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Livestock disease investigations

The Department of Primary Industry and Resources provides disease investigation service, including free diagnostic testing through the Berrimah Veterinary Laboratory, to livestock owners for diagnosis or exclusion of notifiable emergency, exotic and endemic disease, including zoonotic diseases free of charge. Subsidies are available for producers to contact private veterinarians for significant disease investigations in livestock.

Subsidies for disease investigation

- Subsidies of up to \$2,000 are available for disease investigations in cattle conducted by private vets as part of the Northern Australia Biosecurity Surveillance project.
- Subsidies for disease investigations in horses and other species, subsidies of up to \$250 are available.
- Remember that \$300 is available for cattle showing nervous signs where a post-mortem is performed and the brain is collected for 'Mad Cow' exclusion testing.

Please contact your local vet or regional Livestock Biosecurity Officer for more information.

From April-June 2019, 62 livestock disease investigations were conducted to rule out emergency diseases or investigate suspect notifiable diseases across the Northern Territory (NT).

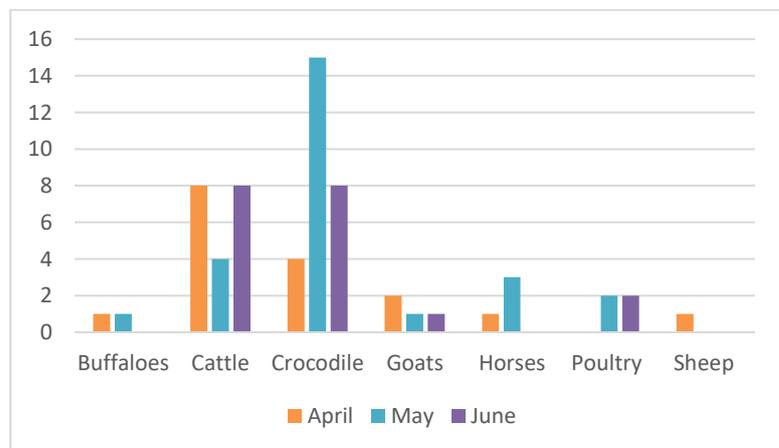


Figure 1: Livestock disease investigations in the NT, April to June 2019

Polioencephalomalacia in the Katherine region

Approximately 800 home-bred cattle aged six to 18 months were mustered and weaned at a property in the Katherine region in May 2019. The weaners and their dams were in good condition and mustered to the yards without issue. No chemical treatments were applied, there was no access to feed supplements (lick or salt) and no other processing was conducted at mustering; the weaners were separated from their dams into a clean, weed-free holding yard with access to freshly cut green Rhodes grass hay and fresh water.

The following day a single weaner in good condition was found dead in the yard; the remaining animals appeared normal. The second day, three animals in the yard were noticed to be wobbly on their feet and staggering, with some showing signs of drooling. The manager contacted the Katherine livestock biosecurity officer on the third day when a further six animals were noted to be showing similar clinical signs. The department's biosecurity and veterinary officers attended the property that day. All affected animals were from the weaner mob; their unaffected dams were grazing in the paddock adjacent to the yards and adult animals in other parts of the property examined by the officers showed no evidence of disease.

On arrival, there were three dead weaners in the yard and two animals were collapsed, unresponsive and unable to rise. In the hours between the initial phone call and the livestock biosecurity and veterinary officers arriving at the property, a further 11 animals had developed significant neurological (nervous system) clinical signs, including head pressing, drooling, staggering, odd vocalisation and altered mentation. The two collapsed and unresponsive animals were euthanised and full post mortem examinations performed.

All affected animals were in good condition and the manager noted that the affected weaners were among the heavier individuals in the mob. Visible signs of organ malfunction in the two animals that were dissected was negligible; the younger animal had no abnormality visible to the eye and the other animal was found to have a number of firm red nodules in the left central lung lobe, which was considered incidental to the neurological signs.

Tissue and blood samples were submitted to Berrimah Veterinary Laboratory. Differential diagnoses for the nervous system signs included polioencephalomalacia, Bovine Herpes Virus 5, urea toxicity, lead poisoning, vitamin A deficiency, rabies, Australian Bat Lyssavirus and Aujeszky's disease. The lesions in the lung were tested to rule out a range of emergency and exotic respiratory diseases, including bovine tuberculosis, contagious bovine pleuropneumonia, Pasteurella and Mycoides sp infections.

The clinical findings, disease course and laboratory results pointed to a conclusion of polioencephalomalacia (PEM) as the cause of this morbidity and mortality event. PEM is a nutritional disease of well-fed, young growing animals in good condition, it is most common in animals between 6-18 months of age and occurs suddenly. In Australia, most cases are associated with a functional deficiency of vitamin B1 (thiamine). Cattle depend on the micro-organisms in the rumen to produce thiamine, and the level of daily production of this vitamin is close to the animal's daily requirement. The most common cause of thiamine deficiency is the presence in the rumen of bacteria that produce thiaminase, an enzyme which consumes, degrades and therefore reduces the availability of thiamine to the animal. In pastoral production systems, a sudden change in feed from low quality dry feed to good quality hay or lush grass will cause a sudden change in the bacterial population of the rumen, which may precipitate PEM.

The visible signs of PEM are caused at a cellular level, and relate to the transport of water across the cell membrane. Lack of sufficient vitamin B1 results in reduced activity of an enzyme involved in the cell

membrane pump that transports salt molecules in and out of cells. Dysfunction of this pump results in movement of water into cells, causing swelling. While this occurs in all tissues, the effects of cell swelling are particularly noticeable in the brain, which is limited in its ability to enlarge owing to the tightly protective skull bones. As swelling progresses, the cells are compressed against the inside of the skull, causing cell death and the development of neurological signs such as depression, apparent blindness, staggering and wobbling. Champing of the jaws, drooling and head pressing against fences and into corners are common. As signs progress, generally over 24-48 hours, animals fall and are unable to rise, with muscle tremors and convulsions becoming noticeable, and ultimately death may occur.

The likely cause of PEM in this case was the sudden change of diet from dam's milk and dry paddock forage, to high quality hay. The rumen microflora are adapted to breaking down a particular type of food, and will take up to a week to adjust to a change. The observation that the larger, heavier animals in the mob were the worst affected speaks to the fact that these are likely to have been the greediest or earliest consumers of the high quality hay. In this instance, the high quality hay provided to the animals was the only available feed source, owing to the very poor preceding wet season in the Northern Territory and consequent lack of locally produced hay.

A presumptive diagnosis was made within 24 hours of investigation. The station manager was advised to limit the amount of high quality hay given to the weaners, slowly increasing the volume, to allow the rumen microflora to adapt to the change in feed. By day 5, no further cases had occurred and mildly affected animals were returning to normal without requiring medical intervention. The veterinary officer also explained to the manager that if the same conditions were to occur again, the effects of a sudden feed quality and quantity change can be mitigated with the use of injectable Vitamin B complex for a few days after weaning. However, this may be a cost-prohibitive option when dealing with large mobs. Alternatively, close observation of the mob and injecting affected animals with Vitamin B1 early in the disease course, may lead to a remission of clinical signs within 6-24 hours. A total of 15 animals died or were humanely destroyed; morbidity was approximately three per cent and mortality less than two per cent. Cases have been reported elsewhere of losses up to 10%.



Figure 2: weaners salivating, staggering and struggling to rise

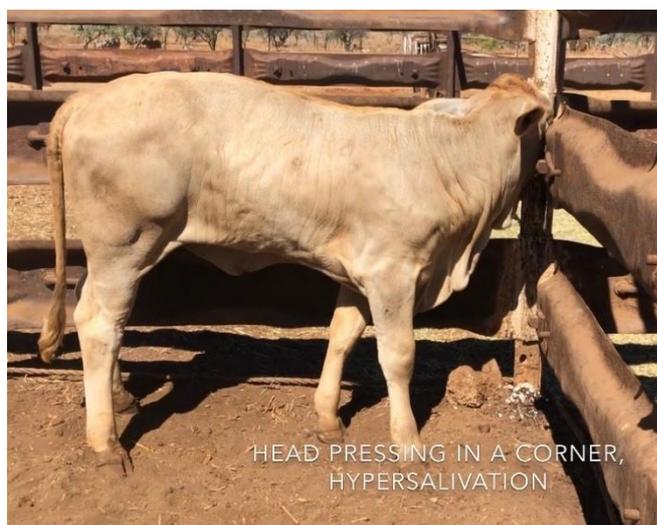


Figure 3: weaner salivating and head pressing in corner of yards

Stock theft in the NT

The Department of Primary Industry and Resources (DPIR) collaborates with Northern Territory Police for investigations into stock theft and ownership disputes in accordance with public service and legislative requirements. Theft of property, which includes theft of cattle, is a criminal offence under the *NT Criminal Code Act 1983* and is managed by NT Police.

The *Livestock Act 2008*¹ and Livestock Regulations underpin the livestock identification and movement requirements for livestock in the Territory. This includes:

- brands
- waybills
- NT Health Certificates (including waybills)
- declared area movement Permits
- National Livestock Identification System (NLIS).

It should be noted that a registered NT brand is the only true proof of ownership of livestock in the NT. Cross branding of purchased cattle is an accepted industry practice but not a legal requirement under the livestock legislation. A receipt of purchase would be required for proof of ownership if cattle were not cross-branded with supporting movement documents.

All suspicions of stock theft should be reported to your local police. The Major Crime Unit from NT Police will lead the investigation with assistance from DPIR Regional Livestock Biosecurity Officers on non-compliance matters relating to brands, NLIS, and movement documentation.

Meat and Livestock Australia release new 'fit to load' guide

The commonly used 'Is it fit to load' guide from Meat and Livestock Australia has recently been updated and renamed 'Is the animal fit to load'. The guide was originally produced in 2012 to assist livestock producers and operators to meet their obligations under the Australian Animal Welfare Standards and Guidelines for the Land Transport of Livestock. The content has been updated to include the following:

- | | |
|--|--|
| <ul style="list-style-type: none">• clear roles and responsibilities for consignors and transporters• clear checklists to assess whether an animal is fit to load• managing effluent | <ul style="list-style-type: none">• loading densities• requirements for transporting bobby calves• using firearms or captive bolt for euthanasia |
|--|--|

The new guide has been endorsed by all red meat peak industry councils, Animal Health Australia, Dairy Australia, and other peak industry bodies throughout the value chain. This includes the Australian Livestock

¹ <https://legislation.nt.gov.au/Legislation/LIVESTOCK-ACT>

and Rural Transporters Association, the Australian Livestock & Property Agents Association, and the Australian Livestock Markets' Association. (MLA, 2019)

The guide can be downloaded by visiting Meat Livestock Australia's website.

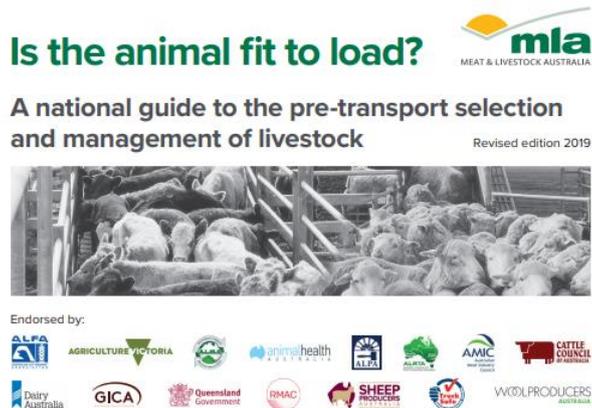


Figure 2: New 'Is the animal fit to load' guide³

Identification and movement requirements for cattle and buffalo

Moving cattle or buffalo off your property

It is the responsibility of the **owner** of the livestock to ensure all livestock movements comply with movement requirements before the movement begins.

If you are planning to move cattle or buffalo off your property, you **must** ensure you meet the following requirements.

- All cattle over the age of eight months must be branded with a clear, legible and permanent brand. NOTE: This does not apply to buffaloes. Buffaloes do not require a brand for movement.
- Only registered earmarks must be applied.
- Earmarks must only be applied to cattle or buffalo that have been branded with a registered brand.
- An earmark must not be longer than 8cm.
- All cattle and buffalo must be identified with an approved National Livestock Identification System device.
- All cattle and buffalo must be deemed fit for the intended journey.
- The owner of the livestock must issue a completed NT waybill prior to departure. A National Vendor Document cannot be used to replace a NT waybill for movements
- Any cattle or buffalo moving off your property that are not owned by you, must have a separate waybill.

² mla.com.au/isitfittoload

³ Meat and Livestock Australia 2019, *New 'fit to load guide released*, viewed 26th August, 2019 <<https://www.mla.com.au/news-and-events/industry-news/new-fit-to-load-guide-released>>

- You must ensure all treatments and/or inspections required for movements related to cattle tick zones.

Returning cattle or buffalo

Cattle and buffalo may be moved without a waybill and approved NLIS device if the livestock are being returned to the property on which they are usually kept after straying beyond the boundaries of the property.

Plant and livestock sector reforms to property identification arrangements

Australia's agricultural and food traceability systems are currently the focus of a number of pieces of work, including reforms to property identification arrangements. This work is looking to opportunities to enhance Australia's traceability arrangements across animal, plant, food and fibre industries, which will benefit the management of pest and disease outbreaks, food safety, trade and market access requirements, and address increasing consumer interest in product sustainability, ethics and provenance.

What is a property identifier?

A property identifier (or property identification code) is a unique number issued by your state or territory government to properties with livestock and is the basis of a traceability system.

What are the proposed changes?

The proposed changes will result in a property identifier being issued for properties involved in the major plant production sectors, including properties that are part of the supply chain.

A rigorous and consistent approach to identifying those properties involved in primary production, processing and distribution is a key building block in developing a robust traceability system. As a result, all governments have committed to deliver nationally harmonised property identification arrangements across the animal and major plant production sectors. It involves agreeing to a set of principles and business rules by the end of 2019 and having necessary legislative changes in place by the end of 2022. The proposed reforms to property identification arrangements will:

- help to ensure we continue to meet the increasing expectations of consumers, both domestic and overseas, and importing countries
- in the event of a biosecurity or food safety incident, support swift and targeted action while minimising business disruption to those unaffected or uninvolved, and
- see regulatory requirements operating alongside/supporting industry tracing systems and needs, avoiding unnecessary costs.

The principles and supporting business rules have been developed by a working group comprising of all state and territory governments and the Commonwealth.

How are we engaging industry?

To implement the proposed changes, each state and territory will be seeking to work with their respective plant and livestock industry groups (and their members) on the design and implementation of this commitment. New arrangements will mean changes to existing arrangements, and will likely have resourcing implications for all parties. In addition to your views on the principles themselves, we are interested in:

- how the proposed changes will affect your specific industry
- ways to minimise disruptions from these changes, including potential integration with existing or anticipated industry led tracing or quality assurance systems
- options to enhance system compliance.

Read more at the [Department of Agriculture and Water Resources website](#).⁴

How can you get involved?

Stakeholders will be engaged through existing industry and government forums. Written submissions can be made through the [Australian Government Department of Agriculture's Have Your Say website](#).⁵ Submissions will close on Friday 1 November 2019.

If you require further information, please contact either of the following Northern Territory representatives from the Property Identification Code working group:

Plant Biosecurity Branch

Hannah Cooke

Plant Biosecurity Officer

08 8999 2063

Livestock Biosecurity Branch

Greg Crawford

Regional Livestock Biosecurity Officer 08 8951 8125

Contact the Livestock Biosecurity team

Darwin

Regional Livestock Biosecurity Officer 08 8999 2034

Livestock Biosecurity Officer 08 8999 2030

Katherine

Regional Livestock Biosecurity Officer 08 8973 9767

Livestock Biosecurity Officer 08 8973 9765

Tennant Creek

Principal Livestock Biosecurity Officer 08 8962 4458

Livestock Biosecurity Officer 08 8962 4492

Alice Springs

Senior Field Veterinary Officer 08 8951 8181

Regional Livestock Biosecurity Officer 08 8951 8125

Department website: nt.gov.au/industry/agriculture/livestock

⁴ www.agriculture.gov.au/propertyidentificationreforms

⁵ www.agriculture.gov.au/propertyidentificationreforms.