Samples of the powder and of liver and kidney from a dead cow were sent to the laboratory by a veterinary practitioner. The powder was identified as arsenic trioxide which was found in the kidneys. Sick cows were treated symptomatically without success. The total value of the dead animals was approximately $4800. To this must be added the loss of the calves and the potential milk yield for the coming season.

ENTEROTOXAEMIA IN ADULT SHEEP

Enterotoxaemia killed 35 of 423 three-year-old, unvaccinated, heavily pregnant Merino ewes that recently were purchased from north NSW in August/ September 2004 and introduced to a property south of Sale in East Gippsland. Deaths started two weeks after arrival in a paddock where lush growth occurred, with 15 dying in the first four weeks. Some ewes were found recumbent before death. The only remarkable findings at post mortem examination were excess pericardial fluid, petechial haemorrhages on the endo- and epi-cardia, and ecchymotic haemorrhages on the diaphragm. Animals were in good condition and lactating. Deaths coincided with maximum spring pasture growth. Histopathology demonstrated cerebral angiopathy consistent with enterotoxaemia. The presence of acute renal tubular necrosis supported the diagnosis. Vaccination with clostridial vaccine and a booster dose three weeks later halted deaths. The outbreak cost the farmer $5000 and highlights the need for vaccination.

PHALARIS POISONING IN ADULT SHEEP

Phalaris poisoning killed 70 of 1850 four-year-old Merino wethers between June and October 2004 on a property near Yarram in South Gippsland. Pasture consisted mainly of 30-year-old phalaris that was growing rapidly after 110 mL of rain at the end of April. Ewes that were removed from the paddock at the beginning of May were unaffected. The paddock was rested until late May when the wethers were introduced. Clinical signs commenced one month later. Most were found dead in gateways. Others were recumbent with paddling, and showed ataxia, tremors and a wobbly or kangaroo-type gait when stood up. Phalaris poisoning was confirmed by histopathology that showed the characteristic pigmentation of the brain stem. This outbreak cost the producer $7000.

NON-HELMINTH PARASITISM OF LAMBS

An emerging problem of deaths, diarrhoea and ill-thrift in growing lambs caused by coccidiosis and *Yersinia pseudotuberculosis* has been recognised across a wide area of north Victoria this winter. In some cases, post mortem examination of affected lambs has shown moderate thickening of mid to terminal small intestine, and enlargement of mesenteric lymph nodes as observed with ovine Johne's disease. Pathology results, however, indicated moderate coccidiosis and *Y. pseudotuberculosis* were present. Treatment of clinically affected lambs with antibacterials that had additional anti-protozoal activity halted further losses and aided recovery in all cases. Bacterial and protozoal infections should always be considered in the differential diagnosis of enteric disease of lambs especially where recent effective helminth treatment has been used.

URINARY TRACT OBSTRUCTION IN FEEDLOTTED LAMBS

Thirty deaths resulted from a proprietary pellet ration being fed to lambs in a feedlot situation near Bendigo in central Victoria. Affected lambs lost condition after several days on the ration and became depressed, lay down and had urine dripping from their belly. Deaths continued until the ration was replaced by the manufacturer with one of much higher salt content. Four properties were known to have suffered similar experiences after feeding the same manufacturer's ration over the previous 2 months. In all cases, the problem subsided or disappeared with the addition of extra salt to the ration. This outbreak of urinary tract obstruction was significant for extent of necrosis in the urethra without any obvious mineral calculi obstructions being present. It has been speculated that grain feeding may predispose to mild lactic acidaemia and dehydration that leads to reduced urinary flow and an obstructive episode.

MARSHMALLOW (*MALVA PARVIFLORA*) POISONING IN EWES

Three ewes were presented for post mortem examination following the sudden onset of deaths in a line of ewes in the Wilby area of north-east Victoria.

A second line of ewes was presented from a property in the Violet Town area within two weeks of the first and showed similar clinical signs. In both cases, the ewes were in late pregnancy, had recently been crutched, and were becoming recumbent and frothing at the mouth. Gross pathology in both episodes was unremarkable, with evidence of pregnancy toxaemia and pneumonia. The major findings were in the kidneys where there was acute, diffuse, tubular necrosis and proteinuria. The property at Wilby was visited and paddock inspection revealed a good rye-clover pasture with some capeweed and no access to oxalis (*Oxalis pes-caprae*). However, the ewes had been crutched two days before the episode and held over night in some old yards next to the shearing shed containing a fresh growth of marshmallow (*Malva parviflora)*. Marshmallow has been associated with myoglobinuric nephrosis. The deaths were attributed to a combination of the marshmallow poisoning, pregnancy toxaemia, and ketosis. The second event at Violet Town had a similar history, and clinical and pathology findings, the only variation being that the ewes had been held in yards two weeks before the deaths occurring.

ENTEROTOXAEMIA IN VERY YOUNG LAMBS

On a farm near Bendigo in north-west Victoria, a 24-day-old twin lamb in good condition from a small flock of Wiltshire Horn ewes died within 24 hours of being found recumbent. Its twin became sick and was brought in for autopsy four days later, depressed and in lateral recumbency. The sheep were running on a paddock consisting mainly of capeweed. The ewes and lambs had not been vaccinated for clostridial diseases. Post mortem examination findings were unremarkable except for pale kidneys, and a large quantity of mud and a few lumps of clotted milk in the rumen. The intestine was almost devoid of contents. Histological examination of the brain found severe cortical lesions consistent with enterotoxaemia. The lambs had been seen licking at dry dust under a trailer. It is presumed that the ingestion of mud probably slowed the gut contents down and allowed toxins to accumulate and diffuse out of the intestine in sufficient quantity to cause the signs.

Western Australia

Contributed by:
Richard Norris
Department of Agriculture – WA

SURVEILLANCE ACTIVITIES

Laboratory testing was conducted on 321 investigations of animal disease during the quarter. Of these, 48 were cost-recovery (private benefit) cases and 273 were charge-exempt (public benefit) and therefore funded directly by the Government.

NOTIFIABLE DISEASES

Two category A (mandatory quarantine) notifiable diseases, and five category C (discretionary quarantine) diseases were reported during the quarter. There two cases of liver fluke (the category A diseases), one case of echinococcosis (hydatid disease) and four cases of malignant catarrhal fever (sheep-associated).

EXOTIC DISEASE ALERTS

There was one category one alert (low index of suspicion) involving an investigation of suspect foot-and-mouth disease (FMD) in a cow with muzzle and teat lesions. Samples sent to the Australian Animal Health Laboratory (AAHL, Victoria) confirmed the diagnosis of bovine papular stomatitis, and excluded FMD.

DISEASES OF SIGNIFICANCE

During the quarter, significant disease outbreaks were investigated in 93 ovine and 141 bovine submissions that included presenting syndromes of abortion, diarrhoea, ill-thrift, respiratory disease, neurological signs, sudden death, and weakness.

ACUTE INTERSTITIAL PNEUMONIA IN A COW

Acute interstitial pneumonia (AIP) was diagnosed in a mature Aberdeen Angus cow. Six cattle died in a herd of 750 grazing on lush green pasture at Esperance. No clinically affected animals were seen; the cattle were found dead. There was no blood draining from the orifices of the dead animals. Anthrax was considered unlikely, and was excluded based on post mortem and histopathological findings. Histopathological examination revealed spectacular and severe alveolar congestion with occasional alveolar septal necrosis. Alveoli were often oedematous, and there were thick hyaline membranes in some places. Other features were severe bronchiolar haemorrhage, inter-lobular oedema with emphysema, and areas of bullous emphysema. A provisional diagnosis of AIP (sometimes referred to as fog fever) was given, despite the absence of some of the diagnostic criteria. AIP has been attributed to inhalation of allergens, but is also linked to ingestions of lush pastures rich in tryptophan, which is converted to pneumotoxic 3-methylindole.

BOVINE RESPIRATORY SYNCYTIAL VIRUS

Four of 80 calves of mixed breed and age died at Youngs Siding. A post mortem examination of one of the dead calves revealed convincing lesions of bovine respiratory syncytial virus (BRSV) pneumonia. There was severe antero-ventral pneumonia and fibrinous pleuritis, characterised histologically by the presence of numerous multi-nucleated cells amongst the alveolar inflammatory exudate. The presence of these cells is highly suggestive of BRSV pneumonia. Unfortunately,

no unpreserved lung tissue or blood was available for virological work-up. Samples are to be collected from herd-mates in the hope of detecting convincing serological evidence of BRSV infection.

MALIGNANT CATARRHAL FEVER

Malignant catarrhal fever (MCF) was diagnosed in a 10-month-old heifer at Mt Barker that had ataxia, hyperaesthesia and pyrexia. Histopathological examination revealed lymphocytic infiltrates with focal necrosis in the liver, acute fibrinous necrosis in the spleen, and characteristic lymphocytic cuffing of arcuate vessels in the kidney. Blood taken from the animal was PCR positive for ovine herpes virus-2 (MCF).

BOVINE PESTIVIRAL INFECTION

Respiratory disease affecting 30 of 400 mixed-age heifers at Westonia was attributed to permanent infection with bovine pestivirus (bovine viral diarrhoea virus). Histopathological examination of the lungs of one such animal revealed a severe fibrinous pneumonia due to *Mannheimia (Pasteurella) haemolytica* and *Arcanobacterium (Actinomyces or Corynebacterium) pyogenes*. Virological examination also showed that the animal was positive to pestivirus antigen, suggesting it had been infected in-utero and was a persistent carrier. The problem began several years ago when 50 cows were introduced to the herd, and seems to be restricted to the progeny of these cattle.

NON-PURULENT ENCEPHALITIS IN A CALF

Non-purulent encephalitis was diagnosed after histopathological examination of the brain of a four-month-old Murray Grey calf at Esperance that had been suffering from weakness and hind limb ataxia. Post mortem examination had shown pericardial adhesions with pleural and peritoneal fibrin tags. Histological examination of the brain revealed marked mononuclear cell cuffing of both meningeal and parenchymal blood vessels, and widespread gliosis. Polyserositis was seen in sections of viscera. No definitive diagnosis was reached. Malignant catarrhal fever, sporadic bovine encephalomyelitis, and infectious bovine rhinotracheitis were considered the most likely causes, but there was no serological evidence to support any of these diseases.

MISCELLANEOUS CONDITIONS OF SHEEP

Enterotoxaemia was diagnosed in Merino weaners at Gardiner River, lambs at Dowerin and ewes at York. Bacterial meningoencephalitis was diagnosed in a Merino trial sheep at Merredin Research Station, and in a weaner at Geraldton. The weaner also had a severe pneumonia, most likely due to *Mannheimia haemolytica*. In another case, a non-suppurative meningoencephalitis with widespread focal gliosis was diagnosed in one of several weaners at Jerramungup. The aetiology of this one is uncertain, as the pattern of lesions was more suggestive of a viral aetiology rather than listeriosis or toxoplasmosis. Lupinosis was seen in feed-lot lambs at Bruce Rock, and also in weaners with concurrent myopathy at Northampton. In another case at Macalinden where 50 of 4000 ewe weaners died, there was an associated haemoglobinuric nephropathy attributed to copper toxicity.

ANNUAL RYEGRASS TOXICITY

Annual ryegrass toxicity has not featured often in laboratory reports this quarter, but in one instance the disease was linked to feed pellets. However, follow-up investigation revealed that the concentration of bacterial galls in the pellets was too low to have caused any problems. The investigation highlighted the fact that interpretation of results of laboratory tests on rumen samples need to be made with care. Extremely high bacterial antigen levels can be found in sheep that are clinically normal, and clinically affected sheep may have low to moderate levels of antigen. In this case, it is thought that intoxicated sheep stop eating, allowing bacterial antigen concentrations in the gut to decrease prior to death.

BACKLINE SKIN NECROSIS

Another report of backline skin necrosis in full-mouth Merinos at Karlgarin was investigated. The sheep were shorn in February, but were not brought in for conventional dipping until two weeks later. Skin lesions were noted at that time, and three months later seven sheep were observed with severe skin lesions and 200 of the 650 had minor lesions. This case suggests that backline skin necrosis is more likely to be associated with the climatic conditions and lack of shade at shearing time than to application of backline treatments.

CRYPTOCOCCOSIS IN HORSES

Severe cryptococcosis was diagnosed in a filly at Hamel. Characteristic soap bubble lesions containing the organisms were found on the tongue, in several locations in the kidneys, and throughout the lungs. The dam of this filly was reported to have lost all previous foals to this disease.

INFECTIOUS BRONCHITIS IN POULTRY

Infectious bronchitis was diagnosed as the likely reason for poor egg quality and production loss in 73-week-old layers. Fowl pox was diagnosed in layers (10 to 20 weeks of age) that had ocular discharge and swollen sinuses. The disease was also seen in Rhode Island Red chickens that developed swollen heads and could not open their eyes. Cryptosporidiosis was diagnosed in 180 of 500 ostriches (two to eight weeks of age) suffering from cloacal prolapses. Large numbers of cryptosporidia were detected in the cloacal mucosa.

Quarterly Disease Statistics

Quarterly disease statistics — Control activities

JOHNE'S DISEASE

Johne's disease (JD) occurs primarily in dairy cattle and sheep in Australia, and to a lesser extent in beef cattle, goats, deer and camelids. Infection with sheep strains occurs to varying extents across the sheep producing regions of southern Australia but has not been detected in Queensland. Cattle strains are endemic in south-eastern Australia but surveillance programs have not identified endemic infection in Queensland, Western Australia and Northern Territory, and active measures are taken to stamp-out any incursions. Table 1 shows the number of herds and flocks known to be infected. New approaches to controlling JD, based on risk assessment and management, have been developed. Market Assurance Programs (MAPs) are in operation for cattle, sheep, goats and alpaca, with the number of herds or flocks that have reached a status of Monitored Negative 1 (MN1) or higher shown in Table 2.

Information about components of the National JD Control Program can be obtained from State coordinators and Animal Health Australia's JD coordinator, David Kennedy 02 6365 6016. Lists of beef, dairy and alpaca herds and sheep flocks assessed in the Market Assurance Programs are available on the internet (at www.aahc.com.au/jdmap).

Table 1: Herds/flocks with JD at 30 September 2004

	Cattle	Sheep	Goats	Deer	Alpaca	Total
NSW	132	335	10	1	0	478
NT	0	0	0	0	0	0
QLD	1	0	1	0	0	2
SA	54	63	1	3	0	121
TAS	24	48	6	0	0	78
VIC	1070	245	8	7	0	1330
WA	0	18	0	0	0	18
AUS	1281	709	26	11	0	2027

* Individual properties infected with JD in sheep are no longer reported in high prevalence regions of NSW.

Table 2: Herds/flocks with a JDMAP status of at least MN1/TN1 status at 30 September 2004

	Cattle	Sheep	Goat	Alpaca	Total
NSW	763	365	34	88	1250
NT#	0	0	0	0	0
QLD#	1	5	0	0	6
SA	287	248	17	39	591
TAS	114	31	1	1	147
VIC	322	89	1	30	442
WA#	0	0	0	0	0
AUS	1487	738	53	158	2436

#Herds/flocks in Free or Protected Zones are equivalent to status of MN1 or better because of the zone's status.

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 3 shows the number of dairy herds tested free of EBL at the end of the quarter.

Table 3: Dairy herds tested free of enzootic bovine leucosis at 30 September 2004

	NSW	NT	QLD	SA	TAS	VIC	WA	AUS
Free	1125	0	954	453	525	6168	360	9585
Herds	1137	0	960	453	525	6215	360	9650

OVINE BRUCELLOSIS

Contagious epididymitis, caused by *Brucella ovis*, is present in commercial flocks at a low level that varies around the country. Voluntary accreditation programs (usually in stud flocks) for ovine brucellosis freedom are operating in all States. Table 4 shows the number of accredited flocks at the end of the quarter.

Table 4: Ovine brucellosis accredited-free flocks at 30 September 2004

NSW	NT	QLD	SA	TAS	VIC	WA	AUS
607	0	0	490	89	625	138	1949

Quarterly disease statistics — laboratory testing

The results of serological testing for a range of viral diseases from routine laboratory submissions for the quarter are shown in Table 5.

Table 5: 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
Jul–Sep 03	2854	724	6307	445	1499	354	2696	8	790	0	376	26
Oct–Dec 03	11778	749	15560	278	1901	300	9559	16	806	2	246	11
Jan–Mar 04	9689	542	7550	318	1746	289	4742	0	547	5	411	24
Apr–Jun 04	9803	827	11710	432	1865	456	8684	12	958	10	630	22
Jul–Sep 04	18309	109	26082	359	1282	252	10754	3	719	5	254	14
NSW	71	33	256	0	169	17	123	0	263	0	126	11
NT	1887	739	970	149	541	113	226	0	4	0	0	0
QLD	426	197	1055	136	268	45	40	0	233	5	5	0
SA	513	0	676	0	92	12	1810	0	2	0	2	0
TAS	20	0	20	0	20	0	5	0	0	0	0	0
VIC	31	0	27	0	4	0	17	0	159	0	57	2
WA	15361	124	23078	74	188	65	8533	3	58	0	64	1

Quarterly disease statistics — surveillance activities

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 187 abortion investigations were performed during the reporting period — all with negative results for bovine brucellosis, as shown in Table 6.

Table 6: Surveillance for bovine brucellosis

	Abortion investigations		Test for other reasons	
	Tests	+ve	Tests	+ve
Jul–Sep 03	131	0	2114	0
Oct–Dec 03	181	0	4161	0
Jan–Mar 04	294	0	714	0
Apr–Jun 04	231	0	3025	0
Jul–Sep 04	187	0	795	0
NSW	1	0	213	0
NT	0	0	0	0
QLD	93	0	407	0
SA	4	0	3	0
TAS	0	0	1	0
VIC	3	0	12	0
WA	86	0	159	0

TUBERCULOSIS

Australia was declared free from bovine tuberculosis (TB) on 31 December 1997, exceeding the OIE requirements for declaration of country freedom. The last case of TB was detected in January 2002 and trace-forward and trace-back slaughter carried out according to the Tuberculosis Freedom Assurance Program. The National Granuloma Submission Program (NGSP) has been the major surveillance tool for TB since 1992. Table 7 summarises results from the program.

Table 7: Results of the National Granuloma Submission Program

	Granulomas submitted	TB +ve
Jul–Sep 03	1755	0
Oct–Dec 03	1676	0
Jan–Mar 04	1188	0
Apr–Jun 04	1189	0
Jul–Sep 04	1071	0
NSW	53	0
NT	0	0
QLD	824	0
SA	51	0
TAS	13	0
VIC	28	0
WA	102	0

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. Tables 8 and 9 summarise NAQS activity in Australia over the past five quarters.

Contact: David Banks, Biosecurity Australia, DAFF

Table 8: Summary of recent NAQS activity in Australia

	Jul–Sep 03		Oct–Dec 03		Jan–Mar 04		Apr–Jun 04		Jul–Sep 04	
	Tested	+ve	Tested	+ve	Tested	+ve	Tested	+ve	Tested	+ve
Aujeszky's disease	34	0	117	0	71	0	74	0	92	0
Classical swine fever	34	0	117	0	71	0	74	0	92	0
Japanese encephalitis	197	0	48	9	394	16	173	0	173	0
Nipah virus	28	0	138	0	53	0	76	0	76	0
Porcine reproductive and respiratory syndrome	34	0	117	0	71	0	74	0	92	0
Surra	45	0	88	0	127	0	112	0	112	0

In 1995–97, animals at sentinel sites on islands in the Torres Strait, but not the Australian mainland, seroconverted to Japanese encephalitis during the latter part of the wet season (March–April). In March 1998, seroconversions occurred at a number of sites on islands in the Torres Strait, and for the first time on the mainland at the tip of Cape York Peninsula. Sentinel pigs at Badu Island have seroconverted each wet season since then (except for 1999), and seroconversions have been detected on other central Torres Strait islands in surveys. Positive results were also detected at one sentinel pig site on the tip of Cape York Peninsula in February 2004.

PORTS SURVEILLANCE PROGRAM

Biosecurity Australia conducts the Ports Surveillance Program for *Culicoides*, screw-worm fly, exotic bees and bee mites. Seaports, particularly those servicing returning livestock vessels and those dealing with high risk deck cargo such as timber, mining equipment and containers, are considered to be high risk locations for incursions of such pests. The program increases the capacity to detect any incursions at an early stage, and this in turn increases the probability of a successful eradication program. The *Culicoides* surveillance also supports the livestock export trade by confirming the continuous or seasonal absence of *Culicoides* vectors at ports from which livestock are loaded. Table 9 shows the number of times that insect trap sites were inspected for the Port Surveillance Program — no exotic insects or mites were detected.

Contact: David Banks, Biosecurity Australia, DAFF

Table 9: Number of inspections of insect trap sites

	Jul–Sep 03	Oct–Dec 03	Jan–Mar 04	Apr–Jun 04	Jul–Sep 04
Port surveillance					
Asian bees	15	10	12	15	18
Bee mites	15	14	20	28	21
Culicoides	31	32	29	32	30
Screw-worm fly	31	31	30	28	21
NAQS					
Screw-worm fly	108	108	108	36	24

SALMONELLA SURVEILLANCE

The National Enteric Pathogen Surveillance Scheme (NEPSS) 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 NEPSS 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 NEPSS. Table 10 summarises *Salmonella* isolations from animals notified to NEPSS for the quarter.

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

Table 10: Salmonella notifications, 1 July to 30 September 2004

Serovars	avian	bovine	canine	equine	feline	ovine	porcine	other	Total
S. Bovismorbificans	0	46	2	1	0	0	0	0	49
S. Dublin	0	47	1	0	0	0	0	0	48
S. Infantis	0	3	4	2	1	0	1	0	11
S. Typhimurium	5	123	5	3	2	7	2	0	147
Other	1	32	11	2	4	2	6	15	73
Total	6	251	23	8	7	9	9	15	328

ZOONOSES

The National Notifiable Diseases Surveillance System (NNDSS) of the Communicable Diseases Network Australia collects statistics about many human diseases. A summary of information about five important zoonoses is submitted to NAHIS each quarter (see Table 11).

Contact: Communicable Diseases Intelligence, Australian Government Department of Health and Ageing (Internet address: http://www.cda.gov.au/pubs/cdipubs.htm)

Table 11: Notifications of zoonotic diseases in humans

Disease	Q3-03	Q4-03	Q1-04	Q2-04	Q3-04	Current quarter							
					AUST	ACT	NSW	NT	QLD	SA	TAS	VIC	WA
Brucellosis[#]	5	3	3	6	12	0	0	0	11	0	0	1	0
Leptospirosis	21	27	55	60	40	0	16	0	22	0	0	1	1
Listeriosis	12	18	17	19	16	1	4	0	1	2	0	5	3
Ornithosis	79	64	67	65	54	0	27	0	2	1	0	24	0
Q fever	96	123	110	117	93	0	57	0	20	6	0	10	0

Brucella melitensis and *Brucella abortus* are exotic to Australia.

NATIONAL TSE SURVEILLANCE PROGRAM

The National Transmissible Spongiform Encephalopathies Surveillance Program (NTSESP) is an integrated national program jointly funded by industry and governments to demonstrate Australia's ongoing freedom from BSE and scrapie, and to provide early detection of these diseases should they occur. Table 12 summarises the activity of the program over the past five quarters. All specimens tested were negative for TSEs. Information about NTSESP is available on the internet (at www.aahc.com.au/surveillance/ntsesp).

Contact: Chris Baldock, Animal Health Australia's NTSESP National Coordinator

Table 12: Number of animals tested under NTSESP (All were negative for TSE)

	Jul–Sep 03		Oct–Dec 03		Jan–Mar 04		Apr–Jun 04		Jul–Sep 04	
	Cattle	Sheep	Cattle	Sheep	Cattle	Sheep	Cattle	Sheep	Cattle	Sheep
NSW	36	44	20	49	25	38	38	40	38	40
NT	7	0	8	0	3	0	1	0	11	1
QLD	49	7	40	2	20	9	58	2	28	9
SA	5	14	8	33	3	18	10	19	6	11
TAS	2	4	0	4	1	1	4	1	4	0
VIC	34	39	17	26	19	11	12	30	25	34
WA	15	27	8	28	10	14	11	11	0	0
AUS	148	135	101	142	81	91	134	103	112	95

NATIONAL RESIDUE SURVEY

Of 2895 samples tested during the quarter for agricultural and veterinary chemicals, anthelmintic residues were detected in samples from beef cattle and goats, an antibiotic residue was detected in a beef liver sample, and there were seven growth promotant-related detections and 42 metal residue detections. The results are summarised in Table 13.

A beef liver sample had a triclabendazole residue of 4.5 mg/kg, where the maximum residue level (MRL) for this veterinary drug in beef liver is currently 0.5mg/kg. The Australian Pesticides and Veterinary Medicines Authority has recommended a change of MRL to 2 mg/kg, but this change has not been promulgated in the Australian Food Standards Code, and the detection was above the new proposed MRL for triclabendazole. A traceback investigation is in progress. There were also three moxidectin residue detections in goats, with the highest residue level at 0.56 mg/kg. There is no MRL in goat liver, but the MRL in sheep liver is 0.05mg/kg. As moxidectin is not registered for use in goats, the residues resulted from extra-label use of the product. The antibiotic residue was neomycin at 0.52 mg/

kg, and was detected in a cow. Although this exceeded the MRL of 0.5 mg/kg, a traceback investigation was not initiated, as the detection is below the residue action level (RAL). The four hormone residues were (17-alpha) 19-nortestosterone, and were found in urine samples from cattle and sheep. These levels are indicative of endogenous production, and no traceback investigations were initiated. There were also three ractopamine detections in pig urine. Ractopamine is a registered veterinary drug in Australia for growth promotion in pigs only. Urine is used, across species, as the test matrix for the general beta-agonist screen in the residue-testing program. The three ractopamine detections in pig urine were not indicative of misuse of the veterinary drug in this species.

Of the 42 metal detections found during the quarter, one was from a sheep and the remaining 41 were from minor species that have no maximum level (ML) set. The sheep detection was for cadmium (1.4mg/kg), exceeding the ML of 1.25 mg/kg, but below the RAL of 2.5 mg/kg, so no traceback investigation was initiated. As the other 41detections did not exceed an ML, no further action was taken.

Further results, reports and information on NRS can be found on the internet (at www.daff.gov.au/nrs).

Contributed by: Daryl Crapp, National Residue Survey, DAFF

Table 13: National Residue Survey, 1 July to 30 September 2004

Each pair of figures gives the number of residues above the maximum residue limit (or the maximum level), and the number of samples tested.

	NSW		NT		QLD		SA		TAS		VIC		WA		AUS	
Anthelmintics																
cattle	0	72	0	6	0	115	0	7	0	1	0	23	0	9	0	233
pigs	0	17	0	0	0	17	0	17	0	1	0	26	1	5	1	83
sheep	0	75	0	0	0	10	0	36	0	1	0	29	0	23	0	174
other	0	18	0	0	0	7	0	8	0	0	0	2	0	10	0	45
Total	0	182	0	6	0	149	0	68	0	3	0	80	1	47	1	535
Antimicrobials																
cattle	0	105	0	2	0	148	0	11	0	15	0	94	0	16	0	391
pigs	0	73	0	1	0	46	0	44	0	2	0	58	0	10	0	234
sheep	0	125	0	0	0	13	0	70	0	3	0	42	0	39	0	292
other	0	7	0	0	0	5	0	11	0	0	0	4	0	8	0	35
Total	0	310	0	3	0	212	0	136	0	20	0	198	0	73	0	952
Growth promotants																
cattle	0	65	0	3	0	145	0	14	0	6	0	25	0	19	0	277
pigs	0	49	0	0	0	49	0	22	0	2	0	31	0	5	0	158
sheep	0	69	0	0	0	7	0	28	0	2	0	11	0	25	0	142
other	0	1	0	0	0	5	0	5	0	0	0	3	0	5	0	19
Total	0	184	0	3	0	206	0	69	0	10	0	70	0	54	0	596
Insecticides																
cattle	0	115	0	13	0	178	0	15	0	11	0	57	0	19	0	408
pigs	0	22	0	0	0	14	0	14	0	2	0	16	0	6	0	74
sheep	0	114	0	0	0	20	0	49	0	5	0	32	0	44	0	264
other	0	39	0	6	0	45	0	7	0	1	0	2	0	10	0	110
Total	0	290	0	19	0	257	0	85	0	19	0	107	0	79	0	856
Metals																
cattle	0	32	0	1	0	32	0	4	0	1	0	12	0	5	0	87
pigs	0	19	0	0	0	21	0	14	0	0	0	20	0	6	0	80
sheep	0	29	0	0	0	5	3	13	0	0	0	16	0	12	3	75
other	9	15	2	2	9	16	3	2	0	0	0	0	5	4	28	39
Total	9	95	2	3	9	74	6	33	0	1	0	48	5	27	31	281
Miscellaneous																
cattle	0	38	0	2	0	90	0	13	0	5	0	30	0	11	0	189
pigs	0	55	0	0	0	30	0	22	0	0	0	36	0	11	0	154
sheep	0	34	0	0	0	8	0	12	0	2	0	8	0	6	0	70
other	0	4	0	1	0	8	0	3	0	0	0	0	0	4	0	20
Total	0	131	0	3	0	136	0	50	0	7	0	74	0	32	0	433

SUSPECT EXOTIC OR EMERGENCY DISEASE INVESTIGATIONS

There were 17 investigations of diseases suspected to be either exotic or a possible emergency reported during the quarter, as shown in Table 15. More details about some of these investigations can be found in State reports.

Table 15: Exotic or emergency disease investigations reported from 1 July to 30 September 2004

DISEASE	SPECIES	STATE	MONTH	RESPONSE	FINDING
Anthrax	bovine	VIC	Aug	1	lead poisoning
Anthrax	ovine	VIC	Sep	2	enterotoxaemia
Avian influenza	avian	NSW	Jul	2	bacterial tracheitis
Avian influenza	avian	NSW	Jul	2	chlamydiosis
Avian influenza	avian	NSW	Aug	3	negative
Foot-and-mouth disease	bovine	NSW	Aug	3	malignant catarrhal fever
Foot-and-mouth disease	bovine	QLD	Sep	3	negative
Foot-and-mouth disease	bovine	SA	Aug	5	photosensitivity
Foot-and-mouth disease	bovine	WA	Aug	3	negative
Leishmaniasis	canine	NSW	Jul	2	myeloproliferative disorder
Newcastle disease	avian	NSW	Jul	2	chlamydiosis
Newcastle disease	avian	NSW	Aug	3	negative
Newcastle disease	avian	QLD	Sep	2	negative
Rabies	canine	NSW	Aug	3	negative
Rabies	canine	NSW	Aug	3	negative
Rabies	ovine	NSW	Jul	3	negative
Scrapie	caprine	NSW	Sep	2	listeriosis

KEY to 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
7 Eradication

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 potential exotic or other emergency disease situations. Anyone suspecting an exotic disease outbreak should use this number to get immediate advice and assistance.

For information about the Disease Watch Hotline, contact Jamie Penrose, Animal Health Australia.

NAHIS contacts

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

Name	Role	Phone	Fax	e-mail
Chris **Baldock**	National NAHIS Coordinator	07 3255 1712	07 3844 5501	chris@ausvet.com.au
David **Banks**	Northern Australia Quarantine Strategy	02 6272 5584	02 6272 3307	david.banks@daff.gov.au
Chris **Bunn**	Emergency Disease Preparedness, AFFA	02 6272 5540	02 6272 3372	chris.bunn@daff.gov.au
John **Elliott**	Tas. State Coordinator	03 6336 5334	03 6336 5374	john.elliott@dpiwe.tas.gov.au
Jenny **Hutchison**	Australian Government NAHIS Coordinator	02 6272 4719	02 6272 3150	jenny.hutchison@daff.gov.au
Tristan **Jubb**	Vic. State Coordinator	03 5430 4545	03 5430 4520	tristan.jubb@dpi.vic.gov.au
David **Kennedy**	Johne's Disease Coordinator	02 6365 6016	02 6365 6088	david@ausvet.com.au
Diane **Lightfoot**	National Enteric Pathogen Surveillance Scheme	03 9344 5701	03 9344 7833	d.lightfoot@ microbiology.unimelb.edu.au
Kelly **Long**	Australian Milk Residue Analysis Survey	03 9810 5900	03 9819 4299	klong@dairysafe.vic.gov.au
Peter **Miller**	National Residue Survey	02 6272 3762	02 6272 4023	peter.miller@daff.gov.au
Barbara **Moloney**	NSW State Coordinator	02 6391 3687	02 6361 9976	barbara.moloney@ agric.nsw.gov.au
Richard **Norris**	WA State Coordinator	08 9368 3637	08 9367 6248	rnorris@agric.wa.gov.au
David **Pitt**	Qld State Coordinator	07 4722 2694	074778 4307	david.pitt@dpi.qld.gov.au
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