

Note from our guest editor: Phil Hausler



Welcome to the NT Rural Review for May 2021.

We are over a quarter of the way through 2021 and I am reflecting on how much things have changed from 12 months ago with the disruption and uncertainty that occurred in 2020 with COVID-19.

With the formation of the Department of Industry, Tourism and Trade and a renewed focus on Agriculture development in the Northern Territory (NT), I am very happy to be working alongside Luke Bowen as he takes on the role of deputy chief executive for Agriculture, Fisheries and Defence. We have previously worked together on several complex projects and I'm sure that we will continue to work very effectively together to develop agriculture across the NT.

My life in agriculture began on the family farm near Warialda in North West NSW where I was very much involved in the cattle, sheep and summer and winter cropping activities on our properties. I also did seasonal work for several other large local farming properties.

With a keen interest in the land, I took the opportunity to study and earn a Degree in Applied Science at Charles Sturt University in Wagga Wagga and returned back to the family farms until my move in 1989 to the NT.

I knew there were many opportunities for young people in the north. This was towards the end of the Brucellosis and Tuberculosis Eradication Campaign and the later years of the Douglas Daly pilot farm initiative. There were many things happening in the agriculture sector!

I started as a base level technical officer at Douglas Daly Research Farm and progressed successively through the technical and professional levels as I worked in the Douglas Daly, Katherine, Alice Springs and Darwin regions. I have worked in technical, professional and managerial roles across the primary industry and resources

NT Rural Review – May 2021

sectors and I have worked for governments in an advisory capacity on both sides of politics before taking up a senior executive role in mining regulation in 2014.

Through my senior roles in government I have been very much involved in high-level policy and strategic planning for the Territory's agricultural sector and I bring a high level of practical experience to my senior roles within government. Responsible for research, development and extension staff throughout the Territory, I also oversee the government's seven research facilities and four regional offices.

I am committed to developing the NT through the enormous opportunities presented in agriculture and I am focussed on building effective relationships and partnerships with stakeholders to achieve strong investment, development and environment outcomes.

I am married with three children who were all born in the NT and we are a very committed Territorian family.

Phil Hausler
Senior Executive Director, Agriculture
Department of Industry, Tourism and Trade

Managed pollination and the transmission of a plant virus - what's going on and should we be worried?

Region: Greater Darwin, Katherine Region | Topic: Horticulture

May 2021



Caption: Get the buzz on the role of honey bees in CGMMV transmission

HortInnovation VM18008: Understanding and managing the role of honey bees in CGMMV epidemiology

In June 2020, the Australian melon industry was valued at \$152.1 million. The Northern Territory (NT) produces 25% of all watermelons grown in Australia. *Cucumber green mottle mosaic virus* (CGMMV) is a plant virus first detected in the NT in 2014. CGMMV is a virus of cucurbit crops, including watermelon, cucumber, melons, zucchini and pumpkin. CGMMV can cause substantial crop losses. As a trade-sensitive pest, there is a national plan for managing CGMMV in Australia to prevent spread, reduce impacts on currently affected regions and mitigate trade impacts.

CGMMV is most likely introduced into a crop through infected planting material (soil, seed or seedlings) and can be mechanically transmitted, by something as small as using secateurs to prune plants, or something as large as driving a tractor through a crop.

Cucurbit crops are almost 100% pollinator-dependent, requiring insect pollination for successful fruit set and production. In Australia, honey bees are regularly used to provide managed pollination services to broadacre watermelon cropping.

NT Rural Review – May 2021

This raises a question. Are honey bees able to transmit CGMMV?

The short answer is yes. However, there are gaps in our knowledge. The NT-based project team is trying to determine exactly how this may impact Australian apiarists and melon producers.

CGMMV is not known to affect bee health. The main concern is that if honey bees are exposed to CGMMV and then moved significant distances within or between states, they may move this highly destructive plant virus to new locations.

In the past year, the research team has shown that:

- honey bees travelling from flowers on CGMMV-positive plants to flowers on clean plants cause infection in the clean (uninfected) plant
- CGMMV can be detected in capped honey for up to 12 months after initial exposure.

The research has also found that removing the honey frames in a bee hive that contains CGMMV and placing the hive on a resting site (with no cultivated cucurbits nearby) can reduce the levels of CGMMV detected in the hive after 12 months.

This field season we will be working to determine if the CGMMV detected in various bee hive products (such as wax and honey) is viable and capable of causing plant disease, and running field trials to see if honey bees from a hive containing living CGMMV are able to transmit the virus to clean plants.



Caption: This season the department will test products from inside the beehive

The project will also produce a literature review of what is currently known about the potential for honey bees to transmit other pathogens aside from CGMMV. The review will cover viruses, bacteria, fungi and nematodes and will allow the apiary and horticulture industries to assess and identify future threats.

NT Rural Review – May 2021

The project is due to wrap up in December 2021.

More information

View more information on the [Northern Territory Government website](#).

Fall armyworm

Region: Greater Darwin, Katherine Region, Central Australia | Topic: Horticulture, Biosecurity

May 2021



Caption: Damage from fall armyworm

Since its arrival in Australia at the beginning of 2020, the fall armyworm (*Spodoptera frugiperda*) has continued its spread and during the summer months has migrated to the southern states. In the Northern Territory (NT) it has been trapped as far south as Alice Springs.

The department has continued its work on mapping the distribution and seasonality of the pest using pheromone traps to attract the male moths, which are then identified by dissection or by molecular techniques. We are maintaining a laboratory colony for experimental work and documenting the current host plants. To date, we have only recorded this pest on plants from the grass family (Poaceae), including maize, sweet corn, sorghum, millet and Rhodes grass, but there are a large number of other potential hosts recorded from overseas. During this wet season, significant damage has been caused to sorghum crops being grown for forage on cattle stations.

The department is collaborating with Queensland and Western Australia on the developing situation and is a partner with these two jurisdictions in a Hort Innovation funded project surveying for biological control agents including parasitoids, predators and entomopathogens (insect diseases). We have also provided material to CSIRO and New South Wales Department of Primary Industries for molecular testing for insecticide resistance.

The department provides advice on control measures to growers and has a range of extension material available:

NT Rural Review – May 2021

- [NT Government fall armyworm webpage](#) - factsheets are in the more information section of the webpage
- webinars and podcasts:
 - [NT Farmers YouTube](#)
 - [AusVeg, Part 1](#)
 - [AusVeg, Part 2](#)
 - [AusVeg, Part 3](#) (features the NT)
 - [AusVeg, Part 4](#)
 - [Plant Biosecurity Research Initiatives \(PBRI\) fall armyworm podcasts](#)
 - [Episode 8: Trial observations and laboratory findings on fall armyworm in the Northern Territory](#)



Caption: Fall armyworm can cause damage to crops and has been found in the Territory. Entomologist Praise Tadle (NT Department of Industry, Tourism and Trade) and Simone Cameron (NT Farmers Association) check for fall armyworm

More information

Advice on identification, biology and control can be obtained from:

Entomology Section
Phone: [08 8999 2258](tel:089992258)
insectinfo@nt.gov.au

Irrigation workshop

Region: Greater Darwin, Katherine Region | Topic: Horticulture

May 2021



Caption: Field demonstration at the 2021 Irrigation Masterclass, (March 2021)

Darwin and Katherine growers turned out to learn about best practice for irrigating at the recent irrigation masterclasses held in Darwin and Katherine in March 2021.

The masterclasses were a collaboration between the Northern Territory Government, [NT Farmers Association \(NTFA\)](#), [Australian Mango Industry Association \(AMIA\)](#) and [Irrigation Australia](#) as part of a [Hort Innovation](#) mango best practice project.

Paul Wilmott from Irrigation Australia ran the sessions, covering topics such as monitoring soil moisture levels, crop water use and testing the efficacy of your system in the field. Following the poor 2019 to 2020 wet season, water use efficiency became more topical for Territory growers. Sarah Hain (AMIA), Di Renfree (NTFA) and Rowena Eastick (Territory Natural Resource Management) provided a snapshot of the various water use efficiency projects currently underway to engage growers in understanding how to be more efficient with their water.

Many of the growers admitted attending for the mini trade show that was hosted as part of the masterclass. More than 20 companies displayed the latest in water monitoring and irrigation equipment.

According to the Department of Industry, Tourism and Trade, Plant Industries Director Matt Hall, "Around 70 people registered for the workshops and there was some really positive feedback from growers on the day. The stallholders are keen to be involved in a similar event in Queensland, so we are really happy with the outcome".

Got a pest? We'll test it and tell you the rest

Region: Greater Darwin, Katherine Region, Central Australia | Topic: Horticulture, Biosecurity

May 2021



Caption : Department of Industry, Tourism and Trade Entomology staff member Haidee Brown checks out insects from the reference collection. This collection is used to help identify specimens sent in from growers and the general public.

Have you got something bothering your bananas? Is there a critter crawling on your cassava? Maybe there's a monster munching your mangos?

If you have an insect or plant disease query, the diagnostic team can help.

If you like to browse the web we have a range of field booklets, agnotes and factsheets available on pests and beneficials in mangos, tropical vegetables and more. View the [department's publications search](#) where you can search by crop/host or pest, such as 'snake bean' or 'ant', or browse our plant pest and disease category, or check out our fact sheets and photographs at [Northern Territory Insects](#).

The diagnostic team can also identify a specific organism for you and provide management advice. Phone, email or send us a specimen. This service is available for commercial and backyard producers. Identifications and advice are confidential and free of charge for Territorians.

Our ability to identify your specimen depends on us receiving a fresh, well-prepared sample or a clear photo with collection details. If a plant disease is suspected, a living plant sample is best. We'll need to know:

NT Rural Review – May 2021

- the name of the person submitting the sample, and the name of the person who collected / photographed the sample (if they are different)
- contact address
- email / landline / mobile
- locality or address of collection
- date collected
- host plant details.

Put plant material or insects into a sealed plastic bag or appropriately sized crush-proof container or jar. When using a jar, add some tissue at the bottom to prevent damage and to soak up any moisture. Specimens can be hand-delivered to Berrimah Agricultural Laboratories (Berrimah Farm Science Precinct, Makagon Road, Berrimah NT) or posted to GPO Box 3000, Darwin NT 0801.

If specimens cannot be delivered within two days, put insect specimens into the freezer and plant disease samples in the fridge until delivery is possible. Please don't mail specimens on a Friday as they stand a good chance of rotting and being super stinky after a weekend in transit.

More information

Entomology

Phone: [08 8999 2258](tel:0889992258)

insectinfo@nt.gov.au

Plant Pathology

Phone: [08 8999 2218](tel:0889992218)

plant.pathology@nt.gov.au

Spicing up the north

Region: Greater Darwin, Katherine Region | Topic: Horticulture

May 2021



Caption: Black sesame crop at Coastal Plains Research Farm, March 2021

This wet season has seen an expansion of the black sesame trials at Katherine Research Station (KRS) and Coastal Plains Research Farms (CPRF). As part of the collaborative [Cooperative Research Centre for Developing Northern Australia](#) (CRCNA), [Central Queensland University](#)-led project 'spicing up the north', four varieties of black sesame were trialled at locations across northern Australia in 2020. This year the top two performing varieties have been planted on a larger (0.5 ha) scale at each site.

The 2019-20 small crop trial showed that crop duration for black sesame is about 90 to 120 days from planting to harvest, with the Northern Territory locations having a shorter growing season than most Queensland grown crops. The plant height was 150 to 200cm with the position of the first capsule 60 to 150cm from the ground.

The hand-harvested seed yield of the four varieties across each of the trial locations, ranged from 1.37 to 3.04 t/ha, with the highest seed yield recorded in Biloela followed by Rockhampton, Katherine, Ayr, Darwin and Tully. This yield is significantly higher than the global average of 554 kg/ha. However, it is important to bear in mind this is only one year's data and greater losses of seed may occur during mechanical harvesting. The crop produced significant biomass in the range of 3-10 t/ha. This volume of biomass creates an opportunity for value-adding, with biomass waste being able to be used for briquettes and harvesting of antioxidants.

NT Rural Review – May 2021

This season will be looking at crop performance on a larger scale, grown in a rain-fed system. Multiple years' worth of data is critical for judging the performance of sesame in rain-fed systems when environmental conditions vary from year to year.

More information:

For more information on this project, including the market analysis and technical reports visit the [CRCNA's spicing up the north webpage](#).

For information on the CPRF or KRS trial contact Chelsea Moore, Department of Industry, Tourism and Trade (DITT) Agriculture Branch on [08 8999 2323](tel:0889992323).

To view the 2020 Agriculture webinar with project lead Associate Professor Surya Bhattarai and Tienieke Trotter discussing the 2020 results visit our [DITT YouTube video](#).

For growers interested in participating in the project in 2022, contact Tienieke Trotter by email t.trotter@cqu.edu.au.

A busy year ahead for the NT Young Farmers group

Region: Greater Darwin, Katherine Region, Central Australia | Topic: Event

May 2021



The NT Young Farmers group is a dynamic group for young farmers and agricultural professionals to network with one another and voice opinions. Spanning across all production industries including turf, vegetables, seafood and packing, this group is about meeting other young people in a social setting, making connections and building relationships.

NT Young Farmers Group welcomes new members to participate in the Generation Next Program, free professional development and events. See the table below for some of their upcoming events.

Month	Date	Time	Topic	Facilitator	Location / online
April	12	3pm to 5pm	Generation Next - how to talk to the media	Matt Brann - ABC Country Hour	460 Stuart Highway, Coolalinga
April	16	3pm to 5pm	Food Ladder hydroponics and protected cropping	Scott McDonald - Food Ladder	Second Street, Katherine
April	TBC	5:30pm to 7:30pm	Generation Next - how to identify if your mate needs a hand and how to give them a hand	Kate Gunn - i farm well	Online
May	19	7am to 8:30am	North Australia Food Futures Breakfast	NT Farmers	Darwin Convention Centre
June	TBC	3pm to 6pm	Parliament question time, drinks and nibbles	TBA	Parliament House, Darwin

To keep up to date, join the [Facebook page](#).

NT Rural Review – May 2021

Regular competitions are open to win tickets to the full [North Australia Food Futures Conference](#) in Darwin from 17 to 20 May 2021.

Beatrice Hill buffalo start a new chapter in southern Western Australia

Region: Greater Darwin, Katherine Region | Topic: Livestock

May 2021



Caption: Buffalo enroute from Beatrice Hill in the NT to Quindanning in WA

Riverine Buffalo have safely made the 4,410km journey from the Department of Industry, Tourism and Trade's Beatrice Hill Research Farm in the Top End of the Northern Territory (NT), to their new home on a 400 hectare farm near Quindanning, two hours south of Perth in Western Australia (WA).

"These buffalo are the product of a breeding program which started in 1994 when we imported four heifers and four bulls from the United States. Since then, semen from around 20 Italian Riverine Buffalo was also introduced, to ensure genetic diversity", said respected buffalo researcher and breeder Barry Lemcke, who developed the herd at Beatrice Hill.

A hardy and quiet breed, the Riverine Buffalo produces up to 20 litres of milk per day, which contains twice the milk solids of regular cow's milk, making it well suited for cheese and yoghurt production.

"While it takes 10 litres of cow's milk to produce a kilo of cheese, it only takes 5 litres of buffalo milk. This means dairy buffalo farmers can command a premium price for their product", Mr Lemcke explained.

Local knowledge and expertise made all the difference

“Given WA’s strict quarantine laws, the experience is not for the faint hearted”, said the new owner of the buffalo, Graeme Carthy. “Special thanks to buffalo expert Barry Lemcke who played an instrumental role in completing the mountains of paperwork required to get the buffalo across the border”.

This was backed up by logistical support from Michael Swart of Wildman River Stock Contractors, who was the driving force making it happen, responsible for transporting the animals and ensuring their wellbeing throughout the journey. Their combined expertise is what got the project across the line.

“The agriculture departments on both sides of the border were also the best I’ve dealt with in a long time and I’ve had a lot of exposure to various government departments over the years”, added Mr Carthy.

The future looks bright for the NT buffalo industry

When asked about the significance of this deal and what it means for the NT buffalo industry Michael Swart said, “This exercise reconfirms our belief there is a marketplace for Riverine Buffalo, both locally and internationally. We are just starting to get somewhere in developing the free-range buffalo industry, holding weaners over the wet season so we can feed them into the live export trade.”

When asked about their potential for dairy exports, Mr Swart added, “It will only be a matter of time before we establish large dairies of Riverine Buffalo here in Australia that feed into the South East Asian market to our north.”

As the herd settles in, their new owner is optimistic about the long term potential in buffalo

Echoing Mr Swart’s comments, Graeme Carthy sees huge potential for buffalo products in WA. “This is an opportunity to be a price setter rather than a price taker, as we’re getting in on the ground floor. I’m considering a variety of options for both buffalo milk and meat products. There’s been a lot of interest in the milk, particularly from boutique markets. While buying the herd was a big outlay to start with, I take a long-term view on the investment”, Mr Carthy said.

NT Rural Review – May 2021



Caption: Buffalo enroute from Beatrice Hill in the NT to Quindanning in WA

Where does this summer fit in the long-term rainfall record?

Region: Central Australia | Topic: Livestock

May 2021 | Alison Kain, Pastoral Production Officer

The summer of 2020/2021 has seen pretty wonderful rainfall for most of Central Australia and it is a relief to see the landscape so green! Before we start to think this is 'the new normal', it is worth taking a moment to look at long-term rainfall records to see where this fits in the bigger picture.

Imagine you are standing at the cattle yards at the Alice Springs Show. Someone new to the region asks about our annual rainfall and we are quick to reply that it is around 260mm to 270mm. However, most of our grass growth occurs during the warmer weather from October through to March, and the average rainfall for Alice Springs during the summer period is 199mm.

Average rainfall totals are calculated by adding up the rainfall totals for all the years on record and dividing that by the number of years. This is also known as the mean rainfall. The problem with this method is that the exceptionally wet years really distort the average in our variable climate. A better way of looking at it is to consider the median. The median is calculated by listing all records from the highest to the lowest and using the middle record to describe what you get half of the time. Table 1 shows that the median summer rainfall for Alice Springs is 174mm, a much lower amount than the annual mean.

Table 1: Average annual calendar rainfall, average summer rainfall and median summer rainfall for various locations in the Alice Springs region (data from bom.gov.au).

Location	Average annual rainfall Jan-Dec (mm)	Average summer rainfall Oct-Mar (mm)	Median summer rainfall Oct-Mar (mm)	Years of data
Tennant Creek	466.7	424.1	429.1	1970-2021
Aileron	304.1	233.5	217.0	1949-2020
Alice Springs	277.1	199.3	174.4	1942-2021
Henbury	224.1	154.5	143.2	1899-2011
New Crown	180.9	124.8	74.2	1950-2014

As well as looking at summer rainfall totals, it is also important to think about how much **effective rain** has occurred. In arid regions, it is well understood that about half the rainy days are isolated occurrences. It is very common to have small daily falls of anything from 1mm to 25mm with two or three weeks between each fall, just enough to settle the dust but not grow any grass. These small events can quickly add up to 70mm or 80mm over the summer. If we take that off our median summer rainfall

NT Rural Review – May 2021

for Alice Springs, our effective median summer rain drops from about 174mm to about 100mm. To reiterate, that means in half of all years the effective grass growing rainfall is often less than 100mm which isn't a lot but is still enough to get a pasture **growth event**.

For pasture growth to occur, enough **rainfall** is required to maintain **positive soil moisture** levels for one week. Positive soil moisture levels mean there is enough water in the soil for plants to get a drink. These conditions are described as **initial effective rainfall** and are more likely to occur when it is overcast for a couple of days, reducing evaporation. Initial effective rainfall allows for germination of annual plants (such as oatgrass, button grass and pigweed) and regrowth of perennial plants (such as buffel grass, umbrella grass and saltbushes). Around Alice Springs, initial effective rainfall in summer is approximately 30mm and such an event happens about twice a year (see table 2 below).

To achieve mature growth with a bulk of feed that can provide useful pasture, a **carryover rainfall event** is needed. This requires a combination of rainfall and low enough evaporation to maintain positive soil moisture levels for about four weeks. Around Alice Springs, this requires at least 60mm of rain and tends to occur about once each summer. Defining a pasture growth event can be tricky as there is a range of variables that contribute to ensuring suitable conditions, including: the amount of initial effective rainfall, the timing and amount of follow-up rain, and low enough evaporation rates (influenced by temperature, humidity, cloud cover and wind). The amount of rain required for a pasture growth event also varies across the region, and is affected by land type, soils and the time of year.

Between Alice Springs and Tennant Creek, the likelihood of getting one or two growth events per year is quite high. However, the chance of getting an annual growth event declines the further south you are, and a full growth event might only be experienced once every few years near the South Australian border, such as at Charlotte Waters (table 2). The rainfall data for the past 30 years shows that around Alice Springs, growth events have occurred in most years, even if the annual rainfall total is often quite low (figure 1). Making the most of these growth events is critical for consistent, profitable production.

Table 2: Number of expected initial effective rainfall events and carryover rainfall events for various locations in the Alice Springs region between October and March (Perry et.al. 1962)

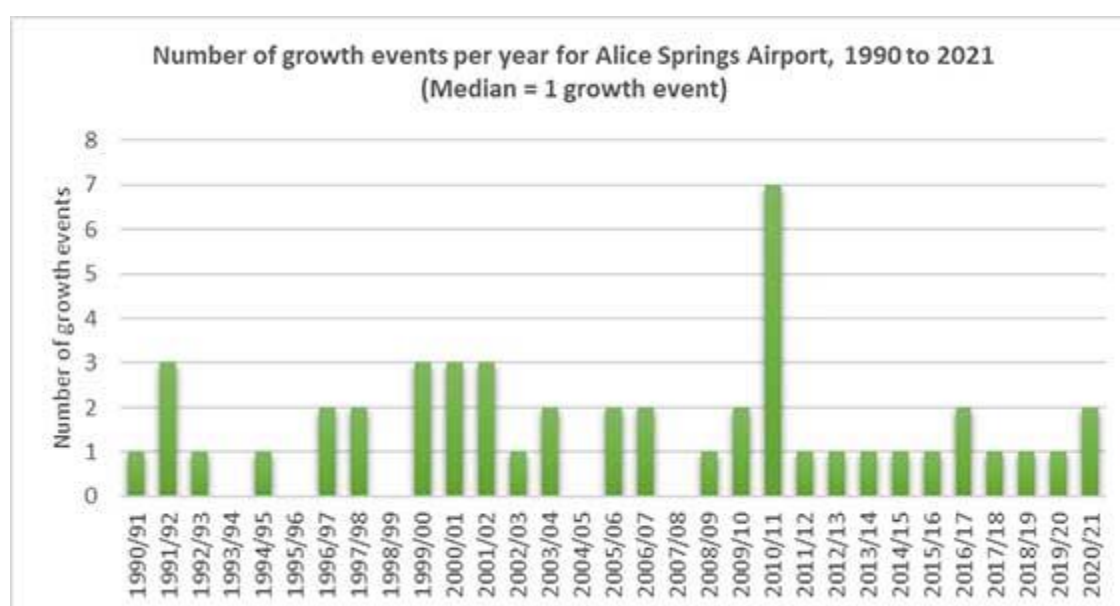
NT Rural Review – May 2021

Location	Initial effective rainfall events	Effective carryover rainfall events
Tennant Creek	2.27	1.77
Barrow Creek	2.12	1.46
Ti Tree	2.39	1.57
Alice Springs	2.04	1.28
Hermannsburg	1.83	1.07
Henbury	1.44	0.69
Charlotte Waters	0.61	0.21

While the very wet years can provide an opportunity to improve land condition and build a reserve of feed that could last for a couple of seasons, it is important that long-term production goals and stocking rates are not based on average or above average rainfall. Even using median rainfall as the 'normal' condition can be misleading; it is important to remember that half of all years will be drier than the median. For the summer of 2020/2021, Alice Springs received 275mm of rain, well above the average of 199mm and the median of 174mm. In fact, this summer was in the 80th percentile, which means that eight out of every 10 years would be drier. For long-term planning (20 years), it would be wise to expect only four summers to be as wet or wetter than the one we have just experienced. It's not likely that this is the 'new normal'!

In the next issue, we will investigate the characteristics of Central Australian landscapes that enable a productive grazing industry in such a variable climate.

Figure 1. Number of growth events at the Alice Springs Airport from 1990 to 2020. A growth event is described as approximately 60mm, or more, falling within a period of about two weeks.



NT Rural Review – May 2021

For the record, Alice Springs received 275.2mm from October 2020 to March 2021 making it the 17th wettest summer since 1941 and on a par with the summer of 1976 when 276.6mm was recorded.

Perry, R.A., Mabbutt, J.A., Litchfield, W.A., Quinlan, T., Lazarides, M., Jones, N.O., Slatyer, R.O. and Stewart, G.A. (1962). **General report on lands of the Alice Springs Area, Northern Territory, 1956-57.** Land Research Series No. 6. CSIRO, Melbourne, Australia.

High school kids to the rescue!

Region: Central Australia | Topic: Livestock

May 2021 | Alison Kain, Pastoral Production Officer



Caption: Danielle Brown showing student Ashley Harrison the importance of collecting accurate records for herd management and research projects.

February is the start of a busy cattle handling period for the Northern Territory Government's research farms in Central Australia. The weaning muster this February saw 914 animals processed over seven very long, hot days.

For the past couple of years, the Northern Territory Government cattle research stations have supported high school based agricultural education in Central Australia, with Rural Operations students from the Centralian Senior College (CSC) completing hands-on training as part of our cattle musters.

Danielle Brown runs the Rural Operations subject at CSC. Danielle says, "The students are gaining valuable skills that they can take with them into the Industry. We really value the opportunity to work with cattle on the research stations".

This year the students were much more than just interested participants. Their involvement saved the day! On the biggest mustering day, three key personnel were unavailable so the students stepped up and provided the workforce that allowed the muster to go ahead. Bryan Gill (Old Man Plains Research Station manager) has many years of experience managing pastoral operations and was impressed by the student's willingness to work hard and show genuine interest in the task at hand.

"Danielle does an amazing job getting the students ready so that they are really capable and helpful in the yards," said Bryan. Along with supervising and educating the students about cattle research tasks, this February Danielle also took on the very important role of recording all research data observations onto the field computer.

NT Rural Review – May 2021

The program is offered to students from various year levels. It is an elective subject, which means the students who join the class have a keen interest in agriculture. Rhiannon is in year 12 and Kelsie in year 10. As part of the muster, Rhiannon and Kelsey have learnt skills in moving cattle within the yards and, even though it's hot, dusty work, they really enjoyed their experience. Other students, like Ashley, were involved in recording data helping them appreciate the importance of keeping detailed, accurate records.

The students showed a lot of maturity and responsibility with their tasks. These are great skills for kids who are showing real interest in being part of the rural industry when they leave school.



Caption: Rhiannon Muller and Kelsie O'Toole are interested in working in rural industries when they leave school and showed a keen interest in learning cattle handling skills.



NT Rural Review – May 2021

Caption: Blake Yodgee learning to quietly and safely move cattle in the yards. The students performed important roles during the musters.

Central Australian research stations provide training opportunities for NTCA programs

Region: Greater Darwin, Katherine Region, Barkly Region, Central Australia | Topic: Livestock

May 2021 | Alison Kain, Pastoral Production Officer



Caption: NTCA Industry Development Program and Real Jobs Program participants learning how to safely and quietly move cattle through the yards (photo from NTCA).

There was a buzz of learning at the Arid Zone Research Institute (AZRI) cattle yards during February 2021 with 18 young adults undertaking practical skills training in rural operations. The participants are part of the Industry Development Program and the Real Jobs Program, both run by the Northern Territory Cattleman's Association (NTCA), with funding from Northern Territory Government. Participants in both programs are working towards a Certificate II in Rural Operations.

Most of the participants have strong connections with the pastoral industry. However, not all of them have had the opportunity to gain work experience or qualifications. Their focus and willingness to learn was impressive and there is every indication that program graduates will go on to be valuable, contributing members of the pastoral industry about which they are so passionate. Participants came from right across the Northern Territory, including the Katherine, Barkly and Central Australian regions.

Russell Young from Charles Darwin University delivered the training, with hands-on experience at the department's research stations. Participants developed practical skills in maintaining water points and bores on Old Man Plains Research Station. The

NT Rural Review – May 2021

cattle handling sessions were at the AZRI yards, using the AZRI Droughtmaster sentinel herd, with a focus on low-stress stock handling techniques.

Trainer Russell Young praised the AZRI cattle, saying, “The students (gained) a lot of confidence within this area. The cattle have an extremely quiet, ideal temperament for this kind of training. They are a huge credit to the research facility.”

Many of the participants had little to no experience of working cattle prior to the training yet they thoroughly enjoyed this aspect of their studies!



Caption: Trainers and participants acknowledged that the excellent temperament of the Arid Zone Research Institute cattle made them ideal for training activities (photo from NTCA).

Investigating the risk of oxalate poisoning for breeder cows grazing irrigated buffel grass

Region: Central Australia | Topic: Livestock

May 2021 | Chris Materne and Alison Kain, Pastoral Production Officers

Buffel grass is a valued pasture species for livestock in Central Australia. Typically, it occurs with native grasses and is capable of producing large amounts of palatable, nutritious feed. Buffel grass also does well under irrigation, providing a secure source of feed in a region that is known for low and unreliable rainfall. While growing irrigated fodder for grazing as pasture isn't common in Central Australia, the managers at Territory Grape Farm, Janet and Roy Chisholm, have access to a good supply of water and the infrastructure necessary to grow approximately 50 hectares of buffel grass under pivots.

Janet says, "We wanted to create a body of feed for our cows and calves regardless of rainfall. It was pretty clear that buffel grass would do well with irrigation but we were also aware that it can cause oxalate poisoning so we wanted to find out more."

Buffel grass can have very high concentrations of soluble oxalates, particularly when it is young and actively growing. Under certain conditions, such as when growing as a monoculture or at the end of extended dry periods, high oxalate concentrations may lead to health problems for livestock if the soluble oxalates are absorbed into the blood stream and bind to calcium ions. For particular groups of cattle, this can cause either acute hypocalcaemia or the formation of calcium oxalate crystals. Calcium oxalate crystals that form in the kidney tubes can interfere with kidney function and cause urinary obstruction. Calcium oxalate crystals can also damage blood vessels, as well as organs including the liver and the rumen wall. Although the occurrence of oxalate poisoning in cattle is probably very low for well-managed stock, groups of cattle that are most susceptible include hungry animals, travelling stock, those not accustomed to high oxalate pastures, first-calf heifers and young male cattle with periodic low water consumption.

From July 2019 to June 2020, a study was undertaken on Territory Grape Farm to investigate soluble oxalate levels in buffel grass under irrigation. Located approximately 180km north of Alice Springs, it has uniform red, sandy soils. Rain can occur at any time of the year but mostly in summer (warm wet summers and cool, dry winters). The area doesn't typically get frosts in winter and it is usually warm enough for some buffel grass growth to occur all year round if there is sufficient soil moisture.

What did we do?

Pasture samples were collected from irrigated buffel grass that was either grazed or ungrazed. We also sampled grazed buffel grass at a non-irrigated site (rain-fed). Pasture samples were collected throughout the year and sent to laboratories specialising in plant nutritional analysis.

Because monocultures of irrigated buffel aren't common in Central Australia, we also included pasture samples from two sites (not irrigated) on Old Man Plains Research Station (OMP), located 20km south of Alice Springs. These sites have slightly more fertile soils than at Territory Grape Farm and support a mixture of grasses, including buffel grass and native grasses, such as oatgrass (*Enneapogon avenaceus*) and button grass (*Dactyloctenium radulans*).

At the Territory Grape Farm, one hundred and twenty Santa Gertrudis crossbred and Droughtmaster cows, and their progeny (65 calves), were put on the buffel pasture in early April, three months prior to the commencement of irrigation in July 2019. Blood samples were collected from 30 individual cows in April 2019. Twenty-four cows were resampled in June 2020 after 12 months grazing the irrigated buffel grass.

Comparing irrigated and rain-fed pastures

Irrigated buffel grass was grown under two 25 hectare centre pivots. The pivots applied water on alternate days to deliver 50mm of water per week over the study period.

During the study, Territory Grape Farm received 215.6mm of rain, a little lower than the median of 297.8mm. Most of the rain fell in an event at the end of January, extending into early February, with follow-up rain in early March. This meant that rain-fed buffel grass on Territory Grape Farm was actively growing from February to May 2020. The sites on OMP also received rain (93mm) in late January and early February resulting in a pasture growth event.

Buffel grass grows well in warm conditions and daily maximum temperatures were suitable for the irrigated buffel grass to grow for pretty much the entire study period. However, it is likely that growth would have been slower during July and August 2019, and again from May to August 2020, when temperatures were cooler.

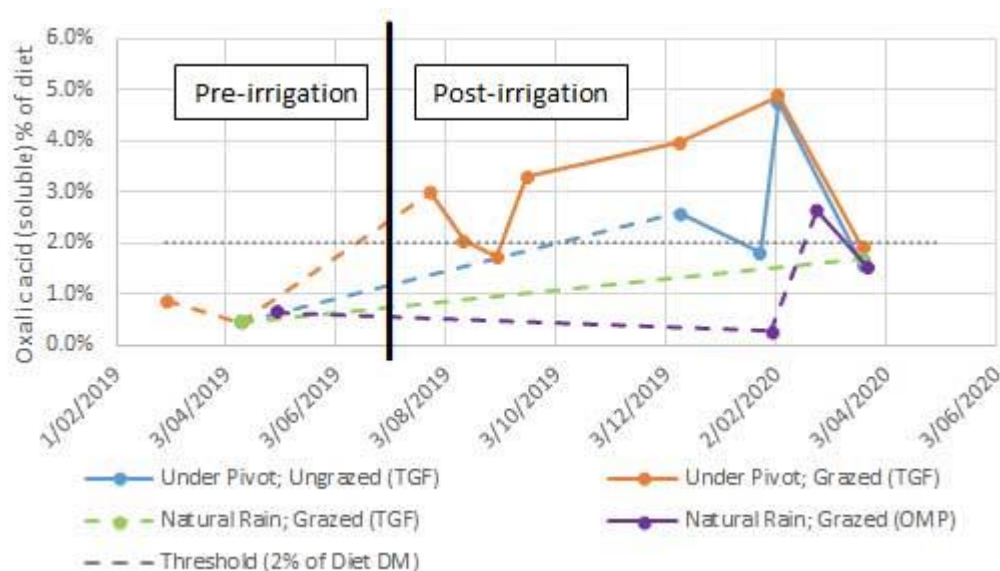
Oxalate levels linked to irrigation, growth phase and moisture content

Soluble oxalate levels in the irrigated pasture were consistently above the recommended <2% of dietary dry matter (DM) for the measured periods. In contrast, in the non-irrigated buffel, on both Territory Grape Farm and OMP, soluble oxalate

NT Rural Review – May 2021

levels only exceeded the recommended threshold for short periods after the rain-fed growth event in late January and early February 2020 (figure 1).

Figure 1: Soluble oxalate percentage in buffel grass over the study period separated by grazing and watering treatment and sampling site (Note: The broken lines only connect data collected prior to irrigation or rain initiated pasture growth to data post pasture growth and do not represent the change or trends in soluble oxalate levels during those periods).

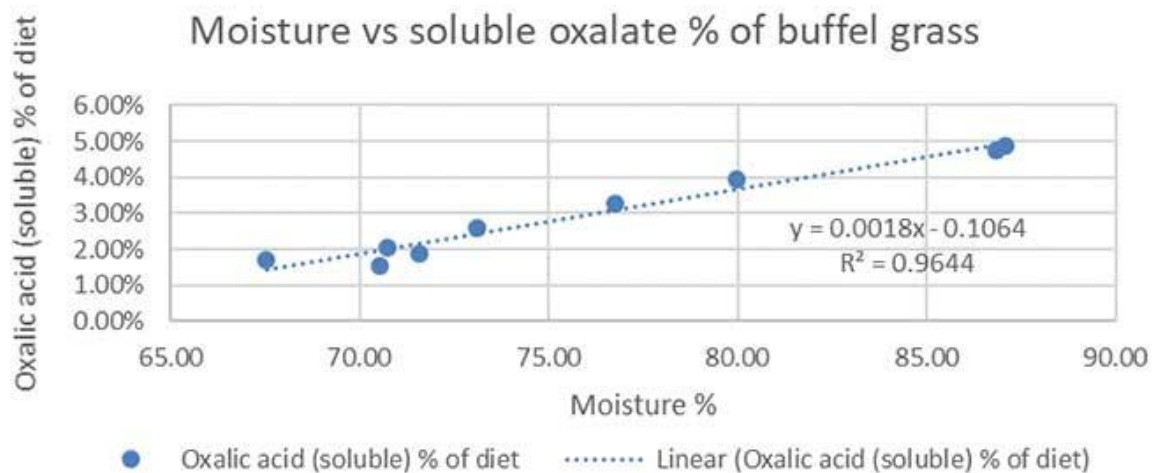


Oxalate levels can vary depending on the growth stage of a grass plant. Soluble oxalate levels were especially high during the early growth phase, when the buffel had lots of fresh, green leaves. This occurred in both the irrigated pastures and the rain-fed pastures. Under irrigation and consistent grazing, buffel grass was kept in this early growth phase. Without grazing, the irrigated buffel reached maturity. Grazing pressure on the rain-fed buffel at OMP was much lower and these plants also progressed to maturity.

When rain occurred, all treatments showed a spike in soluble oxalates to above 4% DM (more than 2% above the recommended threshold). When it rains, nitrogen from the atmosphere is dissolved in the raindrops and is then readily absorbed by plants. An increase in nitrogen can cause changes in oxalate accumulation in certain plants (Libert and Franceschi 1987). This could explain the spike in soluble oxalates, even in irrigated pasture. The soluble oxalate concentration only remained at this peak for a short period before the buffel grass matured and soluble oxalate concentration declined.

There was a strong correlation between moisture content and soluble oxalate concentration. As the moisture content of the grass increased, so too did soluble oxalate levels (figure 2). In terms of management, the results suggest that the risky level of soluble oxalate may drop significantly once the moisture concentration of the buffel grass falls below 70%.

Figure 2: There is a strong relationship between buffel grass moisture content and level of soluble oxalates.



Non-oxalate plants can help lower the dietary intake

The OMP site is more typical of an extensive rangeland pasture where cattle have access to a variety of grass species. After the January and February rainfall, soluble oxalate levels in the buffel grass peaked with almost twice the recommended threshold percentage of dietary DM, but levels dropped quickly as the plants matured. The two native grasses tested did not contain oxalates at any stage so, if buffel grass contained a high level of soluble oxalate, cattle grazing a mixed diet with those grasses could have a better chance of a dietary intake below the recommended threshold level for reduced risk of oxalate poisoning. It is also possible that oxalate levels only increased above the recommended daily limit for a short period and that animals didn't consume enough over that time to be badly affected.

How did the high levels of soluble oxalate in the irrigated buffel grass affect the cattle?

Blood samples were collected twice from breeder cows at Territory Grape Farm: 3 months prior to irrigation and again at the end of the study (photo 1). The samples were analysed for calcium, albumin and phosphorus because the concentration of these can all be affected by a high oxalate diet. Urea and creatinine levels were also measured as an indicator of kidney health.

Photo 1: Bryan Gill (DITT) taking pre-irrigation blood samples at the Territory Grape Farm (11 April 2019).



Despite soluble oxalate concentration being high, all the blood parameters tested remained in the normal range. Calcium levels were slightly lower at the end of the study, but well within the normal range for good health.

At the end of the study, albumin levels were also slightly lower than the initial levels but this could have been due to possible dehydration of the cattle when the initial samples were taken. Slightly elevated albumin levels are not uncommon in hot regions and may be a symptom of dehydration.

Phosphorus levels were slightly higher in 2019 compared with 2020, but were still within the normal range.

Urea and creatinine, which are good indicators of kidney health, were significantly different between the two sampling periods but were also well within the normal range. Based on the elevated albumin, the differences between urea and creatinine in 2019 and 2020 may also be explained by slight dehydration in the mob at the first bleed (Shilton *pers. comm.* 2020).

Management options to reduce oxalate poisoning risk

- While buffel grass growth is in the early growth phase, either provide cattle (especially unadapted animals) with a supplementary low oxalate feed source or allow access to unirrigated pasture.
- Sow an additional low oxalate pasture species into the buffel grass pasture to dilute the dietary oxalate levels, for example, a legume.
- Incorporate a rotational grazing system into the irrigated buffel grass grazing system to prevent grazing of pasture in the early growth phase. By allowing buffel plants to establish and mature, such a grazing strategy might also facilitate greater pasture

NT Rural Review – May 2021

production, as individual tussocks are likely to develop better root systems and become more robust.

Conclusion

Soluble oxalate levels in the irrigated, constantly grazed buffel grass remained higher than the recommended <2% of dietary DM. Although the cattle in the study were exposed to extended periods of potentially toxic soluble oxalate levels, their blood parameters did not indicate evidence of oxalate poisoning. Cattle rumen flora have the ability to adapt to high oxalate levels. In this instance, the cows had been exposed to a diet high in buffel grass before the study. It is likely that their rumen flora adapted to break down oxalates which reduced potential ill effects of high oxalate levels. That aside, the study did identify several key management options that would help minimise the likelihood of oxalate poisoning in 'at risk' cattle.

As Janet says, there are still many questions to answer, such as, "It was really interesting that the highest spike in oxalates was after the summer rain. How much does the nitrogen in the rain contribute to that spike and would that be something to consider if we decided to use nitrogen to increase grass growth under irrigation?"

Acknowledgements

Special thanks go to:

- Janet Chisholm
- Roy Chisholm and Territory Grape Farm staff for mustering cattle
- Bryan Gill (Department of Industry, Tourism and Trade Manager OMP) for collecting blood samples
- Cathy Shilton (Department of Industry, Tourism and Trade Principle Veterinary Pathologist) for advice and interpretation of the blood results
- Mark Hearnden (Department of Industry, Tourism and Trade Principle Scientist, Biometry) for advice on statistical analysis
- Kirsten Skinner (Department of Industry, Tourism and Trade Technical Officer) for assistance in bleeding.

References

Eccles, J. (2010). **Obstructive Urolithiasis (Bladder Stones) in Cattle**. Agnote: K57. Northern Territory Government,
https://industry.nt.gov.au/__data/assets/pdf_file/0011/233579/844.pdf

Libert, B. and Franceschi, V.R. (1987). **Oxalate in Crop Plants**. Journal of Agricultural and Food Chemistry, 35, 926-938.

Benefits already obvious from the Central Australian Self Herding (CASH) producer demonstration site

Region: Central Australia | Topic: Livestock

May 2021 | Bruce Maynard



Caption: An example of a homemade wind chime used as a sound cue to attract cattle to a desired location.

The first year of the Central Australian Self Herding (CASH) project saw multiple properties north and south of Alice Springs join the project.

Self-herding is the term given to a suite of management activities that use an understanding of livestock behaviour to alter the way an animal uses the grazing landscape. Taking an active role in shaping the way cattle reside in their home areas allows pastoralists to better manage grazing pressure and nutrient supply across large areas. Using techniques that are attractive to cattle effectively means that animals choose the desired outcome.

Four businesses with six stations have been involved in the project activities to date. Collectively they manage an area of 22,493 square kilometers with approximately 31,500 cattle under management.

The most notable example was the Reliable Retention strategy that has enabled one of the participants to reduce stock settling time on newly established water points from one week to one day. The cattle had been trained to recognize certain cues as offering a dietary reward and a desirable place to stay. The cues are simple and easy to use. In this case, the producer used a sound cue (a homemade wind chime constructed from an old windmill blade and a piece of poly pipe) and a smell cue

NT Rural Review – May 2021

(raspberry cordial). The new watering point was quickly recognised as a safe place to be and cattle did not attempt to head back to the old watering point. This enabled the cattle to quietly explore the new pastures and establish new grazing patterns more evenly from the water point. The use of self-herding strategies has changed the way this local producer moves cattle around the property. “Instead of trying to force an animal to go where we want them to go, we are now using attractants combined with stress free stockmanship to get an animal to go there because they want to.”

In 2021, the project will conduct more extension days in Alice Springs and on stations in the region. Further experiments will be conducted on the Old Man Plains Research Station to quantify some of the effects of specific self-herding tactics.

More information

For more information contact:

Bruce Maynard
Phone: [0428 890 110](tel:0428890110)
brucemaynard@outlook.com

Angus Duguid
Phone: [08 8951 8106](tel:0889518106)
angus.duguid@nt.gov.au.

Does it look like the grasses have died?

Region: Barkly Region, Central Australia | Topic: Livestock

May 2021 | Chris Materne, Pastoral Production Officer



Caption: There have been reports of large-scale death of mitchell grass on the Barkly Tablelands.

There has been some concern across the Barkly and Central Australia that a large number of perennial grass tussocks have died. Excellent rain across Central Australia has seen some growth of buffel grass and native grasses such as kangaroo grass, umbrella grass and cotton panic grass. However, there has been little germination of new tussocks and a lot of the old tussocks have not shown any sign of regrowth.

Much of the Barkly has also experienced a good wet season. However, following two dry years there is concern that there has been a lot of Mitchell grass tussock death.

The Livestock Industries branch from the Department of Industry, Tourism and Trade is interested in finding out what is happening in your region to determine if there should be a broader investigation. The questions are:

1. Have you experienced substantial perennial tussock death on your property?
2. Which land types or areas is it occurring in?
3. Are you concerned with recent perennial tussock death?
4. What grasses are you worried about?
5. Have you observed any germination from seed over the past two years?
6. How has this affected your management?

Land managers are encouraged to report their observations to Chris Materne, Pastoral Production Officer (based in Alice Springs). Chris can be contacted via email, chris.materne@nt.gov.au or phone on [08 8951 8135](tel:089518135).

NT Rural Review – May 2021

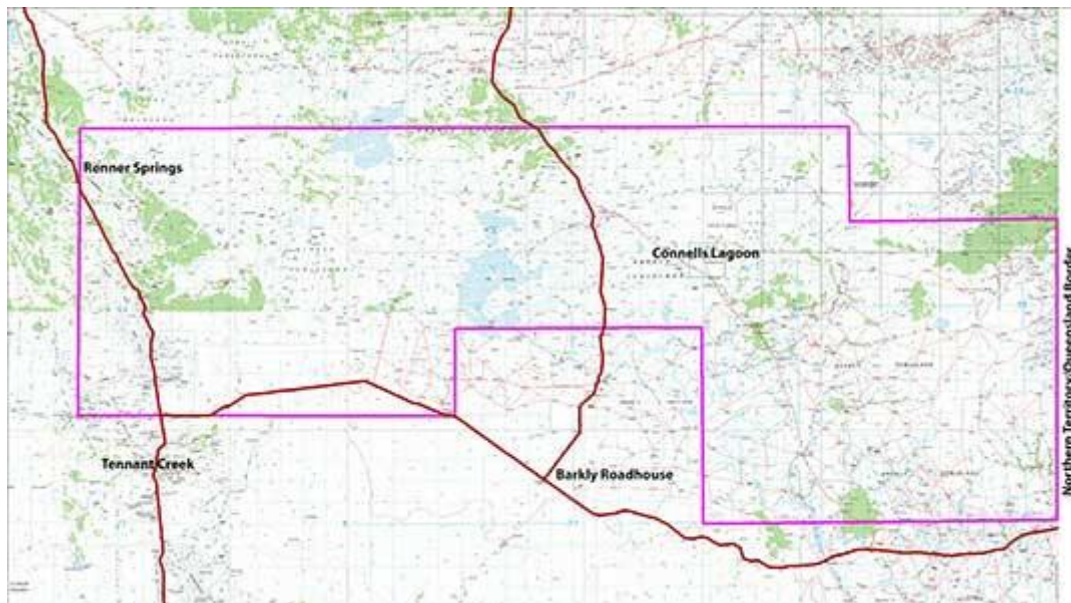


Caption: Some parts of Central Australia have experienced lots of death of mature buffel grass tussocks with little germination of new buffel grass seedlings.

Gravity survey commences June 2021

Region: Greater Darwin, Katherine Region, Barkly Region, Central Australia | Topic: Livestock

May 2021



The Northern Territory Government will be doing a gravity survey within the Barkly region starting in June 2021. The survey will involve a helicopter landing a minimum of every 2kms and taking a reading with a gravity meter. Each reading takes approximately five minutes. There will be **no** ground disturbance.

Gravity information is collected using a gravity meter used to measure changes in the earth's gravitational field. Gravity information is an important tool that will assist regional and national geological mapping.

The results from the gravity readings can be used to find rock formations under the ground and also detect possible areas of underground water.

This is a no impact program that will require helicopter access to some pastoral stations and Aboriginal land trusts.

More information

For further information, please contact:

Peter Campbell
Manager - Aboriginal Engagement and Land Access
Phone: [08 8999 5202](tel:089995202)

Grader grass - not a great grass

Region: Greater Darwin, Katherine Region, Barkly Region, Central Australia | Topic: Livestock, Horticulture

May 2021 | Melissa Bethel, Pastoral Research Officer



Figure 1: Grader grass seed head (left) and kangaroo grass seed head (right) (Source: Northern Territory Government and Wikipedia).



Figure 2: Grader grass seed heads (left) and mature grader grass (right) (Source: Northern Territory Government).

NT Rural Review – May 2021

This year's wet season has brought a vast improvement in pastoral growth in many areas when compared to the previous several years. However, the improved conditions and improved growth can also bring about the emergence of undesirable pasture species and woody weeds.

One such species recently spotted on several properties in the Katherine region is *Themeda quadrivalvis*, commonly known as grader grass. Grader grass is a Class B weed in the Northern Territory (NT). This means that land managers are required to actively identify and control existing infestations, and to prevent any new infestations.

Grader grass is invasive and when mature has very low palatability except when the grass is young. Pastures can become degraded and quickly overrun, as well as the fire risk being greatly increased due to the resulting high fuel loads. It favours disturbed soil, such as: roadways, fire breaks, drainage lines and heavily grazed pastures.

Identification

Grader grass is an erect tussock grass with an average height in the NT of one to 1.5m. As it matures, grader grass turns a distinctive orange-red or golden colour. At that stage, it has cane-like stems with triangular or fan-shaped seed heads and no leaf at the base. It is a rapidly growing annual species capable of yielding in excess of 5,000kg/ha within a single growing season.

Grader grass is quite similar in appearance and can be easily confused with the native perennial kangaroo grass *Themeda triandra*. Kangaroo grass is highly palatable, especially when young, and is generally smaller in height growing to around 1m. It has a more brown than orange-red colour when mature with leaves at the base of the plant.

Kangaroo grass is most reliably distinguished by the size of the spikelets and the nature of the hairs on their seed heads. Spikelets are eight to 14mm long and are either hairless or with fine hairs, and have only a slightly bulbous base. Grader grass has smaller spikelets four to 7mm long with conspicuous, bulbous-based bristles on the seed head. Kangaroo grass has more leaves that have flat margins, as opposed to the leaf margins of grader grass which are often folded. Kangaroo grass generally go to seed earlier in the season than grader grass. Early to mid-wet season it is not uncommon to see seed heads on Kangaroo grass, while seed heads can appear between February and June but are generally seen from late March in the NT for grader grass.

Control

As grader grass can be difficult and costly to control, weed hygiene is one of the preventions to incursion. Natural vectors, such as wind, do not easily disperse the seed. The primary modes of seed spread are via movement of vehicles, fodder,

NT Rural Review – May 2021

machinery or livestock through infested areas. Good hygiene practices will significantly reduce the risks of seed introduction and spread. Avoiding driving through infestations, cleaning vehicles and machinery thoroughly and regularly, and ensuring hay, pasture seed and livestock are uncontaminated before being purchased or moved will help reduce the spread of seeds. The development of a robust weed hygiene plan will be of great benefit in controlling the spread of grader grass, along with many other weeds. Grader grass sets a lot of seed. Soil seed banks can contain up to 20,000 seeds per square metre. The viability of seed on the soil surface declines rapidly within 15 to 18 months. However, up to 30% of seed buried at 5cm can remain viable for over 18 months. Disturbance of the area through activities such as grading, overgrazing or fire can expose the seed to favourable conditions and reignite a previously dormant infestation. In northern Australia mass germination and seedling emergence occurs within three to four days of significant rainfall.

Managing pastures to minimise disturbed soils and exposed areas is a key strategy to preventing and controlling infestations. Preventing erosion and avoiding the overuse of fire, overgrazing, short-slashing, the use of non-specific herbicides are all key management factors in the control and prevention of grader grass.

Employing good grazing land management practices to keep a high percentage of perennial pastures will prevent invasion by suppressing the germination of grader grass seed. It will also assist in reducing existing infestations.

Burning pastures can provide an ideal environment for an explosion in grader grass seedlings due to the removal of cover and competition from other grasses. Avoid burning grader grass infested areas completely if possible or limit burning to no more than once every five years. Carefully manage burnt areas by resting them until pastures have seeded to avoid or reduce any further establishment.

Slashing at full flowering prior to seed is a useful control method for grader grass. However, the short window of one to two weeks following seed head appearance means this can be hard to achieve due to adverse weather conditions and access to infestations. Slashed plants can also produce new seed heads if there is significant soil moisture present at the time or if there is sufficient rainfall soon after slashing. Due to these challenges, slashing is a viable control option for small, easily accessible infestations but is not practical for large areas.

Glyphosate is currently registered for control of grader grass in pastures, along roadsides and firebreaks, and around infrastructure. Spraying must be done before seed set in order to prevent re-establishment the following year. This method should be limited to areas where grader grass is the only remaining species as glyphosate is non-selective. It is recommended that desirable pasture seed should be sown soon after spraying to encourage competition with the next crop of seedlings. Spraying is recommended for smaller, isolated infestations as it becomes cost-prohibitive for larger scale infestations.

Due to the limitations outlined in these control methods, reducing the grader grass population in large-scale infestations is a challenge. The most cost-effective control

NT Rural Review – May 2021

method for larger areas and dense infestations is implementing a well thought-out pasture spelling program and avoiding overgrazing. This will ensure soil disturbance is kept to a minimum and high levels of productive, perennial grass species will provide strong competition for any established grader grass plants and future seedling emergence. A long-term spell of a minimum of two years across dense infestations and a strong weed hygiene program are recommended in order to regain some grazing production while steadily reducing grader grass density.

Whichever control method is implemented, the key to success is consistent checks in the following years to ensure the grader grass seed bed is thoroughly depleted.

More information

If you have a new or previously identified grader grass infestation to report:

Phone: NT Weed Management Branch

- Darwin - [08 8999 4567](tel:089994567)
- Katherine - [08 8973 8857](tel:089738857)
- Tennant Creek - [08 8962 4322](tel:0889624322)
- Alice Springs - [08 8951 9210](tel:0889519210)

weedinfo@nt.gov.au

NABRC meeting Darwin - 16 to 18 March 2021

Region: Greater Darwin, Katherine Region, Barkly Region, Central Australia | Topic: Livestock

May 2021



Caption: During the NABRC meeting- one of the workshops on the role of the RBRC's chairs and secretaries.

The North Australian Beef Research Council (NABRC) is an independent organisation made up of producer representatives, research organisations, education providers and farming organisations with the aim of giving oversight and guidance to the direction of research and research funding for the northern beef cattle industry.

NABRC held the first of their biannual meetings in Darwin in March this year with members travelling from Queensland, Western Australia and across the Northern Territory to attend. In attendance were the chairs of each of the 11 regional beef research committees (RBRCs) and their secretaries, where possible, as well as a representative from each of the relevant research organisations and industry bodies. Attending from the NT Department of Industry, Tourism and Trade (DITT) were Tim Schatz, the department representative on NABRC, and Kieren McCosker and Gretel Bailey-Preston, secretaries of the Katherine Pastoral Industry Advisory Committee (KPIAC) and Barkly Research Advisory Committee (BRAC) respectively.

A major function of the meeting was to review the roles of the RBRCs' chairs and secretaries to improve the running of the committees. There were presentations from experienced chairs and secretaries and interactive workshops about these roles and their purpose. It was a great opportunity for networking face-to-face, which has been on hold during COVID-19 restrictions.

NT Rural Review – May 2021

This NABRC meeting saw the changeover of NABRC chair from Dr Lee Fitzpatrick to Dr John Taylor. The chairs of the BRAC and the Central Queensland regional committee, Ben McGlynn and Swin Hudson respectively, are both resigning after many years. We thank Ben for his many years of involvement with BRAC and for representing the Barkly region on NABRC. We are looking to replace Ben soon.

There was an informative talk about the new Northern Breeding Business (NB2) program from Dr Lee Fitzpatrick, the chair of the NB2 management committee. He outlined the background of NB2, gave an update on progress to date and details of the pilot program to begin soon. There was also information presented about the current foundation projects that are part of NB2, including the DITT uSuckled project. The NB2 program hopes to enhance research, development, extension, and adoption for breeding and profitability of beef enterprises in the north.

Other presentations included updates from the Livestock Productivity Partnership (LPP) program that aims to improve ruminant efficiency with research going into Fecal near infrared spectroscopy (FNIRS) to predict pasture quality as well as supplementation. An update was also received on the National Livestock Genetics Consortium (NLGC), which is aiming to increase adoption of genetic technologies and improve the productivity of the beef industry through genetic improvement and the results of the Northern Australian Beef Industry Situation Analysis project were also presented.



Caption: Swin Hudson (Central Queensland), Dr Lee Fitzpatrick (former NABRC Chairman) and Ben McGlynn (Barkly Tableland) with their farewell cake.

More information

For more information, go to the [NABRC website](#).

For more information about the NT committees, contact Livestock Industries:

NT Rural Review – May 2021

- Tim Schatz, DITT NABRC representative, tim.schatz@nt.gov.au
- Kieren McCosker, KPIAC secretary, kieren.mccosker@nt.gov.au
- Chris Materne, ASPIAC secretary, chris.materne@nt.gov.au
- Gretel Bailey-Preston, BRAC secretary, gretel.baileypreston@nt.gov.au

Calf 48 hour

Region: Greater Darwin, Katherine Region, Barkly Region, Central Australia | Topic: Livestock

May 2021



Caption: Heifers at CQUniversity Australia's Rockhampton research facilities with different sensor systems on collars and tags.

Better detection of calving events for improved productivity

The Calf 48 hour project is evaluating and enhancing technologies to detect parturition events in cattle. The project aims to improve diagnosis of causes of calf loss in extensive grazing systems.

Led by CQUniversity Australia, in partnership with the Northern Territory Government's Department of Industry, Tourism and Trade (DITT), the focus of this Meat and Livestock Australia (MLA) funded project is on calf losses that occur in the first two days of life.

Researchers believe most deaths happen in this critical timeframe but the exact reasons remain unknown.

Consequently, the broad objectives of the Calf 48 hour project are to:

- better understand why and how some calves survive
- develop sensor systems that can be used by producers to monitor their own cattle and determine the causes of losses in their specific conditions.

NT Rural Review – May 2021

The expected outcomes of the Calf 48 hour project are direct improvements in the welfare of animals and improvements on productivity of our cattle industry through increased survival rates.

Technology for remote locations

Beef cattle producers in northern Australia face a massive challenge in monitoring and, if needed, intervening during calving, simply because nobody can know for sure when and where a breeder is during delivery in such remote locations.

During phase 1 of this project, CQUniversity researchers are evaluating a number of sensor systems to improve detection of location and behaviour data of cattle during calving (figure 1).

Improving the performance of these technologies will enable producers to know when cows calve, even in extensive and remote locations.

Phase 2 will be conducted on a large property on the Barkly Tablelands in collaboration with the DITT team where researchers from across northern Australia will combine forces.

The chosen area is representative of the extensive grazing systems in the north, where heat, distance to water, predation and a range of other variables are ongoing challenges to animal welfare and productivity.

More information

Dr Diogo Costa

Phone: [0409 445 454](tel:0409445454)

d.costa@cqu.edu.au

Annual bull sale - Wednesday 7 July 2021

Region: Greater Darwin, Katherine Region, Barkly Region, Central Australia | Topic: Livestock

May 2021



Caption: Top priced bull from the 2020 sale.

The Department of Industry, Tourism and Trade's (DITT) annual bull sale is an opportunity to purchase quality Brahman and Tropical Composite bulls from the department's high-fertility research herds.

The Brahman bulls presented for sale are the result of a 30-year breeding program. Animals are selected for their reproductive and growth traits, with artificial insemination (AI) sires used from well-respected studs in Queensland.

The Tropical Composite herd was developed approximately 20 years ago and had an original breed composition of 56.1% Brahman, 12.5% Africander, 12.5% Tuli, 6.3% Shorthorn, 6.3% Hereford and 6.3% Charolais. The composition may have varied slightly over time with the selection for fertility.

Both breeding programs produce cattle that are highly productive and adapted to the conditions of the Northern Territory. The aim of the breeding programs is to produce the most fertile animal possible while still meeting the live export market weight targets. The females are selected for early puberty and consistent re-conception while lactating. The sires in both herds are selected on their weight, percentage of normal sperm and scrotal size as a yearling. Polledness and their mother's fertility performance are also taken into account when making the selection.

NT Rural Review – May 2021

The majority of the bulls sold will be 2.5 years old (weaned in 2019) with some older bulls up to six years old. The bulls will be auctioned online with AuctionsPlus on Wednesday 7 July 2021. More information about the bulls will be available in a catalogue in June 2021 including BULLCheck results, estimated breeding values (EBVs) and photos.

There will be opportunities to view the bulls before the sale at the Katherine Research Station, including at the upcoming field day on Tuesday 27 April 2021.

For more information contact:

Gretel Bailey-Preston

Phone: [0448 771 449](tel:0448771449)

gretel.baileypreston@nt.gov.au

Production and welfare benefits from managing potential pain during castration and dehorning in the Northern Territory

Region: Greater Darwin, Katherine Region, Barkly Region, Central Australia | Topic: Livestock

May 2021



Caption: Weaners in the yards.

The Northern Territory (NT) Department of Industry, Tourism and Trade (DITT) has recently started a joint project with Western Australia, Queensland and Meat and Livestock Australia (MLA) to investigate the application of pain relief products during castration and dehorning in northern Australia. Production and welfare benefits from managing potential pain after routine husbandry procedures will be investigated.

Why?

The industry is constantly improving animal husbandry practices. With the recent introduction and approval of several pain relief products for use on calves, there have been calls for a large-scale trial to compare long-term production benefits to be conducted on 'real world' properties.

Outcomes

NT Rural Review – May 2021

Anticipated outcomes from the trial include:

- an assessment of any production benefit from providing pain relief to calves during castrating and dehorning, through monitoring liveweight, infection and any instances of mortality
- an assessment of the impacts of providing pain relief on animal behaviour following the procedures
- a survey of participating producers on their experiences using the pain relief.

What's involved for participating properties?

Participating properties will need approximately 600 calves that are to be castrated and / or dehorned (this may be at the same time as weaning depending on your operation). This will be worked in with your regular mustering time. Prior to castration / dehorning, calves must be able to be weighed and tagged with either a National Livestock Identification System tag or management tag with a unique number, so each individual animal's weight change can be monitored.

DITT will provide the pain relief products and a member of the DITT Livestock team will be there on the day to record animal information. Calves will then need to be reweighed three weeks later. A comparison will be made of the different groups following the procedures to see if the animals that received the pain relief products have a better liveweight response than those that did not.

Behaviour will be monitored through accelerometer tags and Global Positioning System collars on a select number of animals. These will be applied during castration / dehorning and removed when they return for weighing three weeks later.

Want to be part of the trial?

If you would like to be part of the trial, or would like some more information, please contact:

Melissa Wooderson
Katherine Research Station
Phone: [08 8973 8476](tel:089738476)
melissa.wooderson@nt.gov.au

Easy P phosphorus supplementation producer demonstration site

Region: Greater Darwin, Katherine Region, Barkly Region, Central Australia | Topic: Livestock

May 2021



Caption: Cattle eating supplement.

The Department of Industry Trade and Tourism (DITT) is seeking expressions of interest for properties to host a producer demonstration site (PDS).

The PDS program is aimed at increasing adoption of phosphorous (P) supplementation by comparing an easy to implement P supplementation strategy (known as Easy P) to current management.

What is Easy P?

The Easy P supplementation strategy involves including P in dry season supplement and putting bulk wet season P supplement out before the beginning of the wet season. No supplement delivery is required during the wet season. Easy P is an easy to implement strategy designed for properties where providing feeding supplement during the wet season is difficult.

What is an Easy P PDS?

The Easy P project is funded by Meat and Livestock Australia's (MLA) PDS program and is a collaboration between the Northern Territory (NT) DITT, Queensland (Qld) Department of Agriculture and Fisheries, and Western Australia (WA) Department of

NT Rural Review – May 2021

Primary Industries and Regional Development, aimed at increasing adoption of P supplementation across northern Australia.

There will be two PDS sites in Qld, three in WA and one in the NT. They enable producers to collaborate in research and development by hosting a research trial on their property. Regionally relevant findings from each of the PDS sites will be shared and presented at annual field days to facilitate peer-to-peer learning between host stations and neighbouring properties.

What is the purpose of the Easy P PDS?

Recent research has shown great benefits from feeding P supplement to breeding females in P-deficient areas, with increased weaning rates, weaner weights, cow weights and reduced mortality rates all combining to give an excellent return on investment from money spent on P supplementation.

Adoption of P supplementation is still relatively low in northern Australia. The Easy P project aims to increase adoption by demonstrating the benefits of P supplementation through a strategy that is easy to implement, even where wet season supplementation may have been considered to be too difficult in the past.

What is involved?

The PDS will start with maiden heifers due to be mated for the first time over the 2021 to 2022 wet season. Their performance will be monitored over four years. Over that time, they will have the opportunity to have three calves. DITT Principal Livestock Researcher, Tim Schatz, will manage the project and assist with data collection.

The host property must have two similar paddocks in P-deficient country that are secure and where the trial animals can remain for the 4-year duration of the PDS. DITT staff will conduct soil testing to determine P deficiency. The Easy P strategy will be implemented in one paddock and the other paddock will be managed in the way the host property normally does it, either receiving the normal station supplementation program over the wet season or no supplementation over the wet season.

The host property needs to also:

- have adequate stock handling equipment and data recording facilities, including vet crush and weighing equipment
- conduct two musters per year of the PDS paddocks (for example, May and September) to enable pregnancy testing, data collection and weaning of calves
- be willing to implement the supplementation strategies involved in the PDS (the supplement fed in the Easy P paddock may be sponsored)

NT Rural Review – May 2021

- be willing to share data collected during the project with industry and host field days to allow other producers to come and view the PDS and project findings.

DITT staff will record and analyse the data and can provide pregnancy testing if necessary. They will also help organise and run the field day with the cost covered by project funds.

What are the benefits to the host property?

You will get to test the Easy P strategy in your own environment and find out how it compares to current management.

You will also gain:

- increased knowledge of cattle performance on your property through rigorous data collection and analysis
- free soil and blood sample testing, free data recording and likely sponsorship of the supplement used in the Easy P strategy (to be confirmed)
- interaction with neighbouring properties and other PDS host properties
- participation in the research development and extension process for the improvement of the northern beef industry.

More information

Expressions of interest or enquiries can be made to:

Tim Schatz

Phone: [08 8999 2332](tel:0889992332) or [0429 677 833](tel:0429677833)

tim.schatz@nt.gov.au

Sharing research and technology with the University of Florida

Region: Greater Darwin, Katherine Region, Barkly Region, Central Australia | Topic: Horticulture May 2021



The Northern Territory Government has partnered with the University of Florida to collaborate on research and development in areas of mutual interest.

A new memorandum of understanding (MoU) has been initially signed for two years, but is extendable by mutual agreement. The MoU will strengthen and expand the research capacity of both organisations through sharing of research and technical exchange.

Specifically, joint investigation research regarding tropical crops will be shared, as well as an opportunity for research questions to improve production systems and returns for growers.

“It’s particularly important to share knowledge from diverse regions to help enhance knowledge of these tropical crops” said Dr Muhammad Sohail Mazhar, Horticulture Group Leader, Agriculture Division of the Department of Industry, Tourism and Trade.

No direct financial contribution has been committed to this MoU. The program has the potential to also develop joint research proposals to secure external funding, and where mutually beneficial, support the exchange of researchers, when the time is right, to build capacity and facilitate the transfer of technical knowledge.

Initially discussions on collaboration opportunities have begun regarding mango, passionfruit, and vanilla.

More information

Phone: [08 8999 2357](tel:0889992357)
plant.industries@nt.gov.au

New Northern Territory Biosecurity Facebook group

Region: Greater Darwin, Katherine Region, Barkly Region, Central Australia | Topic: Biosecurity

May 2021



The Department of Industry, Tourism and Trade has launched a new Biosecurity Facebook group to raise awareness of biosecurity and the important role it plays in the Northern Territory in protecting our economy.

The group will provide factual, relevant information to the Northern Territory community and key stakeholders about current programs, tips and tricks in the home and information on potential biosecurity matters.

Anyone can join the Facebook group, offering a platform for the community to ask questions and interact with other relevant stakeholders and the department.

Biosecurity is everybody's responsibility - join the [Biosecurity Facebook group](#)!

Katherine Research Station and Douglas Daly Research Farm field days

Region: Greater Darwin, Katherine Region, Barkly Region, Central Australia | Topic: Livestock, Horticulture

May 2021



Caption: Field day presentation in the paddock at Douglas Daly Research Farm.

The Northern Territory Department of Industry Tourism and Trade (DITT) recently hosted two agricultural field events at the Katherine Research Station and the Douglas Daly Research Farm (DDRF) in April 2021.

The field days were designed for attendees to be immersed in informative presentations, hands-on farm paddock tours and trade displays. There were over 70 attendees who received information about the latest developments in the agricultural industry. These included farm diversification options such as the emerging cropping sector, and more sustainable and efficient cattle production that could reduce calf loss and increase fertility.

There was much interest and discussion around the presentations by Dr Marina Fortes and Dr Kimberley Wocker around the PhenoBank Project, Arthur Cameron talking on rainfall, land condition and pasture growth, and viewing the bulls and breeding females to be included in the upcoming DITT Annual Bull Sale in July. The paddock presentation by DITT Research Officer Tim Schatz regarding grazing gamba grass was also of great interest as well as calf loss which DITT's Dr Kieren McCosker, Tim Schatz and Melissa Wooderson spoke on.

A livestock export delegation consisting of Mr Luke Bowen, Deputy CEO, Agriculture and Fisheries, DITT, Dr Susanne Fitzpatrick, Chief Veterinary Officer, DITT, Dr Melissa McEwen, First Assistant Secretary, DAWE, Plant and Live Animal Exports and

NT Rural Review – May 2021

senior live export industry stakeholders attended the lunch at DDRF before participating in a live export round table meeting.

Breakfast, lunch and afternoon drinks were used to network by participants and to continue conversations from the presentations. Trade displays were numerous with industry businesses in attendance.



Caption: Lunch at Douglas Daly Research Farm.

Taskforce to fight stock theft in the Northern Territory

Region: Greater Darwin, Katherine Region, Barkly Region, Central Australia | Topic: Biosecurity

May 2021



Caption: Taskforce Starlight has been established to combat stock theft in the Northern Territory.

Taskforce Starlight was formed and launched in March 2021. The taskforce is a collaboration between the Department of Industry, Tourism and Trade (DITT) Livestock Biosecurity Team, the Northern Territory Cattlemen's Association, the Northern Territory Buffalo Industry Council and the Northern Territory Police to combat stock theft in the Northern Territory (NT).

Taskforce Starlight, established for an initial period 12 months, will consist of a planning team and strategic operations teams made up of veterinary officers, livestock biosecurity officers and NT Police, based in Katherine, Darwin, Adelaide River, Alice Springs and Tennant Creek.

As part of the Taskforce, eight NT Police have been appointed as inspectors under the *Livestock Act 2008* with powers of investigation. A joint training program between NT Police and DITT Livestock Biosecurity was held in March 2021 to enhance investigation interoperability. Joint days of actions to target stock theft are also being planned across the NT.

The cattle industry is a big part of the NT's economy and stock theft has serious impacts on pastoralists. Taskforce Starlight will work to investigate and solve stock-related crimes in the NT, hold action days and roll out an awareness program to improve reporting processes. The *Livestock Act 2008* will also be reviewed to tighten legislative gaps to deter stock-related crimes.

NT Rural Review – May 2021

Stock crime can be reported by ringing the NT Police hotline on [131 444](tel:131444).

More information

For information on livestock biosecurity, go to the [Northern Territory Government website](#).

Western Australia makes changes to cattle import requirements from 1 July 2021

Region: Greater Darwin, Katherine Region, Barkly Region, Central Australia | Topic: Biosecurity

May 2021



Caption: Bovine Johne's disease regulation relaxed in Northern Territory.

The Western Australia (WA) Department of Primary Industries and Regional Development (DPIRD) has advised that the Johnes Disease (C-strain) requirements for importing cattle from the Northern Territory (NT) into WA will change from 1 July 2021.

What does this mean for NT producers?

NT properties who have been trading with WA under Johnes's Beef Assurance Scheme (JBAS) score 7 or 8 with an annual check test of 50 animals will be able to continue trading, however the sampling and testing requirements will change as well as the evidence required from properties where you have sourced animals introduced into your herd.

To accommodate for the changes which will be introduced on 1 July 2021, there will be a transitional period from July 2021 to July 2024 for NT and Queensland producers.

What are the new sampling and testing requirements?

- From 1 July 2021 all NT properties planning to move cattle to WA will require one negative screening test.
- By 30 June 2024, a second negative screening test will also be required.
- The two screening tests should be undertaken two to four years apart.
- If you have undertaken a negative JBAS sampling test (300 animals) prior to 1 July 2021, you will need to complete a screening test within two to four years of the last sample test during the transition period, and any further screening tests required in that period.

Screening test

- Faecal samples from **230 individual animals**, which must be collected by a registered veterinarian.
- Faecal samples from introduced cattle (up to a maximum of **50 introduced animals**).
- Laboratory fees for testing will be approximately \$5,700. Veterinary fees are additional.
- Turnaround time - testing will be completed within one week of receipt of samples.

What are the other requirements?

Biosecurity plan

- A registered veterinarian must oversee a property-specific plan for the property of origin that minimises the risk to the herd of introduction of JD (C-strain), including that properties supplying introduced cattle.
- A copy of the biosecurity plan does not need to be submitted.

Declarations

Producer and veterinarian declarations that declare:

- the imported cattle are from property of origin that meet WA's JD import conditions
- **for homebred cattle:** (up to 230) homebred cattle were included in the faecal herd screening test as per the conditions
- **for introduced cattle:** (up to a maximum of 50) introduced cattle were tested as per the conditions

NT Rural Review – May 2021

- any property that supplied cattle introduced onto the property of origin has undertaken JD testing in accordance with WA's JD import conditions
- the imported cattle have been grazed only on properties of origin and eligible properties that meet WA's JD import conditions and have not been in contact with cattle that do not meet WA's JD import conditions
- the imported cattle were born and grazed on properties that have been free from JD (C-strain) infection or clinical cases for the last five years
- copies of all laboratory results must accompany the declarations.

Properties which are unable to meet the WA requirements may submit an application for a permit to import. WA will undertake a risk assessment at a cost to applicant.

A video which outlines the changes is due to be released by WA soon.

More information

For full details of the changes, go to the [DPIRD website](#).

African horse sickness - what is it and what is the risk to Australia?

Region: Greater Darwin, Katherine Region, Barkly Region, Central Australia | Topic: Biosecurity

May 2021



Caption: In an outbreak report published by the World Organization for Animal Health in 2008 | Photo: World Horse Welfare.

African horse sickness is a serious viral disease of horses which is spread by biting midges. It can also affect donkeys, mules, and, less commonly, camels and also dogs which have eaten infected horse meat. There is no effective treatment or prevention for African horse sickness and up to 90% of horses who get the disease will die.

African horse sickness isn't in Australia, however it has recently been detected in South East Asia, with Malaysia and Thailand reporting outbreaks of disease for the first time in 2020. Infected insects could come into Australia on wind currents.

Horses with African horse sickness usually become very sick suddenly, and will rapidly deteriorate and die. Some of the signs can include:

- swelling of the face and eyelids
- swelling of the head, neck and chest
- difficulty breathing, with or without frothy
- discharge from the nostrils.

There is no effective treatment or prevention for this disease.

An outbreak of African horse sickness in Australia could have a devastating impact on the Australian horse industry. The Berrimah Veterinary Laboratories is currently

NT Rural Review – May 2021

undertaking research to determine which species of biting insects in northern Australia would be capable of spreading the virus. Australia has strict import conditions on equids to prevent the entry of this and other equine diseases.

African horse sickness is a notifiable disease and any suspect case must be reported to the chief veterinary officer.

If you notice **severe illness or sudden death in horses** contact your veterinarian or the Emergency Animal Disease Watch Hotline on [1800 675 888](tel:1800675888) immediately.

Ehrlichia canis update

Region: Greater Darwin, Katherine Region, Barkly Region, Central Australia | Topic: Biosecurity

May 2021



Caption: E.canis recovered dog with cloudy blue eyes.

The exotic tick borne disease, ehrlichiosis was detected in the Territory in June 2020. The disease is also present in the Kimberly region of Western Australia and APY Lands in South Australia. Surveillance of dogs during 2020 has indicated widespread distribution of the disease across the Territory, particularly in remote communities. It has also been diagnosed in station dogs which have had no known contact with community dogs.

The disease is now established in the brown dog tick population (as distinct from cattle tick) and remains a risk to all dogs, dingoes and foxes in the Northern Territory (NT).

Over 800 samples from NT dogs have been tested for ehrlichiosis at Berrimah Veterinary Laboratory with more than 200 dogs testing positive and many more reports of suspect cases in remote areas.

Signs and symptoms of ehrlichiosis infection in dogs include the following:

- fever
- lethargy
- loss of appetite
- weight loss
- swelling of chest or front legs
- cloudy eyes or conjunctivitis

NT Rural Review – May 2021

- pain and stiffness
- bleeding disorders such as nosebleeds or bruising on the gums or belly.

Infection must be treated with antibiotics for the best chance of recovery. Veterinarians have reported up to 25% death rate in dogs presented at the clinics, particularly when bleeding disorders are present. Cloudy blue eyes are a distinct characteristic of recovering dogs.

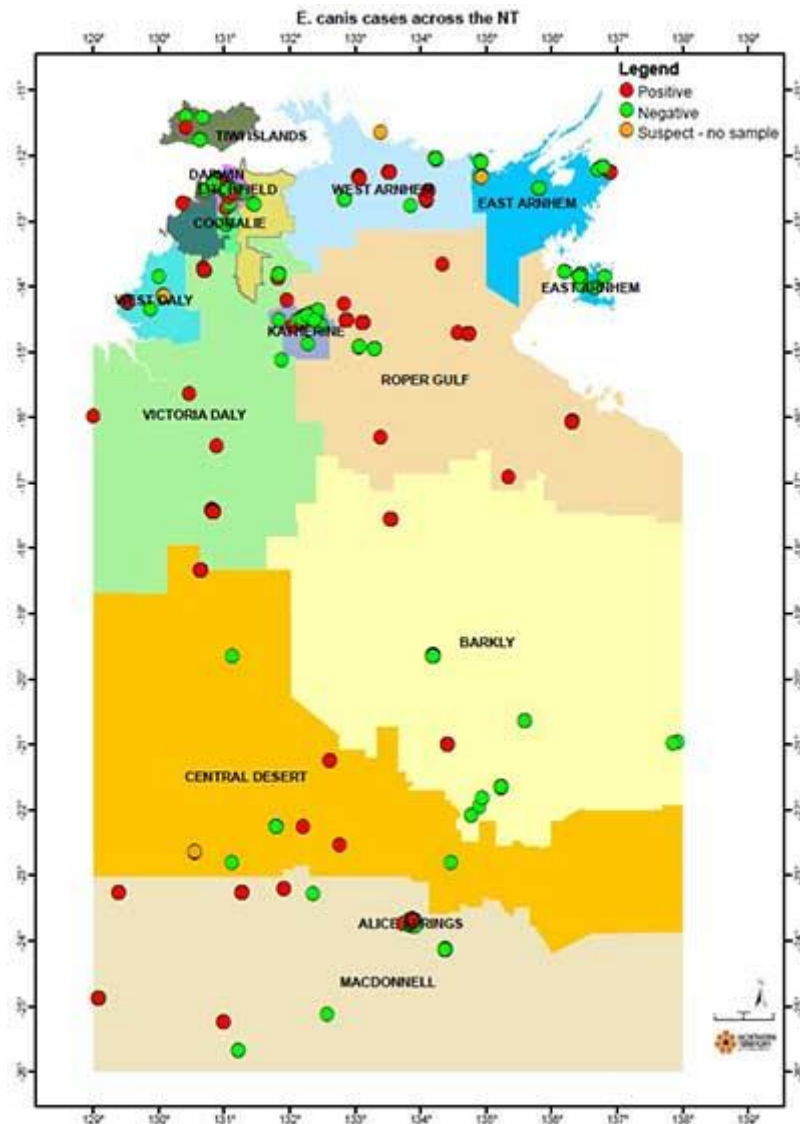
Ehrlichiosis infection in dogs can be prevented with the use of a combination of strategies. These include:

- having dogs on a tick control program - tick collars and spot-ons are the best primary protection used in combination with tablets and chews registered for tick control
- managing tick infestations in buildings and yard areas
- preventing dogs from entering tick-infested areas
- inspecting dog's daily for ticks, especially if they have been in tick-infested areas.

A management strategy is being prepared for the long-term management of ehrlichiosis in the Territory which will focus on:

- minimising the impact of ehrlichiosis on dogs
- preventing brown dog tick infestation in housing and the environment
- preventing the risk of ehrlichiosis infection in Territorians.

NT Rural Review – May 2021



Caption: NT Map showing E.canis test results.

More information

For more information on ehrlichiosis, take a look at the [NT Government website](#).

Walkabout disease

Region: Greater Darwin, Katherine Region, Barkly Region, Central Australia | Topic: Biosecurity

May 2021



Caption: The *Crotalaria* plant which causes Walkabout disease in horses.

In February and March 2021, a number of horses in the Katherine region of the Northern Territory (NT) were diagnosed with Walkabout disease.

This is also known as *Crotalaria* poisoning and as Kimberley horse disease. It affects horses that graze on plants of the genus *Crotalaria*. These plants are commonly known as rattlepods and Gambia peas.

The disease usually occurs when horses graze small amounts of the plant over a number of years with a slow progression of clinical signs in chronic cases. Acute cases are rare but can occur, with sudden onset of clinical signs soon after a horse eats a large amount of the plant.

The toxins in the *Crotalaria* plants are known as pyrrolizidine alkaloids and cause progressive liver damage. Once the toxicity affects more than 70% of the liver, the organ is unable to perform normal, vital functions.

Walkabout disease is a common cause of mortality in horses in the NT.

Horses with Walkabout disease may have any of the following signs:

- anorexia (off feed)
- weight loss
- jaundice (gums and the whites of eyes have a yellow or peach-coloured tinge)
- horses become dull and depressed
- muscle tremors, especially of the head and neck
- frequent yawning
- head pressing into a tree or a stable wall
- urine may be copper coloured or red

NT Rural Review – May 2021

- attacks of frenzy and violent, uncontrollable galloping
- difficult swallowing, horses may stop eating halfway through a mouthful of hay or grass
- horses often stand with their heads hanging down
- affected horses appear to be blind and may aimlessly wander, walking in circles or bumping into objects and head-pressing (hence the name 'walkabout disease')
- dragging of the hind legs, causing the hooves to have worn tips.

Treatment and prevention

Liver damage caused by pyrrolizidine alkaloids is not reversible. Anecdotal evidence suggests that horses may survive many years with reduced liver function, but may struggle to gain or maintain weight. Consult your veterinarian to develop a monitoring and treatment plan for managing long-term liver failure in affected horses. Once a horse develops signs of Walkabout disease, the prognosis is very poor.

Preventing horses from accessing *Crotalaria* plants is the best prevention. During periods of feed shortage, remove horses from paddocks that contain *Crotalaria* plants and feed good quality hay or a combination of hay and grain. If possible, remove all *Crotalaria* species from horse paddocks mechanically or by using appropriate herbicides.

More information

You can find images and information to identify Top End *Crotalaria* species on the [NT Herbarium website](#).

An Agnote is available on [Walkabout disease PDF \(339.6 KB\)](#).