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QUARTERLY REPORT

CONTENTS

Preface

During the quarter, there were two workshops to address Australia's response to exotic disease incursions — the first concerned screw-worm fly and the second foot-and-mouth disease and bovine spongiform encephalopathy. This edition reports on recommendations made at those workshops.

Other topics include highlights of disease surveillance activities, items of interest from States and Territories, and summaries of disease surveillance and monitoring 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. *AHSQ* is available on the Animal Health Australia website (at www.aahc.com.au/nahis).

Gardner Murray
Australian Chief Veterinary Officer

Screw-worm fly threat

In November 2001, an international conference held in Canberra reviewed research activities undertaken in the past 10 years under Australia's long-term screw-worm fly (SWF) preparedness strategy.

At the conference, convened by Agriculture, Fisheries and Forestry — Australia (AFFA), 70 international and national experts on research and control of SWF and related pests developed recommendations for the future direction of Australia's SWF preparedness. Representatives from the South-East Asian region and international agencies participated and agreed to progress regional cooperation on SWF control. Agencies represented included the International Atomic Energy Agency, the Food and Agriculture Organization of the United Nations (FAO), the Arab Organisation for Agricultural Development, and the United States Department of Agriculture (USDA).

WHAT IS SCREW-WORM FLY?

SWF is an insect parasite of vertebrate animals, including humans, laying its eggs on wounds or, sometimes, moist tissue. Larvae ('maggots') of the fly chew into the flesh of living hosts. There are two species of SWF. The New World SWF (*Cochliomyia hominivorax*) occurs in the western hemisphere. The Old World SWF (*Chrysomya bezziana*) occurs throughout much of Africa, the Middle East, India and South-East Asia. It is found in Papua New Guinea, as close to Australia as the coastal swamplands of Papua adjacent to the Torres Strait. Of all exotic diseases of animals, the Old World SWF poses one of the most direct threats to Australia's livestock, wildlife and people.

The only method available to eradicate SWF is the sterile insect technique (SIT), which was pioneered against the New World SWF by USDA in the mid-1940s. Female SWF mate only once, and SIT

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exploits this behaviour by artificially rearing and sterilising (by irradiation) male flies. The sterile male flies are then released in large numbers to out-compete native males. Eggs produced after mating with sterile flies do not hatch and develop into larvae, so gradually the local population of SWF is eliminated. Strategies for prevention and control of major exotic diseases, including SWF, have been developed through the Australian Veterinary Emergency Plan (AUSVETPLAN), which is available on the internet (at http://www.aahc.com.au/ausvetplan).

THE STERILE INSECT TECHNIQUE

USDA carried out the first convincing demonstration of the use of SIT on the Caribbean island of Curacao in 1954. Within 14 weeks of the start of the release of sterile male flies, New World SWF was eradicated from the island. SIT has since been used to eradicate New World SWF from the southern United States, Mexico, and all of Central America as far south as the Panama Canal. It was also used to eradicate an outbreak of New World SWF in Libya in 1988–91. SIT is currently being used in the Caribbean area, and is maintaining a buffer zone south of the Panama Canal.

The use of SIT is not limited to SWF. It has been applied effectively for the control of fruit flies. It was used to eradicate Queensland fruit fly from Western Australia in the early 1990s and is used each season in the Murrumbidgee and Murray valleys to eradicate incursions of Queensland fruit fly in fruit-growing areas. Research by CSIRO demonstrated that SIT could be used to control the sheep blowfly (*Lucilia cuprina*). This potential has raised the question of whether it may be feasible to construct a multi-insect sterilisation facility within Australia.

Work has recently been completed on a $6 million joint Australian–Malaysian pilot project to validate the use of SIT as a control method for Old World SWF, test new concepts for rearing sterile flies, and prepare a design brief for a proposed large-scale sterile insect production plant in Australia. A CSIRO entomologist, an engineering supervisor, and a consulting engineer presented the results of this work at the conference. Reports were also provided on SWF monitoring in Northern Australia, the AUSVETPLAN strategy for SWF, and other related projects.

CONFERENCE OUTCOMES

The main domestic outcome of the conference was recognition of the need for broader consultation on the future direction of SWF preparedness, and the possible linkages to other programs that use SIT. As a result, the conference recommended that Animal Health Australia coordinate and manage a broad national consultation process to resolve options for cooperation with other SIT programs and develop a new SWF preparedness strategy. Animal Health Australia was seen as the obvious group to undertake this role because of its existing role in national coordination of animal health issues and managing the national emergency animal disease preparedness program. Primary Industries Standing Committee, comprising the permanent heads of AFFA and State/Territory departments of agriculture, has since endorsed this recommendation.

The conference was informed that there would be a delay of at least two years from the time of detection of SWF in Australia for construction of a large-scale sterile insect production facility and first release of sterile flies in a SIT response. The cost of such a facility is estimated to be $143 million, with annual operating costs of about $97 million annual operating cost. The timeframe and cost were seen as unacceptable by livestock industries, which wanted further development of options to reduce the lead-times. These options included progressing the proposed SIT facility in Australia, expanding the current Malaysian facility, or establishing a new facility elsewhere in the region. Relevant supporting tools used in SWF preparedness need to be updated. These included AUSVETPLAN, bio-economic modelling, and entomological and SIT engineering knowledge. Over the next year, there will be a substantial workload in undertaking the wide-ranging consultation process with animal and plant health agencies, research and development groups, and industry organisations to develop a new SWF preparedness strategy. AFFA will provide seed funding to Animal Health Australia to progress this work.

The main regional outcome of the conference related to the need for international collaboration, to pool limited expertise and resources and because regional countries and international organisations may underestimate the cost–benefit ratio for SWF eradication. The conference recommended that IAEA, FAO and authorities in South-East Asia should progress cooperation on SWF control through collaborative regional programs. The feasibility of integrated control, eradication and prevention campaigns will be further discussed at a follow-up meeting in the Asia–Pacific Region planned for the second quarter of 2002.

For further information contact Neil Tweddle (phone 02 6272 4756 or e-mail neil.tweddle@affa.gov.au).

Anthrax incident

During the first week in January 2002, a private veterinarian was called to investigate deaths in cattle on a property at Wandoan in southern Queensland. Samples were submitted to the Toowoomba Veterinary Laboratory (TVL) of the (Queensland) Department of Primary Industries (DPI). Early on 8 January, after examination of initial culture material, high suspicion of anthrax was reported. Culture material was immediately transferred to the laboratories of Queensland Health Scientific Services (QHSS) and late that day, positive results to a polymerase chain reaction (PCR) test for *Bacillus anthracis* were reported.

Based on suspicions reported by TVL, quarantine had already been imposed by DPI on the Wandoan property. Investigations by DPI officers quickly established that approximately 300 cattle had returned from agistment on a Dirranbandi property in south-west Queensland to the property near Wandoan on 28 December 2001. It was established that three animals had died in the week preceding trucking, with one further death during transport. Over the next week a further nine animals died. Initially, the owner suspected travel stress, as the weather was extremely hot during this time. After losses continued, the owner requested a veterinarian's assistance. After carrying out post mortem examinations, the veterinarian became suspicious of anthrax and submitted samples to TVL.

Based on the linkage between the two properties, quarantine was also imposed on the Dirranbandi property. A comprehensive response immediately commenced using AUSVETPLAN guidelines. Carcases were incinerated and suspect areas decontaminated with 5% formaldehyde solution. Extreme heat and a large body of grass complicated the situation at Wandoan. Local government assistance was used to constructed firebreaks. At the same time, Queensland Health assessed human exposure risks and took the steps necessary to ensure that any person considered at risk undertook appropriate treatment.

Vaccination of cattle with live attenuated anthrax spore vaccine was undertaken on both properties. Two further anthrax deaths occurred on the Wandoan property 1–2 days after vaccination, in cattle that had not been to the Dirranbandi property. Presumably, these were exposed in the small paddocks or stock yards used during the vaccination program.

Investigations by DPI in collaboration with QHSS commenced to identify possible sources of infection. PCR testing procedures developed by QHSS were used to examine environmental samples for anthrax. Sampling of sites where animals had died at Dirranbandi confirmed anthrax as the cause of death for these animals and a further animal that died on the property on 16 January. This animal was in an area separate to that used for cattle from Wandoan. In total, 18 animals are believed to have died from anthrax in this incident.

Tracing of movements both to and from the properties was carried out and confirmed that no slaughter cattle had left the properties since November 2001. Introductions to the property at Dirranbandi indicated that some movements had taken place during the past five years to and from NSW but not from areas where anthrax is known to occur. Minimal losses of cattle were associated with those movements. Surveillance of surrounding properties and any properties having links with the quarantined properties was carried out and any deaths investigated. No evidence of extension of disease was detected.

Most anthrax cases recorded in animals in Australia occur in what is known as the 'anthrax belt' where alkaline soils and a tendency to flooding may favour survival of anthrax spores. Although a stock route runs through the property, there have not been any recorded major stock losses along or in association with this route. Another possibility is that infection was introduced by contaminated feedstuffs. However, the history of feedstuff introductions for the property provides no evidence that this was the case. Calves were early weaned and fed calf pellets during a drought in the past, but there is no record of losses in these cattle.

Soil conditions on the Dirranbandi property in the black soil river flats and grey clay soil areas are favourable for survival of anthrax due to an alkaline pH and periodic flooding. Over the past 10 years, the property owner developed irrigation infrastructure and carried out land clearing operations, which may have caused soil disturbance and release of anthrax spores buried for many years. However, the losses this time have not been associated with these areas. A possible contributing factor on this occasion was that cattle were fed hay (sorghum hay baled on the property) on the ground for a short time before the deaths began to occur. Feed may have been contaminated by soil and ingestion of anthrax spores may have occurred in this way. Reports from the private veterinarian involved in post mortem examinations at Wandoan indicated that pathological changes were marked in the intestines but lung tissues appeared relatively normal, giving support to ingestion as the likely portal of entry.

Contributed by Janet Berry, Queensland DPI

FMD–BSE policy forum

In November 2001, Animal Health Australia and AFFA organised a government–industry forum to consider national policy on responses to foot-and-mouth disease (FMD) and to bovine spongiform encephalopathy (BSE). Senior government officials, livestock industry peak councils, livestock product marketers and retailers, research and development corporations, and consumer representatives attended the forum.

The focus of the meeting was to agree on a national policy for a number of important issues relating to Australia's FMD and BSE preparedness and response plans. This article summarises recommendations that participants in the forum agreed to forward to the Primary Industries Standing Committee (PISC).

VACCINATION

It was accepted that vaccination would, in certain emergency circumstances, be an important component in controlling an outbreak of FMD. Vaccination of 'at-risk' species is a major component to be considered in Australia's 'stamping-out' strategy against FMD. However, if vaccination were to be used, all vaccinated animals would have to be permanently identified, quarantined and ultimately slaughtered. Improved access to an adequate supply of suitable FMD vaccine is required, and negotiations are under way to ensure this.

ZONING POLICY

It was agreed that zoning should be an integral component of Australia's FMD response. The resources needed for zoning management during an outbreak are an important part of the overall resources needed in a national FMD response.

ADDITIONAL ISSUES FOR FMD

The implementation of an appropriate risk-based national livestock 'stand still' is fundamental to minimise the impacts of an outbreak of FMD.

Feral animals should be controlled where they are assessed to pose an unacceptably high risk in relation to entry, spread and possible maintenance of FMD.

PREPARATORY NEEDS

A comprehensive communication strategy on early detection and reporting of FMD is required. This should involve farmers and veterinarians, industry workers and others to ensure they are aware of the clinical signs of FMD in all susceptible species — including the relatively mild signs in sheep — and of their legal and social responsibilities for rapid reporting.

Regional laboratory capacity to conduct FMD serological testing is a critical response capacity for an outbreak of FMD, and both epidemiological and economic modelling are needed to assist decision making in an outbreak of FMD.

REGULATORY

Swill-feeding of pigs is a likely means of introduction of FMD, and feeding infective meat and bonemeal to ruminants is the key transmission route for BSE. The existing bans on both these feeding practices must continue to be rigorously enforced and audited.

The ability to trace livestock movements for the control of an outbreak of an emergency animal disease is essential. It is important that the deficiencies identified in the current national livestock tracing capacity be removed. Such improvements to information systems are scheduled to be fully implemented by the end of 2003.

NATIONAL EMERGENCY INFORMATION NEEDS

A capability for an integrated national emergency disease information management is required. Significant limitations in the current national capability to access and manage emergency animal disease information, particularly in the event of a major disease outbreak need to be addressed.

Many information management capabilities are generic for a wide range of emergencies, including all biological emergencies, and improved capability built around FMD preparedness needs could have wide government, industry and community benefits.

The Animal Emergency Management Information System (ANEMIS) is available to assist the management of the technical response to an emergency disease and should be the database of choice until an alternative is developed.

Uniform business rules and standards are needed for animal health field and laboratory information. A workshop was held in Adelaide in November as a starting point for the development of such standards.

OVER-ARCHING RECOMMENDATIONS

AUSVETPLAN should remain the national framework for all FMD and BSE emergency planning and response activities.

Animal Health Australia will coordinate the engagement of all stakeholders and ensure achievement of agreed outcomes and timelines arising from the policy forum.

Contributed by: Peter Thornber, Program Manager, Emergency Animal Disease Preparedness Program, Animal Health Australia.

Veterinary Committee

Veterinary Committee consists of the Chief Veterinary Officers of the Commonwealth, the States and Territories, and New Zealand together with a CSIRO representative. The Committee met in Fremantle at the end of October and addressed a number of issues.

BEEF CATTLE TRADE ASSURANCE SCHEME

Veterinary Committee endorsed a proposal to facilitate movement of beef cattle from herds at low risk for Bovine Johne's Disease (BJD). The Beef Cattle Trade Assurance Scheme (BC-TAS), is a low cost, low risk trade assurance scheme to satisfy the requirements in relation to movements of commercial beef cattle between Residual, Control and Protected Zones.

This scheme is initially being introduced only for movements between South Australia, New South Wales, Victoria and Tasmania, and will be reviewed in 18 months. Any extension of the scheme to the Queensland and Northern Territory Protected Zones will depend on the performance of the scheme and the ability to audit it for compliance. To facilitate compliance audits, the use of National Livestock Identification System identification may become a requirement for participation in the future.

CROSS-BORDER ISSUES

Veterinary Committee agreed to a set of detailed principles addressing cross-border jurisdictional issues in animal health (*AHSQ* Vol. 5, No. 4). These will be forwarded to the Primary Industry Standing Committee (PISC, formerly SCARM, the Standing Committee on Agriculture and Resource Management) and the Primary Industry Ministerial Council (PIMC, formed from ARMCANZ — see *AHSQ* Vol. 6, No. 3) for endorsement. The adoption of these principles will significantly enhance the delivery of coordinated disease control and emergency response services between adjacent States/Territories across common borders, and will ensure the restrictions on livestock movement are the minimum necessary to effect disease control and avoid unnecessary costs on industry.

NEXT MEETING

Veterinary Committee will next meet face-to-face in Canberra from 22–24 April 2002. Information about Veterinary Committee meetings is available in an electronic newsletter, *Vetcommunique*, on the internet (at http://www.affa.gov.au).

Contributed by: Jill Mortier,
Animal Health Secretariat, OCVO, AFFA

Aquatic animal health

SIMULATION EXERCISE

Two intensive training exercises between Queensland Department of Primary Industries (DPI) staff and industry advanced Queensland's aquatic animal disease emergency preparedness. The exercises were run by DPI, prepared and moderated by staff from the Office of the Chief Veterinary Officer (OCVO) within AFFA, and funded by the Fisheries Research and Development Corporation. Each two-day workshop tackled a fictitious disease called 'black spot' in redclaw crayfish.

The exercises were based on the AQUAVETPLAN Control Centre Manual. The first day involved the establishment of a local disease control centre as the front line command post for a disease incursion. In this 'tabletop' exercise, DPI's Fisheries and Animal and Plant Health staff combined with emergency response planners, media resources staff, key industry members and the Environment Protection Agency to plan and implement the disease control and eradication program.

The team had to develop a range of initiatives from surveillance and monitoring plans, through destruction and disposal protocols for diseased stock, to media releases and industry briefings. The successful management of the incursion required addressing competing priorities and responding to a range of simulated incidents including medical emergencies, heavy rain, and spread of the disease to other properties and waterways at short notice.

The participants identified gaps in the actual ability to respond in a real emergency, making it a valuable experience for all concerned. This set the scene for the second day — a field exercise with local redclaw growers designed to simulate the on-farm component of an emergency response. The day was particularly valuable for the growers, who had little experience with disease management or emergency planning.

FISH HEALTH MANAGEMENT COMMITTEE

The structure for management of aquatic animal health in Australia was a major consideration during 2001. As the final part of an intensive consultancy, a workshop for resources and funding stakeholders was held in Brisbane in August to report on the stakeholder consultations, and to consider the nature of any national coordinating body. The workshop concluded that the establishment of a stand-alone, national, joint industry–government body with a funding source based on members' contributions is not a realistic option at this stage of industry development. The

establishment of a subsidiary to existing bodies (e.g. Animal Health Australia or the Fisheries Research and Development Corporation) may well be pursued.

For the interim, general support was given for a 'minimalist' low cost option of an Executive Secretariat reporting to a reconstituted Fish Health Management Committee (FHMC). It was agreed that consideration should be given to locating the Executive Secretariat with some other established body for administrative support. A working group, set up by the workshop to review FHMC, subsequently drafted a report recommending a revised structure, terms of reference, membership, funding arrangements, etc. for a reconstituted FHMC, to be called the Aquatic Animal Health Consultative Committee (AAHCC). The Group's report has been endorsed by FHMC. One recommendation of the report was the development of a business plan for the reconstituted committee. It will incorporate the business/operational plan developed and endorsed for the Australian Aquatic Animal Health Information System (see *AHSQ* Vol. 6, No. 3). It is expected that the draft Business Plan for AAHCC will be circulated widely to stakeholders in mid 2002.

ASIA DIAGNOSTIC GUIDE

The *Asia Regional Technical Guidelines on Health Management for the Responsible Movement of Live Aquatic Animals* was published in early 2001 and is available from FAO. The guidelines and their associated implementation plan, the Beijing Consensus and Implementation Strategy, are the result of an extensive consultative process, undertaken between 1998 and 2000, involving government-designated National Coordinators from more than 20 countries in the Asia–Pacific region, the Network of Aquaculture Centres in Asia–Pacific, FAO, OIE, and regional and international aquatic animal health specialists.

To assist implementation of these Guidelines, the *Asia Diagnostic Guide to Aquatic Animal Diseases* has been published as a comprehensive, updatable diagnostic guide for a number of pathogens and diseases that are relevant to or significant in the Asian region. The first of the four sections of the diagnostic guide covers Introduction, Background, Scope and Purpose, Guide for Users, Health and Aquatic Animals, Role of Diagnostics, and Levels of Diagnostics.

The remaining three sections cover different host groups — finfish, molluscs and crustaceans. Each section starts with a chapter on general techniques that will enable prompt and effective response to disease situations in aquatic animal production. This is not disease-specific and emphasises the importance of gross observations (Level 1 Diagnosis), and how and when they should be made, including information on environmental parameters worth recording, general procedures for sampling and fixation, and the importance of record-keeping.

This general information is followed by information on specific diseases, covering:

- causative agents;
- host range;
- geographical distribution;
- clinical aspects;
- screening methods;
- diagnostic methods;
- modes of transmission;
- control measures; and
- references.

Each section concludes with lists of OIE reference laboratories, regional disease experts, and other useful guides and manuals. The manual is printed on water-resistant material, and is ring-bound so it lays flat during use. An electronic version (3.4 MB) is available on the internet (at http://www.enaca.org/aapqis/).

WHITE SPOT VIRUS REVIEW EXERCISES

Since late 2000, the Consultative Committee on Emergency Animal Diseases (CCEAD) has been coordinating the response to the detection of polymerase chain reaction (PCR) signals indicative of possible infection with white spot virus (WSV) in crabs within the Darwin Aquaculture Centre and prawns within the Aquaculture School of the Northern Territory (see *AHSQ* Vol. 5, No. 4) and the subsequent Australia-wide survey of crustaceans to determine whether WSV was present in Australia (see *AHSQ* Vol. 6, No. 1). It was also agreed to review the national response to the incident.

Three separate meetings (involving staff of AFFA, State/Territory governments, and industry) have been held, and a final joint meeting is planned for mid-February 2002. A set of recommendations will be developed and submitted to CCEAD and the Primary Industries Standing Committee. The outcomes were:

- an enhanced understanding of the role of CCEAD and the scope of its operating guidelines;
- recommendations for the improvement of CCEAD operating guidelines;
- identification of avenues for taking forward issues outside the scope of CCEAD; and
- recommitment to the CCEAD framework and disciplines such as adherence to confidentiality and communication strategies.

The major issues dealt with were communication, confidentiality of CCEAD information and leakage of information, misuse of the CCEAD process, laboratory support and the role of non-government organisations.

Contributed by: Eva-Maria Bernoth, Office of the Chief Veterinary Officer, AFFA

National Livestock Identification Scheme

The National Livestock Identification Scheme (NLIS) continues to be developed as the central system of recording the identification of cattle and their movements throughout their life, as well to record information pertinent to animal health and residue status.

BACKGROUND

NLIS is a major beef industry initiative managed by Meat and Livestock Australia on behalf of the SAFEMEAT partnership, in close cooperation with the Australian Quarantine Inspection Service, State and Territory departments of agriculture, producers, meat processors, and livestock saleyard operators. The major function is to track all movements of individual cattle to facilitate life history trace-back (which is a prerequisite for some export markets). The primary objective of the system is to support Australia's meat export markets, as well as assisting in the identification of potential disease and residue problems, should they arise in Australian livestock.

The basis for NLIS is the permanent identification of cattle and a national database to register and trace cattle from birth through the supply chain to the ultimate exporter or domestic retailer. The unique cattle identification number includes the property of birth. State and Territory departments of agriculture maintain the property identification codes.

MANDATORY IDENTIFICATION

At this stage, NLIS remains voluntary except in Victoria, where legislation has been passed to require all cattle born after January 1 2002 to be permanently identified with NLIS devices before leaving the property of birth. Reporting conditions will be progressively phased in over the next three years.

There is considerable discussion in the other States and within industry of the benefits of mandatory identification, particularly in regard to the ability to trace stock quickly in the event of any outbreak of an emergency animal disease. SAFEMEAT, with representation of all peak councils and governments, has adopted a policy of recommending permanent identification under certain conditions.

Any introduction of mandatory identification will almost certainly be on a 'phased-in' basis, with the requirement that cattle born after a certain date be identified before movement from their property of birth. This will mean that the full identification of the Australian herd will take a number of years unless commercial or disease considerations emerge that hasten the process.

PREPAREDNESS FOR EXOTIC DISEASE

Experience in the United Kingdom has shown that the system of identification and traceability used was not adequate when challenged with an exotic disease such as FMD. The visually read tags and passport system involved delays, which meant that movements were not recorded in the database for weeks after the animal movement had occurred. Attempts at containment were hampered by this lag.

The advantages of the NLIS program, using electronic identification and a web-based communication system, are that identities of cattle can be recorded instantly and accurately. Once animals are identified and movements recorded in the database, the transaction history of the animal is immediately available, as are the movements of other cattle that may have come in contact with affected animals.

ENDEMIC DISEASE MANAGEMENT

The NLIS database has the potential to assist in the control and management of diseases such as ovine Johne's disease and in the surveillance for bovine tuberculosis. Animals originating from properties of higher risk can be more closely monitored and inspected at slaughter

In addition, in the case of infected animals being found, associated animals can be identified and traced accurately and easily.

RESIDUE MANAGEMENT

The Extended Residue Program (ERP) database, previously operated by AQIS, has been incorporated into the NLIS database. This has allowed all animal and property statuses to be incorporated into the one database, and will allow a much greater control of affected animals and better risk management of cattle of known higher risk.

Software programs now available to abattoirs allow the property number (PIC) to be entered or scanned from the tail-tag identification and the individual animal Radio Frequency Identification (RFID) to be read electronically. This information can then be checked against the national NLIS database, and the risk status and testing requirements ascertained.

CATTLE IDENTIFICATION USAGE

Although still voluntary, the use of the scheme continues to increase. As at January 2002, there were 3.3 million active tags on 6858 properties in Australia.

NLIS initially provided an identification scheme to underpin the European Union (EU) supply arrangements. However, use of the scheme outside EU

accreditation is growing quickly. More than half of the devices and two-thirds of the properties on which they are used are not accredited for EU supply.

This trend is driven by the on-property benefits of electronic recording of animal data and the ability to now access electronic carcase feedback associated with the unique electronic number.

It is anticipated that EU use of the scheme will plateau while non-EU use will continue to grow as the benefits of electronic identification are appreciated.

SHEEP IDENTIFICATION

The identification of sheep poses different problems due to the lower value of the animals. Proposals for a national voluntary sheep identification program have been developed and are planned for release in early 2002. The proposed plan will see sheep identified on a voluntary basis with a whole-of-life tag printed with the PIC of the breeder. Recording of movements will then be by National Vendor Declarations.

Further information can be obtained from Rick Beasley, Manager, National Livestock Identification Scheme, Meat and Livestock Australia.

National Arbovirus Monitoring Program

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

This report covers the second half of 2001, during which a low level of arboviral activity in northern Australia is usual. No seroconversions were detected in southern States.

BLUETONGUE

In the far north of Western Australia (WA), cattle at one sentinel site seroconverted to bluetongue during August. In the Northern Territory (NT), seroconversions were detected at only one site near Darwin in August, October and November. The usual spring pattern was observed in Queensland, with seroconversions confined to the northern coastal and adjacent inland sites in the last quarter of 2001.

AKABANE

In WA, Akabane virus infected one herd in the far north of the state, but not elsewhere. In NT, activity was limited to one herd in the third quarter of the year, but was more widespread in the fourth quarter, with seroconversions occurring in four herds. In Queensland, activity was restricted to coastal and adjacent inland areas of northern and central Queensland.

BOVINE EPHEMERAL FEVER

No BEF activity was detected in WA during the six months. In NT, no BEF activity was detected in the third quarter, but there was widespread activity in the north of the Territory ,with seroconversions detected in four herds during the last quarter of 2001. In Queensland, activity was restricted to coastal herds in the far north.

INSECT TRAPPING

Low numbers of *Culicoides* were collected in vector traps in WA during October, but high to very high numbers were collected in November and December. During the last quarter, a single *C. marksi* was collected from Carnarvon. Geraldton port collections included for the first time *C. austropalpis* during the third quarter and *C marksi* during the fourth quarter. *C. brevitasis* was collected at Roebuck Plains in August and November. A single specimen was collected from this location in August 2000 and its reappearance may be related to the annual movement of cattle from an area where this species is established.

In NT, the distribution and numbers of *C. actoni, C. brevitarsis, C. fulvus and C. wadai* were usual. However, in November, *C. brevitarsis* was found at Mount Sanford for the first time.

There was evidence that *C. brevitarsis* over-wintered (as usual) along the Queensland coast and a little inland. *C. wadai* was collected at Maryborough and Townsville, suggesting that over-wintering for this species was restricted to the coast. In the fourth quarter, *C. brevitarsis* was the only vector trapped along the coast and inland.

No vectors were found at the Darwin, Mourilyan, Brisbane or Townsville port sites during the six-month period.

Contributed by: Peter Black, Office of the Chief Veterinary Officer, AFFA

State and Territory reports

New South Wales

Contributed by:
Barbara Moloney
NSW Agriculture

ANTHRAX

During the quarter, there were six cases in which anthrax was suspected but found to be negative. However, in another case with seven deaths in 1480 sheep, the clinical signs and previous history of disease on the property indicated anthrax and the case was treated accordingly despite a negative smear test for *Bacillus anthracis*. The last confirmed instance of anthrax on this property was in 1994, but vaccination had been discontinued in recent years.

SUSPECTED *LAMANEMA CHAVEZI*

Based on overseas expert opinion about parasite sections detected in the abscessed livers of alpaca (*AHSQ* Vol. 6, No. 3), it is thought that trematode eggs are more likely than the trichostronglyloid nematode *Lamanema chavezi*. The case highlights the need for post-entry surveillance given that these animals had recently been imported from South America.

HYPOGLYCAEMIA-SPIKING MORTALITY SYNDROME

A broiler flock vaccinated at seven days of age against Newcastle disease (ND) experienced a significant increase in mortalities and culls over four days at two weeks of age. Clinical signs initially suggestive of ionophore toxicity included a range of nervous signs. Follow-up investigations did not detected virulent ND virus in samples from this flock.

Low blood glucose levels in some affected birds (< 4.4 mMol/L) and clinical signs that may be associated with hypoglycaemia (associated with fine tremors) in the absence of aetiologic agents associated with nervous signs suggest the possibility of hypoglycaemia-spiking mortality syndrome, which has been reported in broilers in other countries. The aetiology of this condition is unknown .

CAPRINE ARTHRITIS–ENCEPHALITIS

During 2001, goats from 37 separate herds were tested for caprine arthritis–encephalitis (CAE). Goats in seven herds were positive, although animals in three herds were classified as negative on retesting using a changed test procedure. The accuracy of the test had been questioned because of some weak positive tests in goats in herds previously tested negative for CAE, and because of disparate test results on samples tested with the same reagents at different veterinary laboratories. Subsequent investigation found that a washing reagent containing phosphate-buffered saline might have been the cause, and retesting previously weak positive sera using a new washing reagent returned negative results.

AMERICAN FOUL BROOD

During July–December, 131 (3.6%) beekeepers recorded an outbreak of American foulbrood (AFB). For the same period, 1123 (0.43%) beehives were recorded as being infected. AFB is a notifiable disease and compensation is payable to beekeepers for destruction or irradiation of material under certain conditions. Continuation of the compensation scheme has been under discussion with the apiary industry.

ENZOOTIC BOVINE LEUCOSIS

The November bulk milk testing (BMT) round was completed with all results negative for enzootic bovine leucosis (EBL). This is the first time since inception of the NSW EBL program in 1993 that a BMT round has returned all negative results.

Due to excellent cooperation and support from all sectors of the NSW dairy industry, the NSW EBL Eradication Program has made highly satisfactory progress and is in its final stages of eradicating EBL infection from dairy cattle population in the State.

When the program commenced in 1993, more than 25% of NSW dairy herds were infected. Since then, the NSW Dairy Industry and NSW State Government has provided more than $1.5 m (through the NSW Cattle Compensation Fund and the Dairy Industry Conference Fund) for EBL testing of infected herds and for BMT monitoring of the State dairy herds. NSW Agriculture provided veterinary expert advice to this industry-driven program. Considerable time and money was also provided by Rural Land Protection Boards and by individual dairy herd owners. The fund was exhausted for BMT in November 1999 and for herd testing in September 2001. Milk processing companies now pay the cost of ongoing BMT monitoring.

OVINE FOOTROT

The NSW Footrot Strategic Plan is still on target so that no part of the State will have less than Control Area status for footrot by early 2002. This significant achievement has resulted in the number of footrot-infected flocks being reduced over the past 10 years, from about 6000 to about 600. The next goal set by the NSW Footrot Steering Committee is to have all of the State declared Protected Area status by end of December 2005.

Over the past 12 months, the number of properties in quarantine for footrot has increased, largely because of seasonal conditions favouring the expression of footrot but also because Residual Areas progressed to Control Area status (where quarantine is compulsory). Rural Lands Protection Boards are still confident that progress is being made and that there is widespread industry support for the Footrot Strategic Plan. Parts of the plan are being reviewed in the light of experience. As the plan progresses, there will be greater emphasis on regulatory activities to ensure prescribed eradication programs are carried to protect the wider industry.

Northern Territory

Contributed by:
Diana Pinch
DBIRD

CHANGE OF NAME

In October, the Department of Primary Industry and Fisheries amalgamated with a number of other departments to become the Department of Business, Industry and Resource Development (DBIRD).

RESISTANT TICKS

Resistant ticks of the Parkhurst strain were found on stock on an export depot and another property in the Darwin region this quarter. These ticks were first detected in the Northern Territory in 1999, and are now present on seven properties in the Darwin region. Three measures are being used to control these ticks:

- restricting the spread by application of quarantine and movement conditions;
- attempting eradication on infected properties; and
- regular sampling of ticks for acaricide resistance testing as surveillance on at-risk properties.

EMERGENCY DISEASE PREPAREDNESS

More than 100 people from a variety of businesses attended workshops on the Northern Territory Foot-and-Mouth Disease Operational Plan in November and December. This plan has been developed by vets and stock inspectors in DBIRD, and would be used as the basis for managing an FMD crisis in NT.

The workshops covered topics such as principles of an emergency animal disease response, AUSVETPLAN and national funding arrangements, as well as more detailed information about FMD. Outcomes included identifying preliminary sites for local disease control centres, drafting property biosecurity recommendations, and recognising restricted area movement and security (RAMS) training as a priority.

The workshops were held in Darwin, Alice Springs and Katherine. Participants included pastoralists, stock agents, and staff from non-animal health areas of DBIRD. There will be a workshop in Tennant Creek in 2002.

SCREW-WORM FLY

There were two cases during the quarter for which screw-worm fly was excluded. In one case, a sick camel had maggots in its nasal passage. In the other case, a calf that was down developed a superficial cutaneous infection that was fly-struck. In both cases, the maggots were identified as third instar larvae of *Chrysomya megacephala.*

MELIOIDOSIS

With the onset of the wetter weather, it is usual to see cases of melioidosis in the 'Top End'. *Burkholderia pseudomallei* was cultured in specimens submitted to Berrimah Veterinary Laboratories from three animals this quarter. The bacteria were cultured from the lung of a camel with respiratory distress, nasal discharge and weakness. A meningeal abscess with inflammation extending into the medulla caused hind-limb paralysis in a goat. *B. pseudomallei* was cultured from the abscess and also from an abscess in the spleen of a feral pig that had been sampled as part of a Northern Australia Quarantine Strategy survey.

WHITE SPOT VIRUS

A total of 529 individual marine or freshwater crustaceans, including mudcrabs (*Scylla serrata*) and prawns (*Penaeus monodon*), were collected between August 2000 and September 2001. The survey, for white spot virus (WSV), looked at 15 sites in Darwin Harbour and adjacent coastal waters. The samples were tested at Berrimah Veterinary Laboratories using PCR assay. All samples were negative for WSV. An ongoing surveillance program for WSV has been implemented at Darwin Aquaculture Centre hatchery and on prawn farms in the Darwin region.

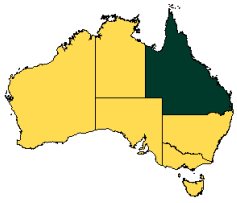
LEPTOSPIROSIS

A titre of 1:800 to *Leptospira australis* was detected on serological testing of blood samples from a dog presenting with sudden severe jaundice. Post mortem examination and histopathological examination supported the diagnosis of leptospirosis. Canine leptospirosis was diagnosed for the first time in the Northern Territory during the 1999–2000 wet season.

MAREK'S DISEASE

Over a three-week period, 17 of 20 chicken poults died on a small farm in the Alice Springs district. Laboratory investigation suggested Marek's disease as the cause. The poults, bought from a hatchery in South Australia, should have been vaccinated as day-old chicks.

Queensland



Contributed by:
Janet Berry
QDPI

BOVINE EPHEMERAL FEVER

Bovine ephemeral fever was diagnosed on numerous occasions along the eastern coastal belt. Field evidence suggested it was occurring over a wide part of central Queensland in areas that received rain during December. There were significant losses on some properties during periods of high temperature at the end of the year.

ENTEROTOXAEMIA

Enterotoxaemia was diagnosed as the cause of sudden death of twenty 15-month-old lambs from a flock of 300 in south-east Queensland. Losses had occurred within three days of introduction of stock to a lucerne paddock. The lambs were in good body condition. Post mortem examination found pulmonary oedema, a marked excess of pericardial fluid that clotted on exposure to air, swelling of the brain (as indicated by flattening of the gyri) and accelerated autolysis of the kidneys (pulpy kidney). Histology of brain sections showed scattered perivascular oedema. *Clostridial perfringens* epsilon toxin was detected in small intestinal contents.

BOTULISM IN POULTRY

Intoxication with botulinum toxin type C was diagnosed in a commercial broiler poultry flock in Brisbane in mid-October. Deaths were largely confined to one shed with two other sheds being marginally involved. The total number of deaths was 14 000 birds over a 20-day period. Sheds initially contained 24 000 birds each. Affected birds became recumbent and died. Typical clinical signs of ascending flaccid paralysis were not seen in live birds submitted for laboratory examination. They were dehydrated, had diarrhoea and showed 'leg weakness', but continued to hold their heads erect.

No significant abnormalities were seen at autopsy. Alimentary tract contents were scanty in most birds. Histopathology revealed no significant lesions, thus profoundly reducing the likelihood of significant infectious diseases and a number of intoxications as likely diagnoses. Botulinum toxin was detected in serum and alimentary tract contents by mouse inoculation, and in alimentary tract contents and litter from the affected shed by ELISA. Tests for botulinum toxin and *Clostridium botulinum* organisms on feed and feed components were consistently negative. The high death toll prompted quarantine and elimination of infectious diseases (Newcastle disease, avian influenza, severe infectious bursal disease) as an urgent response. Before the diagnosis of botulism, testing carried out at the Australian Animal Health Laboratory (AAHL) ruled out exotic viral infections. Histopathology did not support infectious agents as a cause of the incident. Testing for ionophore coccidiostat overdose in feed, insecticide residues in organs, and cholinesterase activity in sera did not support toxicity as a credible alternative diagnosis.

PYRROLIZIDINE ALKALOIDOSIS IN HORSES

In November, on a property in Dalrymple Shire, four horses from a group of 15 died with respiratory distress and coughing. They had been grazing the same two paddocks for five months and, to maintain condition, were being hand-fed lucerne hay and horse pellets. There was a large amount of *Crotalaria mitchellii* in the paddock and a recent small fall of rain, 10–20 mm, may have stimulated new growth. Post mortem examination of three horses by staff from James Cook University revealed the presence of florid focal proliferations of bronchiolar epithelial cells in two of the three horses examined, and heptic lesions consistent with pyrrolizidine alkaloidosis in one. Pulmonary lesions were quite striking, with multiple areas of extensive proliferation of cells frequently filling the alveoli. These cells were often epithelial-like but frequently large and spindle shaped. Mitotic figures could readily be found. Extensive oedema of the alveoli was present, often with abundant proteinaceous deposits almost in the form of thick hyaline membranes. The pulmonary lesions were consistent with disease induced by pyrrolizidine alkaloids such as those caused by intoxication by certain local species of *Crotalaria.*

This is the first report in Australia of this condition not being associated with *Crotalaria crispata*, the major cause of Kimberley horse disease in Western Australia and the Northern Territory. Plants identified from the suspect paddock were *C. mitchellii* and *C. montana*. Camel bush (*Trichodesma zeylanicum*), Birdsville indigo (*Indigofera linnaei*) and black or giant pigweed (*Trianthema portulacastrum*) were also identified. *C. mitchellii* is the only one of these known to contain a pneumotoxic pyrrolizidine alkaloid (monocrotaline) capable of producing the pulmonary lesions. This alkaloid is also present in *C. crispata* as is another pneumotoxin, fulvine.

COCCIDIOSIS

About 350 young Brahman cattle, six-months-old and younger, died on a pastoral station in the far west of the State. They had been weaned on a property in the Northern Territory and transported on trucks to the property in western Queensland where they were held in yards for several days for castration, dehorning and

branding. The calves had been placed in a holding paddock where they were found dying and dead around and in a large waterhole. Many thin calves were seen, clearly not eating, and with a black scour. One calf was seen to be persistently and unproductively straining. Faecal samples were collected and had low to moderate numbers of coccidial oocysts. The stress of weaning, trucking and marking contributed to the morbidities and mortalities that occurred.

NITRATE POISONING

Six hundred 4–6-month-old Merino weaners were delivered to a property near Longreach and held in yards overnight. By the following morning, 250 had died and at least 270 others were affected. They lay down and died quietly, the most prominent clinical sign being congested mucous membranes. There was a profuse growth of *Dactyloctenium radulans* (button grass) in the yards. The nitrate and nitrite levels in a sample of aqueous humour indicated nitrate–nitrite poisoning. The presence of nitrite in the rumen contents confirmed that the feed available was very toxic. Plant samples analysed all had potentially toxic levels of potassium nitrate (from 4 to 10%) .

GOSSYPOL POISONING

Merino wethers on a property in western Queensland had been managed in a feedlot for about two months when deaths began to occur. Affected wethers were seen down and panting rapidly before dying rapidly. About 30 died from a group of 400. They were being fed whole cottonseed, cottonseed meal, lucerne hay, and barley hay. At post mortem examination, there was generalised oedema of the carcases. There was marked centrilobular necrosis and haemorrhage in the liver and the lungs, oedema and congestion of the kidneys, oedema of the myocardium, and congestion of the spleen. Feed analysis for free gossypol found 840 ppm in the cottonseed meal and 7650 ppm in the whole cottonseed, giving 2935 mg per kg of constituted feed. A diagnosis of gossypol poisoning was made.

CHRONIC IMPACTION AND OBSTIPATION IN A GREEN SEA TURTLE

A moribund and emaciated adult green sea turtle sent to Oonoonba Veterinary Laboratory for euthanasia had been found floating near a jetty and then moved to a commercial aquarium in the hope of rehabilitation. The anorexic turtle had not defaecated for a month. The small intestines had an extensive area of linear plication and ulceration. The large intestines were dilated to three times their normal diameter, and filled with a large amount of gas and several huge faecoliths, which consisted of old faeces surrounding a central core of tangled fishing line. No hook was found. There was associated pressure necrosis and ulceration of the gut lining.

South Australia

Contributed by:
John Weaver
PISA

TYZZER'S DISEASE IN A FOAL

A two-week-old foal died suddenly and the only lesion seen on autopsy was miliary hepatic necrosis. The diagnosis of Tyzzer's disease was based on the histological observation of large numbers of poorly staining filiform rods at the edges of the necrotic areas. Another foal had died previously in a similar manner but was not submitted for examination.

PLANT AND FUNGAL POISONINGS

Wet weather continued after the normal end of the wet season with a threatened down-grading of grain crops. Although not as severe as expected, the continuing dampness and warmer weather saw a number of reports of phalaris toxicity, and pyrollizidine alkaloid toxicity (from both Echium and Heliotrope). Some areas have also seen ergot contamination of wheat and other grains, although there were few reports of animals being affected.

Photosensitisation resulting from liver damage continued to be reported from the Naracoorte–Mt Gambier areas. Checking for possible toxic fungi and plants did not confirm their presence.

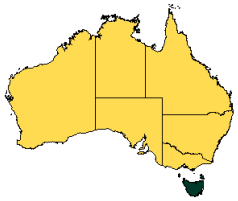
CATTLE DEATHS IN PASTORAL COUNTRY

Cattle on a station near Lake Eyre were mustered and walked about 40 km to the holding yards before sale. About 30 died shortly after, with signs including muscle tremor, staggering, and nasal and ocular discharges with drooling from the mouth. Biochemistry indicated possible muscle and liver damage as well as ketosis. Initially, the cause was thought to be plant poisoning but histology revealed only extensive fatty vacuolation of hepatocytes and some renal cells. Of the 37 sera tested, 22 had titres considered positive to ephemeral fever. The deaths were considered to be due to mustering at a time of nutritional stress, possibly compounded by coincidental infection with bovine ephemeral fever virus.

LABORATORY SUBMISSIONS

During the quarter, 624 laboratory accessions were recorded against departmental projects and surveillance activity. This comprised 11 107 separate samples, of which 44% were derived from cattle, 46% from sheep, and 3.5% from goats.

Tasmania



Contributed by:
John Elliott
DPIWE, Tasmania

HEPATOPATHY IN DAIRY CATTLE

A severe outbreak of hepatopathy presumed due to mycotoxicosis affected 50 cows in a dairy herd of 300 cows in the north-west of the State. Signs at first resembled hypomagnesaemia but later there were haemorrhages from the nose, ears and skin, lethargy, recumbency, photosensitisation, and death of several animals. The milk yield of the herd dropped markedly. Anthrax was excluded after smear examination. Clinical pathology and later histopathology on samples submitted confirmed an acute hepatic necrosis.

In a second outbreak, mycotoxicosis was diagnosed as the likely cause of illness in 30 of 90 mature dairy animals, about 15 of which died. Severe necrotic lesions were seen in the liver.

ORGANOCHLORINE POISONING IN CALVES

At least 11 of 40 three-month-old calves died acutely after apparently gaining access to an organochlorine chemical that had been stored on a farm for many years. Signs included diarrhoea and nervous disorder. Histology revealed lympholysis in lymph nodes, consistent with stress. Toxicological analysis of gut contents and the suspect poison is in progress.

EBL DETECTION

Tasmania has an Industry Disease Control Program that aims to demonstrate that the State's dairy herd is free of enzootic bovine leucosis (EBL). All dairy herds are monitored by bulk milk testing. In June 2001, a dairy farm that had tested positive to a bulk milk test for EBL was confirmed as infected. Seven reactors were detected out of 250 animals at risk. These were all slaughtered. The herd was re-tested six months after the reactors were slaughtered, with negative results.

At this stage, the source of infection is not known. Five of the seven reactors were bought at a dispersal sale in 1998, or were offspring of animals that had been bought at that sale. The herd that was dispersed was the only other herd found to be infected in Tasmania. This herd had been tested thoroughly in 1997 following the removal of two reactors, without further detection of EBL. The other two reactors on the current property came from herds in Victoria several years earlier and had undergone a number of clear tests for EBL. Further tracing is continuing to try to determine whether any other farms are affected.

OVINE JOHNE'S DISEASE IN 'MAINLAND' TASMANIA

In late September 2001, a stud flock in the northern Midlands was confirmed as infected with OJD. This is the first infected flock found in 'mainland' Tasmania. The flock was classed as MN1 in the OJD Market Assurance Program (MAP). The infection was found in a three-year-old ewe submitted to the Mt Pleasant laboratory as part of the annual veterinary audit required by the MAP. The ewe was positive to the agar gel immunodiffusion (AGID) test. No gross abnormalities were observed, but the animal was positive on histopathological examination.

Samples of blood and faeces were taken from all sheep older than two years of age in the flock of 150. Infection was detected in another three-year-old animal by AGID test. Of five pools of faecal samples cultured, one was positive for OJD. The reactor had contributed to the culture-positive pool. Results of strain-typing are yet to be received. The rams share pasture with a large herd of dairy cattle.

Tracing has identified 91 forward traces (see table) and investigations are currently being undertaken. About one-quarter of the traces were considered to have a high priority, another quarter a medium priority, and the remaining traces a low priority. There is currently no indication of a likely source of infection for the infected flock.

Identified forward traces from infected flock in mainland Tasmania

	Type of movement traced			
Flock status	Neighbour	Mainland Tasmania	Flinders Island	**Total**
Infected	0	0	2	**2**
Suspect	8	65	3	**76**
Under Surveillance	0	10	0	**10**
Other	1	2	0	**3**
Total	**9**	**77**	**5**	**91**

OVINE JOHNE'S DISEASE POST MORTEM SURVEY

A year-long surveillance project aims to determine the proportion of deaths on infected properties that are attributable to OJD. Six farms will be surveyed. On five days each quarter a post mortem examination of all dead or moribund sheep will be done on each farm.

SNAIL-BAIT POISONING IN LAMBS

Poisoning, possibly as a result of consuming snail-baits, was considered the likely cause of deaths of five lambs about 3-weeks-old. Blue–green material was present in the stomach of lambs examined and ancillary laboratory tests (for trace elements, microbiology, etc.) found nothing significant.

COLD STRESS IN DAY-OLD CHICKS

On one property, over four days, all 100 newly hatched chicks died. Bacteriological and histological findings were essentially negative, and cold stress of the chicks, which were transported immediately after removal from the incubator, was diagnosed.

ILL-THRIFT IN PIGS

A problem of wasting, cachexia and death occurred in a 160-sow piggery. Bacteriology and other tests gave no indication of an infectious cause. Hepatic haemosiderosis was found microscopically, and nutritional imbalances were suspected.

NOTIFIABLE DISEASES

In the quarter, there were 784 laboratory accessions (28% cattle, 31% sheep and 20% aquatic animals). There were 6009 specimens submitted with these accessions (38% blood and 26% faeces/ingesta). The following table summaries laboratory accessions for notifiable diseases in Tasmania:

Disease	Animals	Accessions	
Species	Tested	Number	Positive
Equine herpesvirus 1			
Equine	14	5	0
Hydatids			
Bovine	1	1	0
Johne's disease			
Bovine	1324	33	3
Caprine	11	6	2
Ovine	331	53	10
Leptospira hardjo			
Bovine	2	2	0
Equine	11	2	1
Exotic	4	2	0
Ovine	4	3	1
Porcine	6	1	0
Listeria			
Wildlife	1	1	1
Q Fever			
Ovine	12	6	0
Salmonella			
Avian	9	1	0
Bovine	58	37	7
Equine	1	1	0
Feline	1	1	0
Ovine	20	9	0
Porcine	8	1	0
Wildlife	8	5	0
Verotoxic *E.coli*			
Bovine	1	1	1

Victoria

Contributed by:
Tristan Jubb
DNRE, Victoria

EPIZOOTIC ULCERATIVE SYNDROME

Epizootic ulcerative syndrome (EUS) was confirmed on a fish farm at Echuca in a group of 25 000 silver perch, which had originated from a property in northern NSW. Approximately 50% of the fish in one tank died within seven days of introduction. The fish had large red ulcers, up to 1 cm in diameter, on the head or the sides of the body. Histopathological findings were characteristic of EUS, with a severe myofibrillar necrosis together with mononuclear cells and non-septate hyphae infiltrating along fascial planes. Some fish had well demarcated granulomas surrounding the hyphae between myofibrils. Fish in the one affected pond were destroyed and EUS was not found in the other four ponds on the property. This is the first reported occurrence of EUS in Victoria. The property will continue to be monitored for EUS.

SUSPECT EXOTIC AND EMERGENCY DISEASE INVESTIGATIONS

Three separate cases of suspected vesicular disease in individual cattle were investigated. Two proved to be mucosal disease. The other case had injuries acquired during transport and samples submitted to the Australian Animal Health Laboratory (AAHL) in Geelong as a precaution were negative.

Anthrax was excluded by examination of tissue and blood smears from cattle dying in three separate outbreaks of clostridial disease in the northern irrigation area.

Rabies was excluded in two foxes in the Port Philip Region, one showing unusual behaviour including no fear of humans and licking dew off grass, the other showing ataxia. Samples from the first fox were submitted to AAHL as a precaution and were found negative. The other fox was deemed negative after finding injuries consistent with being hit by a car and after a histological examination of the brain.

Serum samples submitted to AAHL ruled out *Brucella canis* in an imported dog with orchitis.

Increased mortalities in broilers in two separate rearing facilities on the Mornington Peninsula were attributed to the lowly pathogenic Australian strain of infectious bursal disease (IBD) in one, and bacterial septicaemia in the other. Microbiological investigations including viral isolation ruled out the involvement of exotic diseases including Newcastle disease and avian influenza.

Botulism was the probable cause of death of ducks and chickens belonging to a 'backyard' poultry owner. Viral isolation ruled out exotic avian viruses including duck viral enteritis and viral hepatitis. A botulinum toxin ELISA did not detect toxin but the diagnosis was based on clinical signs, the exclusion of other diseases and the presence of a number of possible sources of botulinum toxin on the property.

Equine influenza was ruled out in a horse recently imported from Europe after a journey of 32 hours. A bacterial infection was suspected and the horse responded to antibiotic treatment. There was no evidence of contagious equine metritis after culture of clitoral swabs from 16 mares on a stud where the prevalence of metritis was of concern.

LIVESTOCK IDENTIFICATION

The Victorian beef and dairy industries, together with the Victorian Government, have agreed to work together to implement fully the National Livestock Identification Scheme (NLIS) in Victoria. This will involve the progressive introduction of legislation requiring the tagging of cattle using electronic NLIS tags, and ultimately the reading of NLIS tags at saleyards and abattoirs. With the support from all sectors of the cattle industry, legislation has been introduced that now requires the identification, using NLIS tags, of calves born after 1 January 2002. Cattle must be tagged before they leave their property of birth. Cattle consigned direct from their property of birth to an abattoir, and bobby calves that are sold for slaughter, are exempt from this requirement to use NLIS tags. From 1 January 2003, abattoirs must read all NLIS tags and notify the NLIS database of the cattle that they have processed. The full implementation of the NLIS will help to ensure that Victoria is able to trace cattle movements effectively in the event of a disease or chemical residue emergency.

AMERICAN FOULBROOD SMART PROJECT

The American Foulbrood Smart Project (detection of American foulbrood spores by testing honey) commenced in Victoria in August 2001. 2001 was a particularly hard season for beekeepers, with little honey being produced. Honey samples from 126 apiaries were submitted for testing, with no positive results to date.

FOOTROT CONTRACTORS' ACCREDITATION

The department provides training and oversees the Footrot Contractors' Accreditation program. This program is designed to provide a pool of skilled operators, contracted by sheep owners to implement competent and humane footrot eradication programs. Since the scheme's inception in 1997, 26 contractors have gained accreditation, including nine in 2001.

ENDEMIC DISEASE INVESTIGATIONS

Several outbreaks of endemic disease of unusual scale or severity attracted attention this quarter.

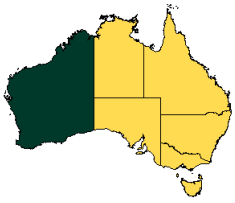
Polyarthritis in six-month-old calves (*Mycoplasma mycoides* subsp. *mycoides* was ruled out), leptospirosis (*hardjo*) mastitis in dairy cattle, infectious bovine rhinotracheitis in cattle, and outbreaks of polioencephalomalacia in calves were reported.

Flaviruses were ruled out in two horses with ataxia, a strangles outbreak occurred in a thoroughbred racing stable, equineherpes virus 1 was confirmed as the cause of death of a four-day-old foal on a thoroughbred stud, and was ruled out by PCR in six abortions and one parturient death in other investigations. Several stallions were found seropositive to equine viral arteritis. Some were standardbreds, others were imported, and vaccinated thoroughbred stallions. However, no equine arteritis virus was isolated from any stallion on semen culture. *Salmonella typhimurium* 9 was isolated from a thoroughbred horse with diarrhoea.

A large number of deaths attributed to heliotrope poisoning and copper toxicity were reported in sheep flocks in northern Victoria.

An outbreak of sexually transmitted cystitis–pyelonephritis syndrome caused deaths in gilts 3 to 4 weeks post-mating. *Actinobaculum suis*, a member of the *Actinomyces–Arcanobacterium* species complex, was cultured.

Western Australia



Contributed by:
Richard Norris
WA Department of Agriculture

LABORATORY TESTING

Laboratory testing was conducted on 482 investigations of animal disease during the quarter. Of these, 191 were cost-recovery (private benefit) cases and 291 were charge-exempt (public benefit and therefore funded directly by the Government). There were four exotic disease alerts and 20 notifiable diseases reported during the quarter.

NOTIFIABLE DISEASES

The 20 notifiable diseases reported during the quarter included: six cases of annual ryegrass toxicity, five reports of mucosal disease in cattle, two cases of infertility associated with bovine genital campylobacteriosis, and two cases of swine erysipelas. There were single reports of malignant catarrhal fever in cattle, chlamydiosis in sheep, *Mycoplasma gallisepticum* infection in poultry, fowl cholera and bat

lyssavirus infection. A further case of cattle tick was seen in the Pilbara region.

LYSSAVIRUS-POSITIVE BAT BITES CHILD IN KIMBERLEY

As reported last quarter, the first Australian bat lyssavirus (ABL) positive cases in WA specimens were collected from a bat in Broome in July. In November 2001, a child in Derby was bitten by a bat, which was subsequently found to be ABL-positive. Public Health Department officers supervised post-exposure prophylaxis.

EXOTIC DISEASE ALERTS

A Johne's disease reactor was encountered in cattle specimens received for export testing. Subsequent follow-up indicated that it was a false positive reaction. A post-entry equine specimen tested positive for liver fluke eggs, and two Pilbara cattle were shown to be carrying antibodies to bluetongue virus.

BISERRULA ASSOCIATED WITH PHOTOSENSITISATION IN SHEEP

There were numerous reports of photosensitisation in sheep grazing the recently released pasture legume *Biserrula*. Photosensitisation was first associated with consumption of the plant in the Narrogin area in 1999 but was not seen in 2000 because of dry seasonal conditions. However, during the more normal spring of 2001 the plant has again been implicated. *Biserrula* is intensely green and the high concentration of chlorophyll may be the cause of the problem, although the presence of a primary phototoxic agent is also possible.

LUPIN ALKALOID POISONING

This season has seen a rise in the number of cases of suspected lupin alkaloid toxicity reported in the Geraldton region. It is probably due to:

- a reduction in volunteer grasses and plants in the canopy below the lupins because of the dry season;
- a possible increased alkaloid in the lupin plants due to moisture stress;
- the lack of alternative pasture grazing options;
- the delay in blue lupin pod shattering because of mild September–October weather; and
- the decline in pastures in general in the cropping areas due to spraying for weeds in crops.

Traditionally, the advice given is that blue lupin crops should not be grazed, once pod formation has commenced, until at least 75% of the pods have shattered. This normally occurs during October when the pods mature with the onset of warm weather. This year has been exceptional in terms of rainfall, with a late start coupled with some early small falls delivering a poor pasture year in most areas away from the coast. Even in the coastal areas, pastures in the Geraldton district do not seem as strong as in other years. Blue lupins have tended to dominate pastures and farmers have been reluctant to spray them out because of expected feed shortages. Many have cut blue lupins for silage and hay rolls using various techniques for 'sweetening' before cutting. Others have not had the capacity to move cattle off podding lupin paddocks due to lack of alternative grazing.

ENCEPHALOPATHY IN AN ADULT COW

A recently calved adult cow at Busselton was reported with ataxia and impaired vision. In addition to a severe suppurative metritis as a post-calving sequel, the brain had severe and widespread status spongiosis in both grey and white matter, with extensive vacuolation in the neurones of the red nucleus. Bovine spongiform encephalopathy (BSE) was ruled out by testing at AAHL. The encephalopathy was possibly due to closantel intoxication, which causes similar lesions in sheep and goats (see *Australian Veterinary Journal* 1999, 77: 259) but was similar to blind grass (*Stypandra* spp.) and everlasting *(Helichrysum* spp.) poisoning

KRIMPSEIKTE-LIKE DISEASE IN SHEEP

Hoggets moved from Katanning to Many Peaks and placed onto good mixed pasture in July 2001 developed an intermittent stagger syndrome after two weeks grazing. About 60 of the 300 developed central nervous system signs similar to perennial ryegrass staggers, and six died of misadventure. The animals were moved to another paddock and signs abated. Nothing significant was seen at autopsy or on histopathological examination of the neuromuscular system. The paddock contained many different pasture species but did not include perennial ryegrass. Follow-up in October 2001 revealed that some recovered animals had developed severe cervical scoliosis (wry necks). The affected sheep were in poor condition but otherwise healthy, with no residual nervous signs. Histologically, there were many different changes in the cervical muscles but the spinal cord, nerve roots and all intramuscular nerves were normal. The brain had scattered mild non-suppurative meningoencephalitis.

The syndrome observed resembles a condition seen in South Africa called krimpziekte, which is thought to be caused by certain pasture plants. Discussions with Professor Christo Botha in South Africa failed to resolve the issue since none of the pasture species from Many Peaks could be identified as the likely cause.

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 1.

Table 1: Serological testing from routine submissions to State and Territory laboratories

	Akabane		Bluetongue		Bovine ephemeral fever		Enzootic bovine leucosis		Equine infectious anaemia		Equine viral arteritis	
	Tests	+ve	Tests	+ve	Tests	+ve	Tests	+ve	Tests	+ve	Tests	+ve
Oct–Dec 00	1646	370	5552	393	1937	266	511	0	742	10	388	30
Jan–Mar 01	1143	457	8588	285	1183	182	10812	2	872	11	328	32
Apr–Jun 01	4240	707	11631	443	3151	286	17340	9	1205	11	398	1
Jul–Sep 01	1971	318	7853	303	2130	300	10268	0	1268	27	370	5
Oct–Dec 01	7827	352	8138	242	2564	361	7298	2	1167	11	547	16
NSW	11	2	796	6	6	0	462	0	552	0	311	5
NT	568	153	547	122	737	234	2349	2	14	0	0	0
QLD	460	154	2632	96	386	92	671	0	268	11	16	0
SA	5	0	1662	0	43	23	0	0	13	0	1	0
TAS	0	0	6	0	0	0	0	0	0	0	10	0
VIC	42	0	72	0	65	0	96	0	290	0	184	11
WA	6741	43	2423	18	1327	12	3720	0	30	0	25	0

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. JD occurs in NSW, Victoria, Tasmania and South Australia. Surveillance programs have not identified endemic JD in Queensland, Western Australia and Northern Territory, and active measures are taken to stamp-out any incursions. Table 2 shows the number of herds and flocks known to be infected. A National Ovine Johne's Disease Control and Evaluation Program will be completed in 2003. Programs for bovine Johne's disease are currently being 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 3.

Information about components of the National JD Control Program can be obtained from State coordinators and Animal Health Australia's JD coordinators, David Kennedy 02 6365 6016 or Bruce Allworth 02 6036 9233. Lists of beef, dairy and alpaca herds and sheep flocks assessed in the Market Assurance Programs are available on the internet (at http://www.aahc.com.au/jdmap).

Table 2: Herds/flocks with JD at 31 December 2001

STATE	Cattle	Sheep	Goats	Deer	Alpaca	Total
NSW	144	696	12	0	0	852
NT	0	0	0	0	0	0
QLD #	1	0	0	0	0	1
SA	42	28	0	0	0	70
TAS	15	25	4	0	0	44
VIC	1246	31	8	5	4	1294
WA	0	0	0	0	0	0
AUS	1448	780	24	5	4	2261

The herd in Queensland is in quarantine in response to finding an infected animal introduced from an endemic area.

Table 3: Herds/flocks with a JDMAP status of at least MN1/TN1 status at 31 December 2001

STATE	Cattle	Sheep	Goats	Alpacas	Total
NSW	963	354	46	110	1473
NT#	0	0	0	0	0
QLD#	0	8	0	0	8
SA	219	228	8	36	491
TAS	115	34	3	0	152
VIC	266	147	6	35	454
WA#	0	0	0	0	0
AUS	1563	771	63	181	2578

Herds/flocks in Free or Protected Zones have a status of MN1 or better because of the zone status.

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 128 abortion investigations were performed during the reporting period — all with negative results for bovine brucellosis. The results of recent brucellosis surveillance are shown in Table 4.

Table 4: Surveillance for bovine brucellosis

	Abortion Investigations		Test for other reasons	
	Tests	+ve	Tests	+ve
Oct–Dec 00	155	0	1292	0
Jan–Mar 01	139	0	9100	0
Apr–Jun 01	262	0	13325	0
Jul–Sep 01	181	0	11995	0
Oct–Dec 01	128	0	7008	0
NSW	15	0	293	0
NT	0	0	1874	0
QLD	40	0	1199	0
SA	14	0	317	0
TAS	4	0	0	0
VIC	0	0	122	0
WA	55	0	3203	0

ENZOOTIC BOVINE LEUCOSIS

Enzootic bovine leucosis (EBL) accreditation programs have been operating in the dairy industries in Queensland and NSW for several years. Victoria, South Australia, Western Australia and Tasmania are undertaking a program of bulk milk testing of all dairy herds. Table 5 shows the number of dairy herds tested free of EBL at the end of the quarter.

Table 5: Dairy herds tested free of enzootic bovine leucosis at 31 December 2001

	NSW	NT	QLD	SA	TAS	VIC	WA	AUS
Free	1401	0	1321	640	679	7891	360	12 292
Herds	1414	0	1331	642	741	8017	360	12 505

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 6 shows the number of accredited flocks at the end of the quarter.

Table 6: Ovine brucellosis accredited-free flocks at 31 December 2001

NSW	NT	QLD	SA	TAS	VIC	WA	AUS
969	0	65	476	102	662	86	2360

TUBERCULOSIS

Australia was declared a Free Area for bovine tuberculosis (TB) on 31 December 1997. The National Granuloma Submission Program is the major surveillance tool for TB. Table 7 summarises results from the program. Table 8 summarises the national case register for bovine tuberculosis since 1990. The seven cases in 2001 were all secondary cases to the case detected in Queensland in December 2000. (The activity resulting from these cases is summarised in *AHSQ* Vol. 6, No. 3.)

Table 7: Results of the National Granuloma Submission Program

	Granulomas submitted	TB +ve
Oct–Dec 00	2316	2
Jan–Mar 01	981	0
Apr–Jun 01	1240	0
Jul–Sep 01	1500	0
Oct–Dec 01	1502	0
NSW	135	0
NT	1	0
QLD	900	0
SA	113	0
TAS	11	0
VIC	136	0
WA	206	0

Table 8: National case register for bovine tuberculosis

	BTEC			BTEC — impending free					TFAP — free			
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
NSW	1	0	1	0	0	1	0	0	0	0	0	4
NT	2	1	2	7	5	5	3	4	2	1	0	0
QLD	5	6	4	1	2	1	1	2	2	0	2	3
SA	0	0	1	0	0	0	1	0	0	0	0	0
TAS	0	0	0	0	0	0	0	0	0	0	0	0
VIC	0	2	1	0	0	1	1	0	0	0	0	0
WA	0	0	0	1	0	1	1	1	1	0	0	0
AUST	8	9	9	9	7	9	7	7	5	1	2	7

Surveillance activities

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 six important zoonoses is submitted to NAHIS each quarter (see Table 9).

The list of human diseases that are reportable to NNDSS has been updated. For zoonoses, data on hydatid disease will no longer be collected. Data on human cases of anthrax, Murray Valley encephalitis (MVE), Kunjin virus infection, cryptosporidiosis, and Australian bat lyssavirus will be added to the NNDSS database.

Contact: Communicable Diseases Intelligence, Australian Department of Health and Ageing
(Internet address: http://www.health.gov.au/pubhlth/cdi/cdihtml.htm)

Table 9: Notifications of zoonotic diseases in humans

Disease	Q4-00	Q1-01	Q2-01	Q3-01	Q4-01	Current quarter							
					AUST	ACT	NSW	NT	QLD	SA	TAS	VIC	WA
Brucellosis#	11	7	2	5	4	0	0	0	4	0	0	0	0
Hydatidosis	8	11	4	4	6	0	nn	0	1	0	0	0	5
Leptospirosis	62	90	67	59	38	0	14	3	5	1	2	12	1
Listeriosis	14	22	6	11	11	0	2	0	5	1	0	1	2
Ornithosis	40	31	27	35	37	0	10	0	nn	5	0	21	1
Q fever	131	193	212	142	169	0	42	0	107	8	0	7	5

nn disease is not notifiable in these States

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

NATIONAL TSE SURVEILLENCE PROGRAM

The Office International des Epizooties (OIE) International Animal Health Code requires that countries (such as Australia) claiming to be free of transmissible spongiform encephalopathies (TSEs) have in place a surveillance system to detect bovine spongiform encephalopathy (BSE) and scrapie should they occur. The National TSE 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 10 summarises the activity of the program over the past five quarters. Specimens from a small number of animals were unsuitable for testing. All specimens tested were negative for TSEs. Information about NTSESP is available on the internet (at http://www.aahc.com.au/surveillance/ntsesp).

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

Table 10: Number of animals tested under NTSESP (All were negative for TSE)

	Oct – Dec 00		Jan – Mar 01		Apr – Jun 01		Jul – Sep 01		Oct – Dec 01	
	Cattle	Sheep	Cattle	Sheep	Cattle	Sheep	Cattle	Sheep	Cattle	Sheep
NSW	40	64	26	40	37	52	43	64	12	33
NT	3	0	6	0	2	0	13	0	3	0
QLD	76	5	42	14	54	7	81	19	36	14
SA	11	44	9	9	1	12	5	14	0	18
TAS	11	5	2	5	3	1	3	2	1	5
VIC	18	18	10	15	53	33	37	44	6	15
WA	19	61	12	37	2	34	14	31	3	29
AUS	178	197	107	120	152	139	196	174	61	114

NORTHERN AUSTRALIA QUARANTINE STRATEGY

In recognition of the special quarantine risks associated with Australia's sparsely populated northern coastline, the Australian Quarantine Inspection Service 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. In addition to both offshore and onshore surveys, NAQS activities in Australia include sentinel herd monitoring and insect trapping programs to provide information about the time of any disease incursion.

Table 11 summarises recent NAQS activity. Table 12 shows the number of times that the insect trap sites were inspected during a quarter for both screw-worm fly (NAQS) and for screw-worm fly, Asian bees and bee parasites (AQIS Port Surveillance program).

Contact: David Banks, Biosecurity Australia

Table 11: Summary of recent NAQS activity

	Oct – Dec 00		Jan – Mar 01		Apr – Jun 01		Jul – Sep 01		Oct – Dec 01		Notes
	Tested	+ve	Tested	+ve	Tested	+ve	Tested	+ve	Tested	+ve	
Aujeszky's disease	117	0	18	0	182	0	246	0	26	0	
Hog cholera	113	0	18	0	178	0	169	0	26	0	
Japanese encephalitis	201	0	249	26	786	26	47	0	245	0	a
Newcastle disease	0	0	0	0	1	0	0	0	0	0	
Porcine reproductive and respiratory syndrome	119	0	18	0	151	0	175	0	26	0	
Surra	60	0	0	0	123	0	283	0	99	0	

a 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 sentinel sites on islands in the Torres Strait, and for the first time on the mainland at the tip of Cape York Peninsula. During the first half of 2000, sentinel pigs seroconverted on the island of Badu, but no clinical cases were detected in humans or animals.

Table 12: Number of inspections of insect traps

	Oct – Dec 00		Jan – Mar 01		Apr – Jun 01		Jul – Sep 01		Oct – Dec 01		Notes
	Tested	+ve	Tested	+ve	Tested	+ve	Tested	+ve	Tested	+ve	
NAQS											
Screw-worm fly	131	0	94	0	32	0	48	0	6	0	
AQIS port surveillance											
Asian honeybee	28	0	24	0	23	0	30	0	25	0	
Screw-worm fly	36	0	44	0	42	0	35	0	36	0	

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 13 summarises *Salmonella* isolations from animals notified to NEPSS for the quarter.

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

Table 13: Salmonella notifications, 1 October to 31 December 2001

Serovars	avian	bovine	canine	equine	feline	ovine	porcine	other	Total
S. Bovismorbificans	0	9	1	3	0	1	1	0	15
S. Dublin	0	56	0	0	0	0	0	0	56
S. Infantis	1	0	0	0	0	0	22	0	23
S. Typhimurium	12	46	4	10	0	4	14	1	91
Other	10	15	5	6	2	2	90	12	142
Total	23	126	10	19	2	7	127	13	327

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.

NATIONAL RESIDUE SURVEY

Of 2989 samples tested during the quarter for agricultural and veterinary chemicals, three (0.10%) had residues above the maximum residue limit (MRL) or maximum level (ML). The detections were in two chemical groups — metals (environmental contaminants) and hormones. Table 14 summarises the results for the quarter.

The two metal detections in sheep were for cadmium at 3.5 and 1.3 mg/kg. The lower level was below the NRS 'level of action' and an investigation was not initiated. The result of the investigation into the second detection is pending.

A residue of 19-nortestosterone was detected in a male deer, but since the concentration was consistent with endogenous levels of this hormone in entire males, no further action was necessary.

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

Contributed by: Peter Miller, National Residue Survey, AFFA

Table 14: National Residue Survey, 1 October to 31 December 2001
Each pair of figures gives the number of samples above either 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	75	0	1	0	69	0	9	0	3	0	42	0	9	0	208
pigs	0	10	0	0	0	9	0	7	0	0	0	8	0	4	0	38
sheep	0	32	0	0	0	8	0	4	0	3	0	53	0	7	0	107
other	0	18	0	0	0	15	0	8	0	0	0	4	0	2	0	47
Total	0	135	0	1	0	101	0	28	0	6	0	107	0	22	0	400
Antimicrobials																
cattle	0	94	0	5	0	97	0	15	0	7	0	45	0	13	0	276
pigs	0	95	0	0	0	90	0	62	0	5	0	68	0	55	0	375
poultry	0	62	0	0	0	10	0	19	0	0	0	18	0	0	0	109
sheep	0	20	0	0	0	5	0	2	0	1	0	33	0	8	0	69
other	0	11	0	1	0	16	0	8	0	0	0	11	0	6	0	53
Total	0	282	0	6	0	218	0	106	0	13	0	175	0	82	0	882
Growth promotants																
cattle	0	134	0	6	0	112	0	17	0	12	0	62	0	23	0	366
pigs	0	26	0	0	0	20	0	14	0	3	0	12	0	9	0	84
poultry	0	4	0	0	0	0	0	3	0	1	0	3	0	0	0	11
sheep	0	20	0	0	0	4	0	3	0	0	0	32	0	3	0	62
other	0	8	0	1	0	10	0	5	0	0	0	13	1	9	1	46
Total	0	192	0	7	0	146	0	42	0	16	0	122	1	44	1	569
Insecticides																
cattle	0	110	0	8	0	110	0	20	0	7	0	88	0	15	0	358
pigs	0	21	0	0	0	18	0	14	0	3	0	12	0	12	0	80
poultry	0	33	0	0	0	5	0	16	0	3	0	13	0	0	0	70
sheep	0	36	0	0	0	11	0	8	0	4	0	53	0	7	0	119
other	0	23	0	4	0	40	0	16	0	3	0	8	0	3	0	97
Total	0	223	0	12	0	184	0	74	0	20	0	174	0	37	0	724
Metals																
cattle	0	30	0	2	0	22	0	4	0	3	0	9	0	2	0	72
pigs	0	16	0	0	0	8	0	7	0	0	0	2	0	2	0	35
poultry	0	16	0	0	0	1	0	8	0	2	0	6	0	0	0	33
sheep	0	19	0	0	0	4	0	1	0	0	2	29	0	2	2	55
other	0	10	0	2	0	11	0	6	0	0	0	4	0	2	0	35
Total	0	91	0	4	0	46	0	26	0	5	2	50	0	8	2	230
Miscellaneous																
cattle	0	26	0	2	0	26	0	5	0	2	0	9	0	2	0	72
pigs	0	12	0	0	0	8	0	12	0	0	0	4	0	4	0	40
sheep	0	20	0	0	0	4	0	6	0	2	0	17	0	2	0	51
other	0	1	0	1	0	4	0	2	0	10	0	3	0	0	0	21
Total	0	59	0	3	0	42	0	25	0	14	0	33	0	8	0	184

AUSTRALIAN MILK RESIDUE ANALYSIS SURVEY

The Australian Milk Residue Analysis (AMRA) Survey is an independent monitoring program for agricultural and veterinary residues and environmental contaminants in raw cow's milk. Dairy Food Safety Victoria coordinates the AMRA Survey on behalf of the Australian Dairy Authorities Standards Committee (ADASC) and the Australian dairy industry. The AMRA Survey is an integral part of the Australian dairy industry's efforts to secure access to major export markets, including the European Union. The samples taken in the survey are from bulk milk farm pick-up tankers. All positive samples are investigated by the relevant state or territory dairy authority. Residues detected in this survey are reported against the Australian Maximum Residue Limits (MRLs). Table 15 summarises the results for the quarter.

For further information contact: Kelly Long (AMRA Survey Coordinator), Dairy Food Safety Victoria, phone 03 9426 5999; fax 03 9427 1895; e-mail klong@dairysafe.vic.gov.au

Table 15: Australian Milk Residue Analysis Survey, October – December 2001
Each pair of figures gives the number of samples above the maximum residue limit and the number of samples tested.

	NSW		NT		QLD		SA		TAS		VIC		WA		AUS	
Antimicrobials	0	15	0	0	0	15	0	8	0	6	0	66	0	4	0	114
Cadmium	0	3	0	0	0	5	0	2	0	1	0	18	0	0	0	29
Lead	0	3	0	0	0	5	0	2	0	1	0	18	0	0	0	29
Mercury	0	3	0	0	0	5	0	2	0	1	0	18	0	0	0	29
Organochlorines	0	4	0	0	0	5	0	2	0	1	0	18	0	1	0	31
Organophosphates	0	4	0	0	0	5	0	2	0	1	0	18	0	1	0	31
PCBs	0	4	0	0	0	5	0	2	0	1	0	18	0	1	0	31
Synthetic pyrethroids	0	4	0	0	0	5	0	2	0	1	0	18	0	1	0	31
Triclabendazole	0	15	0	0	0	15	0	8	0	6	0	66	0	4	0	114

SUSPECT EXOTIC OR EMERGENCY DISEASE INVESTIGATIONS

There were 42 investigations of diseases suspected to be either exotic or a possible emergency reported during the quarter, as shown in Table 16.

Table 16: Exotic or emergency disease investigations reported during 1 October to 31 December 2001

Disease	Species	State	Date	Response	Finding
Anthrax	bovine	VIC	Dec	2	clostridial disease
Anthrax	bovine	VIC	Dec	2	clostridial disease
Anthrax	bovine	VIC	Oct	2	clostridial disease
Avian influenza	avian	QLD	Oct	3	negative
Avian influenza	avian	SA	Nov	3	negative
Bluetongue	caprine	NSW	Oct	2	negative
Bluetongue	caprine	QLD	Dec	6	photosensitisation
Bluetongue	bovine	WA	Nov	3	negative
Bluetongue	bovine	WA	Nov	3	negative
Bovine spongiform encephalopathy	bovine	VIC	Oct	2	negative
Canine brucellosis	canine	VIC	Oct	3	negative
Contagious equine metritis	equine	VIC	Nov	2	non-specific metritis
Duck virus enteritis	avian	VIC	Dec	2	botulism
Epizootic ulcerative syndrome	other	VIC	Dec	5	epizootic ulcerative syndrome
Equine piroplasmosis (Babesiosis)	equine	NT	Dec	2	negative

Continued overleaf

Table 16: Exotic or emergency disease investigations reported during 1 October to 31 December 2001

Disease	Species	State	Date	Response	Finding
Continued from previous page					
Foot-and-mouth disease	bovine	VIC	Oct	2	mucosal disease
Foot-and-mouth disease	bovine	VIC	Oct	2	bovine viral diarrhoea
Foot-and-mouth disease	bovine	VIC	Oct	3	cellulitis
Foot-and-mouth disease	bovine	NSW	Nov	3	negative
Foot-and-mouth disease	ovine	NSW	Oct	3	negative
Foot-and-mouth disease	bovine	SA	Dec	3	infectious bovine rhinotracheitis
Hendra virus	equine	NSW	Nov	3	negative
Hendra virus	equine	QLD	Oct	2	trauma
Hendra virus	equine	SA	Oct	3	bacterial pneumonia
Johne's disease	bovine	WA	Dec	2	negative
Leishmaniasis	fauna	NSW	Oct	2	negative
Liver fluke #	equine	WA	Nov	2	positive for liver fluke in horses
Maedi-visna	ovine	SA	Oct	3	negative
Newcastle disease	avian	VIC	Dec	2	bacterial septicaemia
Newcastle disease	avian	VIC	Oct	2	proventriculitis and infectious bursal disease
Newcastle disease	avian	NSW	Oct	2	negative
Newcastle disease	avian	NSW	Nov	2	*Pasteurella multocida*
Newcastle disease	avian	NSW	Nov	3	hypoglycaemia-spiking mortality
Newcastle disease	avian	NSW	Oct	2	avian leucosis
Newcastle disease	avian	NSW	Oct	2	hypovitaminosis A
Newcastle disease	avian	QLD	Oct	6	negative
Rabies	fauna	VIC	Dec	2	trauma
Rabies	fauna	VIC	Nov	3	negative
Screw-worm fly	other	QLD	Oct	2	*Chrysomya megacephala*
Screw-worm fly	bovine	NT	Nov	2	*Chrysomya megacephala*
Screw-worm fly	camelid	NT	Dec	2	*Chrysomya megacephala*
Vesicular disease	ovine	TAS	Nov	3	negative — poxvirus observed

Liver fluke (*Fasciola heptica*) is not present in Western Australia.

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

NAHIS contacts

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

Name	Role	Phone	Fax	e-mail
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