

# Top Paddock

DEPARTMENT OF PRIMARY INDUSTRY AND RESOURCES



ISSUE 69; October 2019

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Figure 1. Mango fruit at sunset

## Message from the editor

It's that time of year when the mangoes are starting to come off the trees. We have several research activities on our commercial orchards this year so the next few months are busy in the Plant Industries side of things.

There are a number of field days happening in the near future for the cattle, pastures and cropping folk, so don't forget to have a look at those.

Finally, it has been a dry year and it looks like the wet will be a late one. There have already been a number of fires around the place so keep your eye on the SecureNT fire advice and as always, take care.

Cheers

Chelsea Moore

Editor



Figure 2. The recent fire in the Katherine region.

## A blazing dry season

On the back of a particularly poor wet season, the Northern Territory (NT) rural area is as dry as tinder. There have been a number of bushfires in the Darwin and Katherine rural areas that have burnt paddocks and orchards. Several mango properties in the Darwin rural area have been affected, many with minor or peripheral damage, but at least one grower has reported significant damage to their crop.

The Department of Primary Industry and Resources (DPIR) is working with NT Farmers and the Australian Mango Industry Association (AMIA) to understand how we can support affected growers. We encourage all growers to 'be prepared' this dry season and read the [bushfire recovery article](#) for a comprehensive list of contacts and information.

## Be prepared

[SecureNT](#) is a centralised website for emergency alerts and warnings, including bushfires and cyclones. It has information from the Bureau of Meteorology, NT Police, Fire and Emergency Services, the road reports, Power and Water and Bushfires NT. If you haven't visited the [SecureNT](#) website it is well worth a look, they also have a [Facebook page](#) with more frequent social media posts.

## Katherine Research Station gets singed

The combined brave efforts of department staff, the NT Fire Service and Katherine volunteer firefighters saved Katherine Research Station (KRS) from extensive bushfires. The quick thinking and long hours put in by volunteers ensured all people and animals remained safe. No infrastructure was lost, although the fire managed to get within 1.5 kilometres of the KRS office and shed complex. Staff and volunteers worked late into the night, extinguishing smouldering trees and logs. At first light, DPIR staff were straight back on the fire line, pushing over burning trees and making the area safe.

"To say the next four hours were chaotic would be an understatement, it was an amazing effort from all concerned, including the office staff who shifted vehicles and manned the lawn sprinklers," said Jack Wheeler, KRS Farm Manager.

Accolades must go to Bernard Welsford, the Officer in Charge of Katherine Fire Service, Paul Justin from Bushfires NT and the Katherine volunteer firefighters who were on both scenes within minutes. "I cannot thank all the people involved enough, especially the Katherine volunteer firefighters who give their time so generously. Without them, it would be a poorer place," Jack said.

## Bushfire orchard recovery



Figure 3. Burnt paddock after a bushfire

With the recent bushfires throughout the Berry Springs, Lambells Lagoon and the Arnhem Highway region affecting properties and mango orchards in the area, it is a good time to assess what resources are available to growers affected by bushfires.

DPIR is able to assist with on-farm advice at an orchard level, including pest and disease management and, where required, animal welfare advice.

### Be prepared

Before we get into recovery, here are some quick tips to make sure you are prepared for the bushfire season:

- Keep your inter-row managed and create fire breaks.
- Consider herbicides if you cannot get a slasher in and manage gamba grass.
- Maintain your firebreaks. They should be at least 4 metres wide and run around the property as well as around permanent structures.
- Prepare a plan for your property.
- Follow Bushfires NT or SecureNT on social media to keep up to date on what's happening in your area:
  - [facebook.com/BushfiresNT](https://www.facebook.com/BushfiresNT)
  - [twitter.com/bushfiresnt](https://twitter.com/bushfiresnt)
  - [SecureNT](https://www.securent.gov.au/)

### Orchard management after a bushfire

#### Assess the damage

Unless trees have been killed outright it can sometimes take several weeks to assess the full impact.

- Check the damage to the bark, roots and cambium. Peel back a small portion of the bark. If the tissue underneath (cambium layer) is moist and creamy white or tan in colour it is still alive and there is a chance of recovery. If it is dry and red or brown, it is dead or damaged.
- Extensive damage to the cambium will kill the tree, however if the cambium layer is healthy it may reshoot.
- Wait for the regrowth to assess the tree for uneven growth. If the plant is badly skewed it may not be very functional.

### Manage tree recovery

- Check your irrigation lines as heat from bushfires can melt and destroy irrigation and ash can block your lines. Stressed trees are particularly vulnerable and getting the irrigation back on line will help their recovery.
- Protect plants from sunburn if they have lost foliage. Spray-on products can be bought from local agricultural suppliers or white paint can be painted onto exposed trunks and branches.
- On badly damaged trees, remove the fruit to prevent unwanted stress and reduce the pest and disease build-up.
- Pruning and fertiliser should be delayed until regrowth has begun.
- Keep an eye out for Longicorn borer in particular, as it is renowned for affecting stressed trees. Read through the [Longicorn borer information sheet](#) for details about this pest.
- Trees damaged by bushfires can take a couple of seasons to return to cropping and may not be economically viable in the long run.
- Block viability and replacement strategies should be made in consultation with your insurance company. Technical advice on plants or pests and diseases can be sourced from DPIR or NT Farmers.

### More information

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Animal Welfare (DPIR)  
[animalwelfare@nt.gov.au](mailto:animalwelfare@nt.gov.au) or 1300 720 386

Greg Owens (NT Farmers)  
[greg@ntfarmers.org.au](mailto:greg@ntfarmers.org.au) or 0437 092 551

## PalmCow animal enrolment trip



Figure 4. Bali cattle grazing under 16 year old oil palms.

Arthur Cameron, Principal Pastures Agronomist and Kieren McCosker, Senior Livestock Scientist.

PalmCow is a research project our agriculture researchers are leading to improve smallholder beef supply and livelihoods through oil palm-cattle integration in Indonesia.

“This project will provide us (DPIR staff) with experience in cattle production under plantations. It will give us insight into grazing management under forestry plantations in the NT.” Arthur Cameron.

The PalmCow project, along with its sister project CropCow integrating cropping and cattle production, is Australian Centre for International Agricultural Research-funded and part of the larger research program IndoBeef. The University of New England is the lead organisation of the IndoBeef program. DPIR is contracted to provide animal production and forage production advisory services for the PalmCow project. Kieren McCosker, Senior Livestock Scientist is providing the animal production services and Arthur Cameron, Principal Pastures Agronomist is providing the forage production services.

There are five project sites spread over three provinces in East Kalimantan, South Sumatra and West Sumatra.

Arthur and Kieran recently returned from a trip to Indonesia to complete field officer training in the CommCare software app. The CommCare app stores all the data generated by the project that is attributed to individual cattle enrolled in the project.

Our Indonesian research partners received practical experience in tagging cattle and use of technology. These practical tests also allowed any minor problems in the app to be resolved.

Kieren conducted pregnancy tests on cows at each of the sites, while Arthur spent the time assessing pasture yields under oil palms of different ages, and identifying cut and carry forages provided to the cattle.

### More information

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[arthur.cameron@nt.gov.au](mailto:arthur.cameron@nt.gov.au) or 08 8999 2214

Kieran McCosker  
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## Identifying gamba grass made easy



Figure 5. Can you tell the difference between gamba grass and the native lemon grass? The new video on DPIR's YouTube channel might help.

Arthur Cameron, Principal Pastures Agronomist has been helping people learn to identify gamba grass for years. In a new video on [identifying gamba grass](#), he explains what to look for and the features that make it stand out.

“There are several grasses that are often confused with gamba grass, probably the most common is a native lemon grass. Sometimes you can see where people have sprayed it (the native lemon grass) out by accident, thinking that it is gamba grass.”

Gamba grass (*Andropogon gayanus*) is an introduced grass found throughout the NT. It is highly invasive and is a declared Class A or B weed (depending on region), which means that property owners have a legal obligation to control it (outlined in the [weed management plan](#) and [guide](#)). It is important that landowners and managers know what to look for and how to tell the difference between gamba grass and other grasses. DPIR released the video to help pastoralists, land and natural resource managers successfully identify gamba grass. The video is a two-minute guide that discusses the main characteristics to look for, including the timing of the flowering, white stripe down the centre of the leaf, excessively hair stem, and fluffy v-shaped seed head.

The [DPIR YouTube channel](#) has a range of five-minute videos on practical topics, including [identifying gamba grass](#).

### More information

Arthur Cameron (DPIR Pastures Agronomist)  
[arthur.cameron@nt.gov.au](mailto:arthur.cameron@nt.gov.au) or 08 8999 2214

Visit the NTG [webpage on gamba grass](#)

NT Government weeds branch, Darwin  
[weedinfo@nt.gov.au](mailto:weedinfo@nt.gov.au) or 08 8999 4567

NT Government weeds branch, Katherine  
[weedinfo@nt.gov.au](mailto:weedinfo@nt.gov.au) or 08 8973 8857

## Be aware: Siam weed detection



Figure 6. Siam weed was recently found in the NT.

An incursion of Siam weed (*Chromolaena odorata*) has recently been detected on two properties in the greater Darwin region. Primary producers should be aware of this and check any new plants they find on their properties. As with any weed management, early reporting of a suspected Siam weed infestation is essential to successful control and eradication efforts.

Native to the Americas, Siam weed has become a major land management issue across tropical areas of Asia and Africa. In 1994, it was detected in the Tully area of far north Queensland and, until recently, was confined to that region.

The NT Weed Management Branch notified the National Biosecurity Management Consultative Committee of this most recent incursion of Siam weed. We are working closely with landholders and other government departments to contain and control the infestation and are conducting field surveys to determine how far it may have spread.

### Why is it a problem?

Siam weed has high nitrate levels and, in some countries, has led to cattle deaths and abortions when stock have been accidentally fed contaminated fodder. Its rapid growth rate means that it has the potential to out-compete crops, pastures and native vegetation. In addition, Siam weed may cause skin complaints and asthma in allergy-prone people.

These potential environmental, economic and health impacts, when combined with the costs associated with control, mean that it is considered one of the world's worst weeds.

### How to identify it

Siam weed can look similar to other weed species but there are a few outstanding features that help in identification.

The pungent smelling leaves of this scrambling climber are soft, green, hairy and roughly triangular in shape. They also have a very distinctive three-vein 'pitchfork' pattern running the length of each leaf. Pale pink-mauve tubular flowers are held in clusters at the end of the branches. The flowers can appear white if seen from a distance but will usually turn darker lilac when mature.



Figure 7. Flowers seem white from a distance but turn lilac when mature.

Flowering is triggered mid-year by shorter day lengths. The flowers produce enormous numbers of seeds within 8-10 weeks of flowering. Each seed has a tuft of white or brown hairs that act as a little parachute, allowing it to be easily transported by wind or water.

## **Come clean, go clean**

Preventing weed spread through biosecurity measures is as important to Siam weed management as early detection. The hairs on the seed help it attach to vehicles, clothing, footwear and animal fur. It is very important that travel through known areas of infestation is controlled and that vehicles, machinery and any personal gear used in an infested area be cleaned thoroughly before leaving an infected area.

## **Report it**

Let's work together to stop the spread of Siam weed.

If you have seen Siam weed, or think you may have it on your property, please contact the Weed Management Branch on 08 89 99 45 67 or [weedinfo@nt.gov.au](mailto:weedinfo@nt.gov.au)

## **Importing plants or plant products into the NT?**

Have you got an import permit and/or plant health certificate?

### **Import permits**

Examples of plants needing import permits include:

- avocado plants
- banana plants
- plantain, manila hemp
- grapevine material
- potatoes (planting)
- soybeans



- turf
- soil, compost, potting mix
- plant materials for diagnostic and lab testing.

Examples of used machinery and equipment needing import permits include:

- all used agricultural and earthmoving equipment and machinery
- ploughs and seeders
- tractors
- harvesters
- bulldozers
- pruning shears
- picking poles
- grape related machinery/equipment/tools
- other plant related packaging, pellets and plant equipment.

## Plant health or plant health assurance certificate

Examples of plants plant health or plant health assurance certificates include:

- plants (household / potted / nursery) plants general (not otherwise specified)
- fruit and vegetables
- maize seed
- peanut seed
- citrus and fortunella plants
- papaya plants
- passionfruit plants
- untreated pinewood, seasoned pinewood or pinewood articles and firewood from Western Australia.

### More information

Darwin 08 8999 2118

Katherine 08 8973 9704

Alice Springs 08 8951 8166

General email: [quarantine@nt.gov.au](mailto:quarantine@nt.gov.au)

# NT weather outlook as at September 2019\*

Sourced from the Australian Bureau of Meteorology (BOM)

\*[This seasonal outlook was correct at the time of publication. For the most up-to-date seasonal outlook, please go to the climate outlook section of the BOM website.](#)

The outlook for October to December 2019 indicates that:

- **drier** than average conditions are expected across most of the NT for the remainder of 2019
- **warmer** than average days and nights are likely for almost the entire NT.

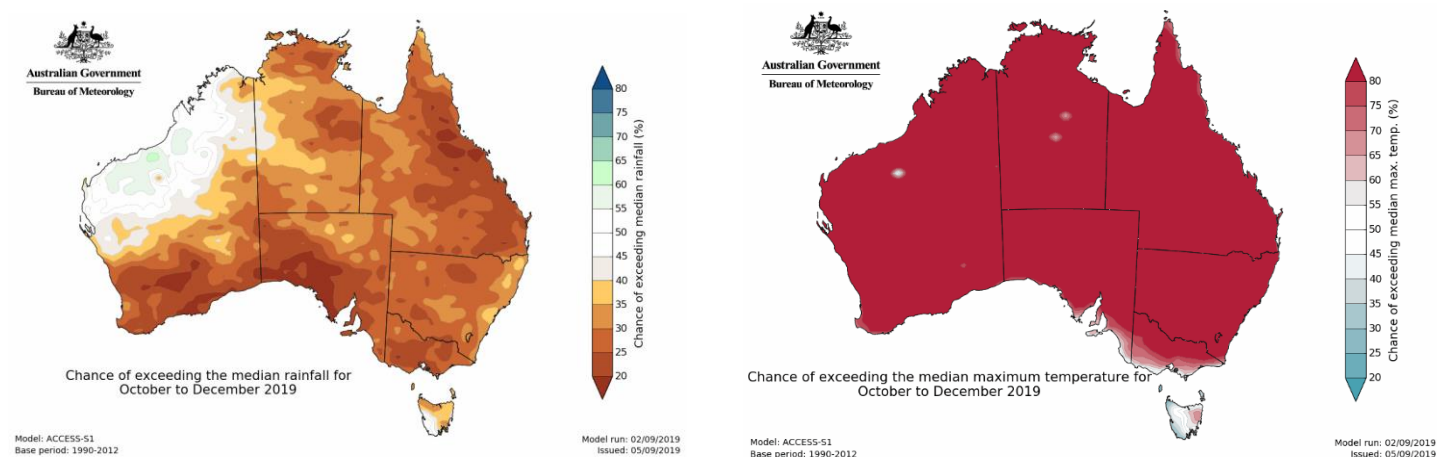


Figure 8. Weather maps from the BOM (left) chance of exceeding the median rainfall for October to December, (right) chance of exceeding the median maximum temperature for October to December.

In addition to natural drivers, such as El Niño Southern Oscillation and the Indian Ocean Dipole, Australian climate patterns are being influenced by the long-term increasing trend in global air and ocean temperatures.

## Outlook for the build-up and wet season

The BOM puts out a weekly tropical climate note, as well as a three-monthly climate outlook video.

- The current expectation for this year's build-up is hot, with early rainfall [likely to be below average](#) across the Top End and central NT this wet season.
- The [El Niño – Southern Oscillation](#) is expected to stay neutral.
- We could still see at least an average wet season from January. This is because the Indian Ocean Dipole typically breaks down in November or December, having little to no effect on Australian weather from January to April.
- Once the monsoon arrives, the timing and location of heavy rainfall will depend on shorter-scale influences, such as the location of active monsoon events, tropical cyclones, and tropical lows.
- In an average year, October, November, and December account for about 27 per cent of Darwin's annual rainfall, with 70 per cent accumulated between January and April after the first active monsoon arrives (usually during the last couple of weeks in December)

## More information

Growers can subscribe to the BOM [Weekly Tropical Climate Note](#) to find out more about climate drivers affecting weather in the tropics each Tuesday. Use [this page](#) to sign up and manage a range of BOM regular emails, blogs and events.

The climate summary videos can be found on the [BOM YouTube website](#).

For information on the pastoral outlook (including anticipated pasture growth and current estimated feed supply), visit the [Pastoral Feed webpage](#).

## Leucaena and profitable grazing systems field day



### Northern Territory Agriculture: Pathways to Potential **LEUCAENA AND PROFITABLE GRAZING SYSTEMS**

#### What's on

Take part in the first of a series of workshops and site walks with The Leucaena Network (TLN) and Profitable Grazing Systems (PGS).

Improve your grazing systems with the new psyllid-tolerant strain of leucaena, Redlands. Topics will cover the economic advantages of incorporating Redlands leucaena as a forage crop, where it will grow, techniques to ensure a good planting outcome and how to manage it while minimising its weedy potential.

- Visit Department of Primary Industry and Resources research farm leucaena demonstration sites and also local producers' demonstration sites.
- View slashing/mulching and other relevant equipment and talk to local contractors and machinery suppliers.
- Learn how to use Natural Resources (NR) maps. Hear about improved pastures, what will grow in your region and talk to Northern Territory seed suppliers. Get the basics about ecosystem processes, understanding pasture growth and how to work out grazing loads. Discover the key differences in managing grazing on introduced or mixed pastures vs native pasture systems.
- Learn about legume agronomy, "checking out your nods", how to assess if nitrogen fixation is occurring in your paddocks and the basics of soil health.
- See how to use drone imaging and other technology for pasture assessment. Drones allow advanced information-gathering for automation, analysis and visualisation. Understand how remote satellite sensing and imaging of your farm or region, analysed in real time, can give you valuable data on crop quality, crop volumes, and land management.

#### Where, when and how much

##### Douglas Daly Research Farm

- From 10am Thursday 10 October 2019 to approx. 1pm Friday 11 October 2019
- NT producers: free, limited places available. Industry representatives: \$75 per person

Please RSVP to Rebecca Mohr-Bell at [rebecca@argyllconsulting.com.au](mailto:rebecca@argyllconsulting.com.au) for catering and accommodation purposes.



## Fruit fly treatment requirements for exporting mango fruit into South Australia, Tasmania and Western Australia

With the 2019 mango season underway, and in light of changes to some interstate quarantine requirements (relating to fruit fly) for mango exports last season, DPIR would like to remind mango growers/exporters that ICA accreditations will soon be due for renewal. A reminder letter will be sent in the near future. We would also like to take this opportunity to clarify the fruit fly treatments that are now permitted for the South Australian, Tasmanian and West Australian markets. A brief summary is provided below in Table 1.

**Table 1. Summary of accepted treatments for domestic fruit fly sensitive markets**

	South Australia	Tasmania	Western Australia
<b>Area freedom</b>	ICA23 Area/property freedom as per fruit fly code of practice [SA Condition 9]	ICA23 Area/property freedom as per fruit fly code of practice [Tas Import requirement 1]	ICA23 Area/property freedom as per fruit fly code of practice [WA Import requirement 09Ec]
<b>Systems approach (based on pre- or post-harvest treatment)</b>	CTM01 systems approach [SA Condition 12]	CTM01 systems approach [Tas Import requirement 8A]	WA will accept the CTM01 systems approach where a post-harvest treatment (ICA01 or ICA02) is used as the treatment option [WA Import requirement 04 (1)(a)(1 and ii)]
<b>Post-harvest dimethoate dip or flood spray</b>	Post-harvest dimethoate dip or flood spray can only be used as a component of CTM01. It cannot be used in conjunction with any other treatments or as a stand-alone treatment	Post-harvest dimethoate dip or flood spray can only be used as a component of CTM01. It cannot be used in conjunction with any other treatments or as a stand-alone treatment	- ICA01 (400mg/L dimethoate dip for 1 minute) - ICA02 (high volume ( $\geq 16\text{L}/\text{m}^2/\text{min}$ ) 400mg/L flood spray for $\geq 10$ seconds and fruit remaining wet for $\geq 1$ min) [WA Import requirement 04 (1)(a)(1 & ii)]
<b>Heat treatment</b>	Hot water immersion - 46.1°C for $\geq 75$ min (95 min where hydro-cooled) Vapour heat - 46.5°C for $\geq 30$ min or - 47°C for $\geq 20$ min [SA Condition 12C]	Vapour heat - 47°C for $\geq 15$ min [Tas Import requirement 4]	Hot water immersion - fruit treated at $48\geq\text{C}$ with duration dependent on the weight of the fruit. Vapour heat - 46.5°C for $\geq 30$ min or - 47.5°C for $\geq 20$ min [WA Import requirement 09B]
<b>Methyl bromide</b>	- 17°C – 20.9°C @ 40 g/m <sup>3</sup> for 2 hours or - 21°C – 31.9°C @ 32 g/m <sup>3</sup> for 2 hours; Chamber loading and impervious material requirements to be met [SA Condition 13]	- 17°C – 20.9°C @ 40 g/m <sup>3</sup> for 2 hours or - 21°C + @ 32 g/m <sup>3</sup> for 2 hours; Chamber loading and impervious material requirements to be met [Tas Import requirement 2]	- 17°C – 20.9°C @ 40 g/m <sup>3</sup> for 2 hours or - 21°C – 31.9°C @ 32 g/m <sup>3</sup> for 2 hours [WA Import requirement 04 (1)(a)(iii)]
<b>Irradiation</b>	Minimum absorbed dose of 150Gy [SA Condition 14]	Minimum absorbed dose of 150Gy [Tas Import requirement 6]	Minimum absorbed dose of 150Gy (maximum absorbed dose of 1000 Gy as per FSANZ Code) [WA Alternative treatment]

It's apparent that although these treatments are permitted they may not all be practical to implement, either because they require specialised apparatus (for example, heat treatment) or they are logistically not viable at the present time (for example, irradiation treatment).

CTM01, a systems approach negotiated trilaterally between the NT, Queensland and South Australia last season following South Australia's unexpected suspension of ICA19, was subsequently accepted by Tasmania and Western Australia. Tasmania accepts CTM01 in its entirety (in lieu of ICA19 which they have suspended). However, Western Australia accepts CTM01 only where the post-harvest treatment option (that is, ICA01 or ICA02) is used. Western Australia does not accept the pre-harvest bait spray option in CTM01.

It is worth noting that Western Australia still accepts mangoes that have only been subject to post-harvest treatment with dimethoate (that is, ICA01 or ICA02). Therefore, ICA01 and ICA02 provide viable alternatives to CTM01 if all requirements of CTM01 cannot be met.

It also should be noted that previous requirements relating to securing consignments against fruit fly infestation during transit to these markets remain in place.

### **More information**

If you have any questions about becoming accredited for ICAs or about any of the treatments, please contact the Plant Biosecurity Branch at:

Ph: (08) 8999 2118

E: [quarantine@nt.gov.au](mailto:quarantine@nt.gov.au)

## **Magpie Goose Integrated Pest Management Report released**

For growers who struggle with damage to their crops from magpie geese, Charles Darwin University's Dr Hamish Campbell and Amélie Corriveau have released an Integrated Pest Management (IPM) report.

Mango growers may remember hearing about the PhD project over the past couple of years. The project is a partnership between Charles Darwin University, Australian Mangoes, Hort Innovation, NT Farmers and the NT Government.

The newly released report is brief and practical. Although it's based on work in local mango orchards, it is well worth a read for growers of other crops.

### **More information**

View the [magpie goose IPM report](#) online

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## Veggie Integrated Pest Management field walk

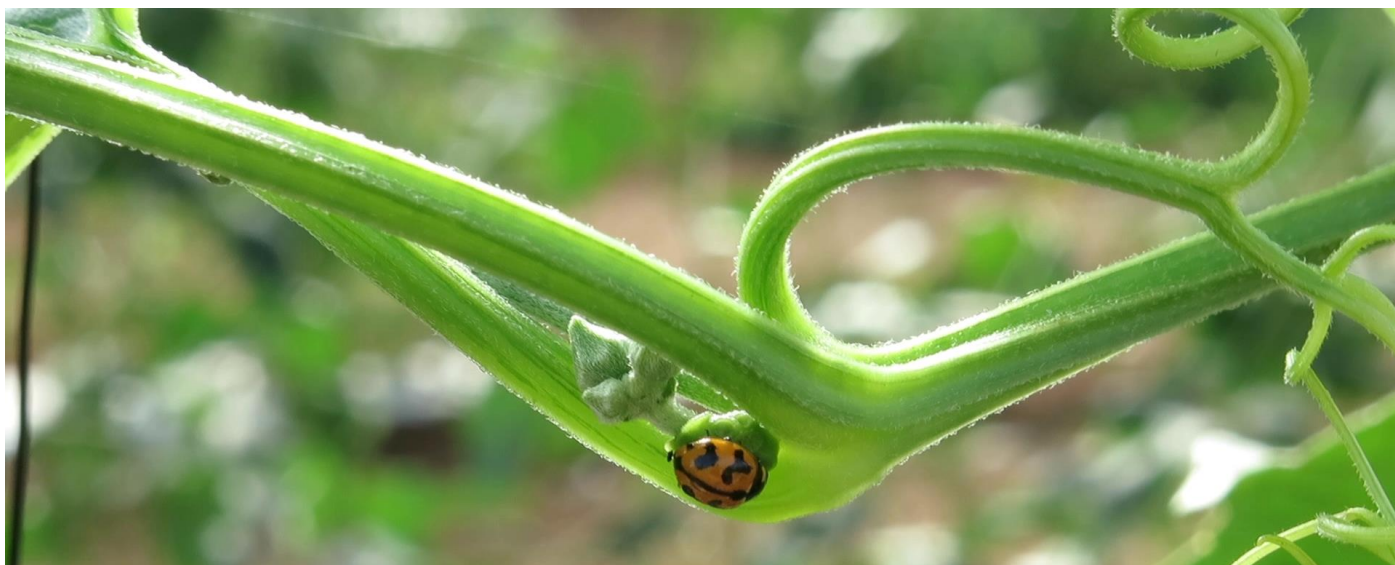


Figure 9. Ladybirds helping out in the IPM plot at Coastal Plains Research Farm.

DIPR and NT Farmers led a field walk recently at Coastal Plains Research Farm to share information with growers and industry stakeholders.

Farmers, scientists and anyone in between came together to discuss Integrated Pest Management (IPM) for vegetables, explored through presentations and demonstrations.

The Coastal Plains demonstration plots have been running since 2017, with crops including okra, Sin Qua, chilli and snake bean. This year's trial focuses on pest management and options for trap crops, and continues to assess the different yields associated with IPM, no spray and calendar spray systems.

Presenters included Dr Brian Thistleton (DPIR entomologist), Jacob Betros (Territory Natural Resource Management), Simone Cameron (EE Muir and Sons) and Greg Owens (NT Farmers). There were a range of topics discussed, including soil health and the use of IPM and its correlation with reduced pesticide use.

Attendees were given the chance to witness some of the beneficial insects through the microscope, before being shown the demonstration plots and the bean fly control trial.

### More information

Brian Thistleton (DPIR entomologist)  
brian.thistleton@nt.gov.au or 08 8999 2257

Laura Cunningham (NT Farmers IDO)  
ido@ntfarmers.org.au or 08 8983 3233

## In brief: hemp legislation passed in parliament

The Legislative Assembly has passed the Hemp Industry Bill, which will allow development of an NT hemp sector. The Bill was passed on Thursday 8 August 2019, creating a framework to regulate development and operation of an industrial hemp industry in the NT.

Under the Act, a licensing system now exists for the possession, cultivation, supply, processing and research of industrial hemp, and covers the various prohibitions, necessary enforcement provisions, offences and miscellaneous arrangements to support this industry.

Industrial hemp plants differ from regular hemp species in that they contain very low levels of Tetrahydrocannabinol (THC). Foods and products made from industrial hemp have no psycho-active effects on individuals when consumed. Hemp fibre has been used for manufacturing of textiles, ropes and lines, paper and building materials. The grain is a highly nutritious food source, as a whole grain, an emulsified cake, flour, or pressed oil.

The Territory is well positioned geographically and climatically to become a region that could supply viable seed for hemp crop propagation in southern broad-acre areas of Australia.

The Act allows for authorised inspectors to be appointed with appropriate powers of entry, inspection and seizure to ensure compliance and provides offences and penalties for contravening specified provisions of the Act.

### **More information**

Dr Warren Hunt, DPIR Manager of Agricultural Policy and Analysis  
[warren.hunt@nt.gov.au](mailto:warren.hunt@nt.gov.au) or 08 8999 2143

## **Livestock disease investigations**

DPIR provides disease investigation services, 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 of up to \$250 are available for disease investigations in horses and other species.
- \$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 to June 2019, 62 livestock disease investigations were conducted to rule out emergency diseases or investigate suspect notifiable diseases across the NT.



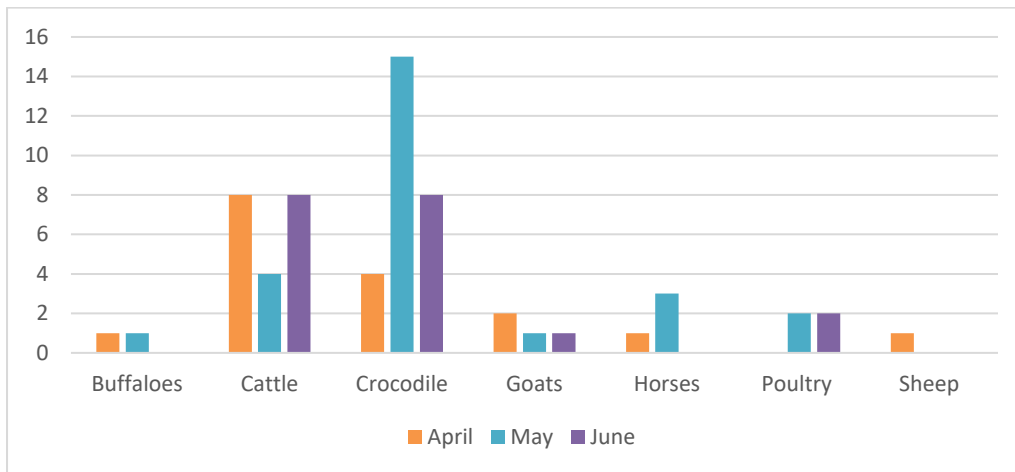


Figure 10. Livestock disease investigations in the NT, April to June 2019

## Polioencephalomalacia (PEM) ) 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 but 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 were 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 PEM) Bovine Herpes Virus 5, urea toxicity, lead poisoning, vitamin A deficiency, rabies, Australian Bat Lyssavirus and Aujesky'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 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 symptoms. 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 NT 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 five, 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 per cent.



Figure 11. (left) weaners salivating, staggering and struggling to rise (right) weaner salivating and head pressing in corner of yards.

### More information

<p>Livestock Biosecurity Branch            Greg Crawford (Regional Livestock Biosecurity Officer) 08 8951 8125</p>	<p>Darwin            Regional Livestock Biosecurity Officer            08 8999 2034            Livestock Biosecurity Officer 08 8999 2030</p>
<p>Katherine            Regional Livestock Biosecurity Officer            08 8973 9767            Livestock Biosecurity Officer 08 8973 9765</p>	<p>Alice Springs            Senior Field Veterinary Officer 08 8951 8181            Regional Livestock Biosecurity Officer            08 8951 8125</p>
<p>Tennant Creek            Principal Livestock Biosecurity Officer            08 8962 4458            Livestock Biosecurity Officer 08 8962 4492</p>	

## Stock theft in the NT

DPIR collaborates with NT 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* 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).

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.

Report all suspicions of stock theft 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



Figure 12. New 'Is the animal fit to load' guide Identification and movement requirements for cattle and buffalo

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 meet their obligations under the Australian Animal Welfare Standards and Guidelines for the Land Transport of Livestock. The content has been updated to include:

- clear roles and responsibilities for consignors and transporters
- clear checklists to assess whether an animal is fit to load
- management of effluent
- loading densities
- requirements for transporting bobby calves
- use of 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 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](#).

## Moving cattle or buffalo off your property

It is the responsibility of the livestock owners 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 an NT waybill for movements
- Any cattle or buffalo moving off your property that are not owned by you must have a separate waybill.
- 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
  - support swift and targeted action in the event of a biosecurity or food safety incident while minimising business disruption to those unaffected or uninvolved
  - ensure regulatory requirements operate alongside and supporting industry tracing systems and needs, avoiding unnecessary costs.

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

## 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:
  - effects of the proposed changes on 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](#).

## 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](#). Submissions will close on Friday 1 November 2019.

### More information

Contact the following NT representatives from the Property Identification Code working group, or the Livestock Biosecurity team.

Plant Biosecurity Branch Hannah Cooke (Plant Biosecurity Officer) 08 8999 2063	Livestock Biosecurity Branch Greg Crawford (Regional Livestock Biosecurity Officer) 08 8951 8125
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

DPIR website: [nt.gov.au/industry/agriculture/livestock](http://nt.gov.au/industry/agriculture/livestock)

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# CALENDAR OF EVENTS



Old Man Plains Field Day  
Leucaena Field Day  
TropAg

[Old Man Plains \(NT\) 26<sup>th</sup> September](#)

[Douglas Daly Research Farm \(NT\) 10-11<sup>th</sup> October 2019](#)

[Brisbane 11- 13<sup>th</sup> November 2019](#)

## More information?

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