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## Wet season supplementation

*Whitney Dollemore, Pastoral Production Officer, Katherine*

Supplementation in the dry season targets the most limiting nutrient i.e. protein. Urea is a non-protein source of nitrogen which feeds the rumen microbes making them more efficient at breaking down dry season pasture. After the rains when pasture plants start to regrow, the digestibility in the pasture is increased releasing more energy and the new shoots are the highest in protein. The next most limiting nutrient is phosphorus (P). In order to get more value from the native pastures over the wet season i.e. not waste the excess amounts of energy and protein in the green pick we supply animals with a wet season lick which is predominately phosphorus (see Table 1).

Phosphorus supplementation of breeding animals is hard to justify when an immediate increase in production is not observed in a commercial situation. Breeding animals do have storages of phosphorus in bone which can be mobilised in times of dietary restriction, however, a 400 kg cow has only 600 g (20-30%) available. If the animal is lactating, during the first four weeks she will use 10gP/d (300g) and over another eight weeks she will use 5gP/d, the remainder of her body reserves. Some phosphorus will be supplied by the pasture however, in regions of acute phosphorus deficiency, including most of the NT, extra phosphorus will be required via supplementation.

The current recommendation for feeding wet season phosphorus for breeders on acutely deficient phosphorus soils is 10gP/day. Wet season phosphorus supplementation is the most cost effective form of supplementation. The economic and production benefits from such strategies are shown in case studies of properties across northern Australia in the MLA publication, "[Phosphorus management of beef cattle in northern Australia](#)".

**Table 1.** A standard wet season supplementation ingredient list

Wet season lick ingredients	%
Urea	0
Kynophos (P)	40
Sulphate of Ammonia (SOA)	10
Salt	50



**Figure 1.** Lactating cows making the most of the phosphorus supplementation

Phosphorus supplementation results in an increase in appetite and for animals that are of high risk e.g. lactating heifers, breeders and growing stock, wet season phosphorus can result in heifers that are able to grow and lactate without impacting on body condition. As a result of increasing body condition, phosphorus supplementation also increases the chances of re-conception and can increase liveweight gains in growing animals.

Minimising costs could be achieved by combining segregation and supplementation strategies e.g. keeping growing animals together, heifers separate to the breeder herd or separating breeders according to the predicted time of calving/lactation. Phosphorus supplementation is most important for late pregnant heifers and cows, growing stock and lactating cows. Other strategies to minimise cost may include, not feeding lick to breeders (3+yo) that will not lactate in the current year or selecting for a cow with a moderate frame size/ lower requirements for phosphorus.

It is important to note that supplying phosphorus supplements to stock will increase the amount of pasture eaten by each animal and this should be taken into account when calculating stocking rates based on an increase in dry matter intake of 10-30% (Jackson et al. 2012).

**Reference:**

Jackson, D., Rolfe, J., English, B., Holmes, W., Matthews, R., Dixon, R. M., Smith, P., and MacDonald, N. (2012). "Phosphorus management of beef cattle in northern Australia", I. Partridge, (ed.). City: Meat and Livestock Australia Limited: Sydney.

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## NT Pastoral Feed Outlook is now online:

The DPIFs latest quarterly NT Pastoral Feed Outlook is now online:

PDF version: [http://www.nt.gov.au/d/Content/File/p/pi/outlook/2015-09\\_NT\\_Pastoral\\_Feed\\_Outlook.pdf](http://www.nt.gov.au/d/Content/File/p/pi/outlook/2015-09_NT_Pastoral_Feed_Outlook.pdf)

MS Word version: [http://www.nt.gov.au/d/Content/File/p/pi/outlook/2015-09\\_NT\\_Pastoral\\_Feed\\_Outlook.docx](http://www.nt.gov.au/d/Content/File/p/pi/outlook/2015-09_NT_Pastoral_Feed_Outlook.docx)

The purpose of this quarterly outlook is to summarise information relevant to the pastoral industry including current feed supplies, seasonal conditions, fire risk and the development of drought conditions.

If you would like to be added to the email list to receive the Outlook automatically, please email [dionne.walsh@nt.gov.au](mailto:dionne.walsh@nt.gov.au)

# Hi-Tech Cattle Production

Sally Leigo, Research Leader, Precision Pastoral Management Tools Project

The CRC for Remote Economic Participation's Precision Pastoral Management Tools (PPMT) project has seemingly been a bit quiet over the past couple of years; however, we've been heads down and tails up, fervently working on the Precision Pastoral Management System (PPMS) software and conducting field work. In fact, the team completed its fieldwork with Glenflorrie Station in the WA Pilbara region. As such it is the first research site to be wrapped up.

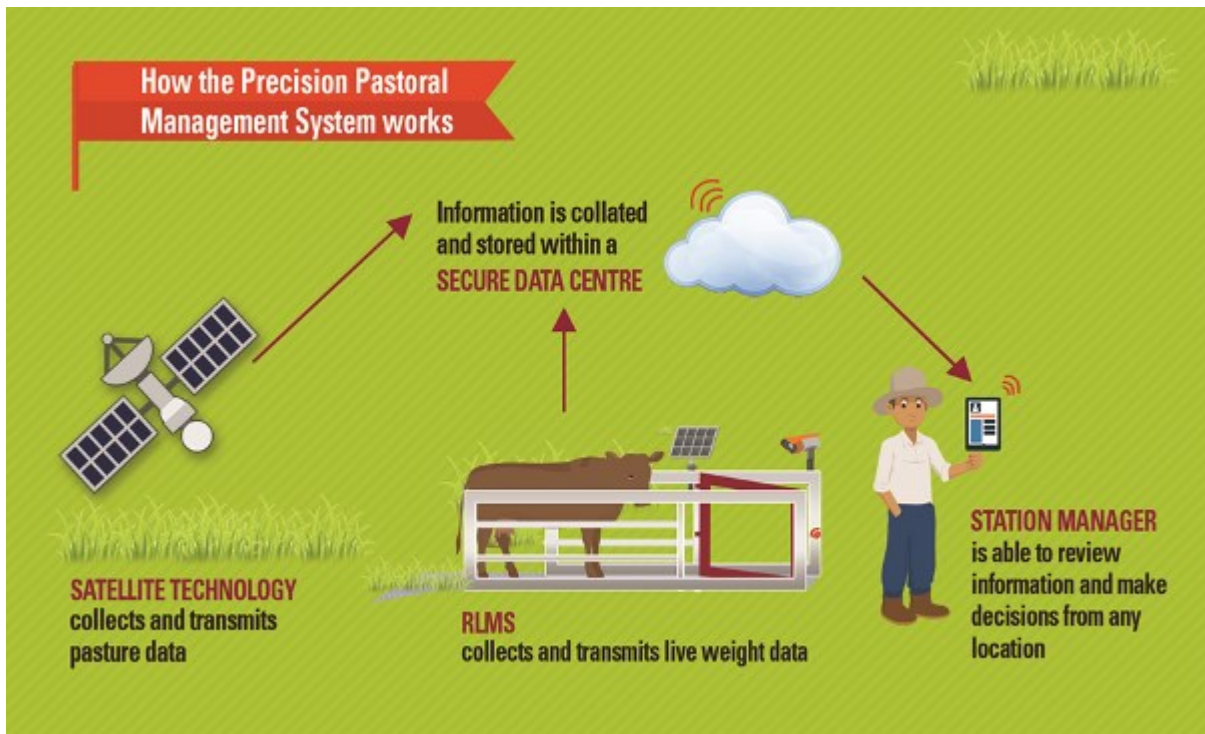
The PPMT project held its first field day at Glenflorrie Station on 28 October, with an excellent representation of beef producers from the Pilbara region. The field day was the first opportunity for beef producers to learn more about the PPMS software and to see the Remote Livestock Management System (RLMS) in the paddock.

## What is the PPMS?

The PPMS is software (which will be customised for each station) that reports on the trends in cattle and pasture production. Its unique attribute is that it automatically collects, analyses and reports on cattle liveweight and pasture production data, and it does so with little error and without labour expense.

Figure 2 summarises how PPMS works:

1. The system receives data collected by a satellite on the pasture greenness.
2. Cattle liveweight data collected via the RLMS is also supplied.
3. On a weekly basis, the beef producer is then able to review trends in cattle liveweight and pasture greenness, to determine whether any actions are required (such as the sale of cattle, supplementation or stocking rate adjustments).



**Figure 2.** Information on pasture greenness and animal liveweight data is assessed and analysed before being reported to the station manager.

## How has Glenflorrie Station found using the PPMS?

*We are really excited at the potential benefits that this R&D project looks to deliver to the pastoral industry.*

*The ability to monitor cattle live weights in real time on such a broad scale whilst simultaneously monitoring feed on offer, and make critical decisions before it impacts on the bottom line, is a game changer in my opinion...We have found it [the PPMS] to be a reliable and easy to use system.*

Murray Grey from Glenflorrie Station,

The Grey family have found that the PPMS has helped them to minimise weight loss from their cattle through making better timed decisions for their supplementation program, minimising handling stress and adjusting stocking numbers in their paddock.

Murray Grey outlined that by just preventing the weight loss of 10kg/head (on average) for a herd of 400 head, amounted to four tonnes of beef. At \$3/kg, preventing the loss of four tonnes of beef added up to the avoidance of a \$12 000 loss for one herd, in only one year.



## What's next for the PPMT Project?

The PPMT project will be completing its last summer of field work on the four remaining cattle stations involved.

Further field days are expected to be delivered in 2016 in the Northern Territory and Queensland.

Watch the Rural Review for updates.

You can stay up to speed with the PPMT project via our social media accounts, or sign-up to receive project updates via the PPMT Project website:

[Precision Pastoral Management Tools Project](#)

**Figure 3.** Locations of the five cattle stations involved in the PPMT project



Precision Pastoral Management Tools Project



@PPMT\_project



@PPMT\_project

If you have further questions, please don't hesitate to give me a call or drop me line:

Sally Leigo  
Research Leader – PPMT project  
Phone: 08 8951 8144 or 0467 770 661  
Email: [sally.leigo@nt.gov.au](mailto:sally.leigo@nt.gov.au)

# Who's new in the zoo!

## Introducing Dr Ian Biggs

### **Where did you get your degrees (and doctorate) and specifically what degree was it?**

Bachelor of Applied Science with honours from QUT and PhD from The University of Queensland – Title: Investigation of sugarcane nitrogen physiology: sources, uptake, and metabolism.

### **What was your background in agronomy, science and agriculture/horticulture generally and rough location before coming to Katherine?**

Science is a second career for me. After working for 10 years as a technical officer with the local council at Kingaroy, Queensland, I studied science at QUT with the initial aim of going into environmental science. However I had a charismatic plant physiology lecturer (Dr Graeme Kelly) and so changed my major to plant physiology and plant tissue culture. I followed this stream through to my honours project on the development of photosynthetic systems in tissue cultured plants as they transition from tissue culture to fully autotrophic plants.

I was offered a scholarship from the Sugar Research Development Corporation to undertake PhD studies and set up my project with Professor George Stewart at the School of Botany, The University of Queensland. After my PhD, I worked for 10 years with the CSIRO in the Division of Sustainable Ecosystems based in Brisbane. I worked on projects developing sustainable farming systems along the tropical coastal regions of eastern Australia.

On leaving CSIRO I completed an MBA but found the business world was not for me and took a technical agronomy position with a liquid fertiliser company, Agrichem. Realising that to keep following agronomy work would require leaving Brisbane; I took a part-time technical position with The School of Agriculture and Food Sciences while I attempted to complete renovations on our workers cottage in Brisbane.

I am totally stoked to have this opportunity to undertake research agronomy in the Northern Territory with the Department. I look forward to another 10 year stint in this position.

### **What do you love about agriculture/horticulture?**

I love the concept of primary production; that plants produce food, fibre and fuel from sunlight, water, atmosphere, and nutrients. I am fascinated by the interactions within the agroecosystem of plants, microbes, animals, the environment, and humans. I want to study further how we can continue to sustainably generate wealth for individuals, companies and countries from this primary production. That the study of these concepts can be used to help disadvantaged and developing peoples and economies adds to the personal reward that can come from this work.

### **What things are you looking forward to within your work here at DPIF?**

I have found the enthusiasm and support of the NT DPIF department and staff for scientific study in agriculture and agronomy refreshing. There has been much work done in the many previous studies of these concepts in the Top End and many smarter people than I have gone before me but I hope to build on, and modernise their work. I look forward to working closely with departmental staff, farmers and industry to develop both the science and practicality of agriculture in the Top End. I also look forward to once again living in a small community after the anonymity of living in Brisbane.

### **Introducing Callen Thompson:**

#### **Where did you get your degree and specifically what degree was it?**

I studied a Bachelor of Science at the University of New England.

#### **What was your background in agronomy, science and agriculture/horticulture generally and rough location before coming to Katherine?**

I worked as a commercial agronomist focussing on summer crops including sorghum, corn, mungbeans and sunflowers on the Liverpool Plains and winter crops including wheat, chickpeas and canola in western and central NSW. Many of my clients ran mixed farm enterprises, with both cropping and livestock. After this, my wife Maria and I ran a contract sowing business focussed on sowing improved pastures such as Lucerne, clovers and tropical species such as Digit and Rhodes grass as well as sowing winter and summer crops.

#### **What do you love about agriculture/horticulture?**

I have wanted to be involved in agriculture since I was a kid sitting on my grandfather's knee while he drove the tractor. There is something good about knowing that the food you produce will feed people who may be thousands of kilometres away.

#### **What things are you looking forward to within your work here at DPIF?**

I believe there are very few areas where there is so much scope for growth in the agricultural sector as the NT. I am really excited about the potential we have here and look forward to building on the great work that has been done by DPIF staff before me.

On a personal front, I'm hoping that moving to Katherine will improve my fishing skills!



**Figure 4.** Callen Thompson (left) and Dr Ian Biggs (right) with the Minister for Primary Industry and Fisheries, Hon Willem Westra van Holthe (centre).

## NT Bull Selection & Polledness Roadshow

*Jodie Ward and Whitney Dollemore, NT DPIF, Katherine Livestock Industry Development*

September 2015 saw 64 pastoralists across the NT attend one of three local field days featuring genetics and cattle breeding expert John Bertram and Zoetis Technical Manager of Genetics Emily Piper. The focal point of the roadshow was to encourage balanced selection of bulls to maximise herd profitability. The Bull Selection and Polledness Roadshow began in Alice Springs at the DPIF Quarantine Yards on 11 September, moved on to Helen Springs Station on the Barkly Tableland on 12 September followed by Montejinni Station in the Victoria River District two days later.

The overall message of the roadshow was that although there are several things to consider when selecting bulls, including breed and temperament, it is important not to focus too strongly on one particular trait, as other desirable characteristics relevant to profitability such as fertility or growth will be compromised. A balanced selection criteria as well as a Bull Breeding Soundness Evaluation (BBSE) should be considered before purchasing new bulls.

Topics covered throughout the day included EBVs 101 and calculation, the value of a bull, trait selection related to establishing a breeding objective, polledness and gene marker technologies, bull structure and function and semen traits culminating in a practical demonstration of a BBSE. In addition to these topics, at the Helen Springs field day there was great discussion centred on the breeding of your own bulls. Helen Springs has been the location of a bull breeding producer demonstration site which has shown the practical implementation of a bull breeding nucleus herd in a real station situation.

John Bertram encouraged those in attendance to critically think about the value of the bulls they are purchasing and the impact those bulls will have on the breeder herd. "It is important to consider the contribution that every bull is making to the herd, as one bull's genetics will stay in the breeding herd for at least 16 years if his daughters are used as replacement heifers". Mr Bertram also encouraged beef producers to insist on asking for the results of a BBSE with special emphasis on semen morphology (% normal sperm) before investing in new bulls to ensure the animals are capable of delivering genetics to breeders and meeting your breeding objectives.

Dr Emily Piper provided a comprehensive summary of how the gene poll marker works and how it may be used to maximum advantage by producers. For example, reducing the cost and stress associated with dehorning by increasing the number of polled animals in your herd. This can be achieved by identifying and using bulls with the polled gene.

Attendees commented that although conformation is important, in the future they are planning to prioritise EBVs before going to a sale and remove the bulls that don't meet their objectives, market or environment from their potential purchases list. Attendees specified that they would now be asking bull breeders to supply BBSE data including % normal sperm. Many producers also mentioned on their feedback forms that they will also now be seeking the genotyping of bulls in order to identify true polled (homozygous (PP)) bulls.

Overall the feedback from the roadshows was that the information was helpful and relevant to industry. DPIF would like to thank the host stations and all who attended.



**Figure 5.** Using a phone to display the differences of sperm morphology as seen under a microscope.

# Is there a business case for NT beef producers to “farm carbon”? The answers are in.

*Dionne Walsh, Rangeland Program Coordinator (08) 8999 2178*

## Background

The carbon tax is gone but the Australian Government has a fund to purchase carbon credits from producers who are increasing carbon storage and reducing methane emissions from livestock (“carbon farming”).

Carbon credits can be generated by:

- reducing livestock emissions (through changes to herd management or changing supplementation practices)
- by not re-clearing previously cleared country
- by increasing the amount of carbon stored in soil
- by reducing the amount of late dry season burning and/or the total area burn

Over the past 3 years, the NT and Qld primary industry departments have been working with commercial producers to test whether there is a business case to farm carbon as part of a beef enterprise.

## Key findings:

The economic viability of a carbon project is highly sensitive to herd size, carbon project management costs and carbon price. The recent average carbon price of \$13.95/tonne paid at auction is not sufficient to cover the costs of compliance and auditing for most project options we evaluated.

We found that projects that reduce livestock emissions intensity (for example improving weaning rates, increasing lifetime reproductive performance and improving growth rates) are currently only a viable source of carbon income if your herd is in excess of 15 000 adult equivalents.

Replacing urea supplements with nitrate supplements (to reduce emissions) is not financially viable according to at least two recent studies due to the cost of the supplement.

Beef businesses should focus on cost-effective changes to improve production efficiency and the associated improvement in livestock revenue. Potential carbon income should be considered a bonus and not the basis for management change alone.

Properties that have a prevalence of late dry season fire (or a lot of area lost to fire) may have potential for earning carbon revenue from changing their burning regime.



**Figure 6.** Collecting soil samples in the middle of the dry season to test carbon content

Woody vegetation regrowth retention (e.g. in Queensland) has potential to store significant amounts of carbon, but this option will need to be weighed up against the negative impact on long-term livestock carrying capacity.

The impact of grazing management practices on soil carbon was found to be negligible or inconsistent for the wide range of soil types, regions and management systems sampled, which presents significant risk for producers participating in the carbon economy.

### More information

We did this project to provide independent, scientifically tested information about the potential for making money from carbon farming. Feel free to call us to discuss the findings of our project in more detail: Dionne Walsh on (08) 8999 2178 or David Ffoulkes (08) 8999 2204. Read up about the Climate Clever Beef project on the FutureBeef website: <http://futurebeef.com.au/resources/projects/climate-clever-beef/>

The Climate Clever Beef project was funded by the NT Department of Primary Industry & Fisheries, Queensland Department of Agriculture & Fisheries and the Australian Government Department of Agriculture, Fisheries and Forestry.

## New mango orchard at KRS

*Teagan Alexander, Technical Officer, Katherine and Constancio Asis, Research Agronomist, Berrimah*

Cognizant of the importance of mango in the horticultural economy of the Northern Territory, DPIF is boosting its research on mango rootstocks. Bob Williams, Director of the Plant Industries Development, organised the establishment of new mango orchard at Katherine Research Station (KRS).

The trial is an offshoot from the National Mango Breeding Program (NMBP) which was established at KRS in 2012. Based on three years of data, the Kensington Pride performed well as a rootstock while NMBP 1201, NMBP 1243 and NMBP 1243 were the best performing scions. Chris Kelly of Berrimah Research Farm (BRF) grafted NMBP 1201, NMBP 1243 or NMBP 4069 on Kensington Pride rootstocks in May 2015.

On 22 September, staff from BRF (Chris Kelly, Constancio Asis and Lorenzo Meschiari) joined with the KRS team (Teagan Alexander, Kae Wegman, Karl Bourne, and Chiara Zraggen) in planting 170 grafted mango trees. The team whizzed through planting far quicker than expected but not without a few adventures in the form of a few grubs with nasty incisors.

The orchard was shown to international guests for the first time in early October. About 60 mango researchers attending the 11<sup>th</sup> International Mango Symposium visited the site as part of the field trip to visit the Katherine mango orchards.



**Figure 7.** One hundred and seventy new mango trees were planted at the Katherine Research Station Recently as part of the National Mango Breeding Program.

# AuctionPlus demonstration in conjunction with the Selected Brahman bull auction at KRS

*Whitney Dollemore, Pastoral Production Officer, Katherine*

On 6 November 2015 the NT DPIF hosted an AuctionPlus briefing day in conjunction with the auctioning of 17 bulls from the Selected Brahman herd for an average price of \$1474. The field day at Katherine Research Station included a bull viewing and briefing by Anna Speer from AuctionsPlus. It provided a worthwhile opportunity for interested producers to ask specifics on the AuctionsPlus system.

The bulls auctioned at the field day were some of the top genetics coming out of the Selected Brahman herd. These bulls had undergone a bull breeding soundness evaluation (BBSE) with all bulls producing percent normal sperm (% NS) above 60%. It is suggested in a multiple sire mating bulls should have above 50% NS and above 70% NS for single sire mating. The EBVs of the bulls in this auction also had average days to calving in the top 15% with 1 bull in the top 5% of the Brahman breed, average scrotal size in the top 5% and average 600 day growth in the top 45% of the Brahman breed.

The Selected Brahman program aims to produce cows that will produce a calf each year from 3 years of age. This objective is achieved in a number of environments as the animals are at DDRF until 3 years of age, after which the Brahmans are sent to Kidman Springs (VRD). To achieve this objective selection has been performed in both females and bulls. Females are culled if they are not pregnant and wet in first round and bulls are selected at 12 and 18 months for breeding. The bulls are selected on a combination of scrotal circumference, semen production at 12 months of age, growth and dam reproductive performance.

To continue to have a large variety of genetics to choose from, semen is sourced from bulls with a large scrotal circumference EBV and low days to calving (DTC) EBV. The DTC EBV is calculated by the date when bulls are put in to the birthdate of the calf. The average gestation length is 0 when looking at a DTC EBV and so; a negative DTC EBV indicates a cow that conceived quickly when the bulls were introduced. In the Selected Brahman herd this identifies the females that conceive whilst lactating.

Selection of a bull that has good EBVs in the traits required to achieve your breeding objective is important as a bull mated this year will continue to influence the makeup and performance of your herd for the next 16 years. In order to prevent unknowingly diminishing an economically important trait e.g. growth in your herd multiple trait selection is important. Accessing Breedplan gives you the option of using existing selection indexes such as the Northern Live Export Selection Index or customising a selection index to value animals in relation to your breeding goal in order to ease multiple trait selection.

If using a selection index it is still important to look at the individual trait EBVs as a bull may have the same selection index value but be very different for fertility and growth traits e.g. mature cow weight or birth weight.

It is important to understand EBVs are only a measure of the genetic contribution a bull could bring to your herd, environmental adaptation is important for the expression of these genes.

***The production from an animal = genetic ability of the animal x environment (nutrition)***

The number of calves a cow will produce is still related to nutrition. However, if nutritional requirements are met through appropriate stocking rates, supplementation and breeder management such as controlling the time of calving, the genetics will be most important as the gain is cheap, cumulative and permanent. The animals with superior fertility genetics are identified every muster when looking for the wet pregnant cows that are on the same nutrition as opposed to those females that have a calf every two years.

## NT fodder and seed production 2014

Arthur Cameron, Principal Pastures Agronomist, Berrimah

Plant Industries Development Group of DPIF conducted a survey to estimate hay, silage and seed production in the Northern Territory during 2014. These figures include the mulching hay made in the Darwin Rural area. The figures are tabulated below.

The hay production in 2014 at 84 370 tonnes increased from the 50 570 tonnes produced in 2013 on the back of the higher numbers of live cattle exported from Darwin in 2014. This year's production is the highest recorded in the Northern Territory, exceeding the 2010 total by 1050 tonnes.

Seed production, at 75.5 tonnes was higher than in 2013.

The value of the hay produced in 2014 is estimated at \$23.02 m and the seed at \$1.29 m. The high demand for hay following the increased numbers of live cattle exported during the year pushed up the average price of hay.

These figures represent the majority of the production in the NT in 2014.

The production is presented in the table below by the Australian Bureau of Statistics district.

**Table 2.** Hay and Seed Production in the NT by District (tonnes)

District	Feed Hay	Mulch Hay	Seed
Alligator	750		
Barkly and Central NT	7450		
Daly	23200		43.5
Litchfield Shire	18920	2000	
Lower Top End	32050		32
Total	82370	2000	75.5

These figures were compiled with the assistance of Departmental Officers Casey Collier (Tennant Creek), Peter Shotton (Douglas Daly Research Farm) and Coral Allan (Arid Zone Research Institute).



**Figure 8.** Hay made at Katherine Research Station earlier this year.

## Ironwood toxicity in cattle

Ironwood poisoning is common in the Darwin and Katherine region. The leaves of the Ironwood tree are highly toxic when ingested and as few as two to three leaves are known to be lethal. The toxic agents are Diterpenoid alkaloids and the young leaves of new plants are very attractive to hungry and newly introduced grazing stock. Hay containing Ironwood leaves is also a potential source of poisoning.

DPIF Field Veterinary Officers investigated four recent deaths in a consignment of 1000 heifers in the Darwin region. Sudden death occurred after relocation to a paddock from holding yards at the property. Post-mortem revealed one heifer to be in good condition but with several leaves from the ironwood tree in its rumen. Officers identified Ironwood trees in the paddock and once relocated, the consignment experienced no further losses.

### Important information about Ironwood poisoning

#### Animals affected:

- Horses
- Donkeys
- Sheep
- Cattle
- Buffalo
- Goats
- Camels
- Deer

#### Symptoms of Ironwood poisoning:

- Staring and/or sunken eyes
- Pale gums
- Severe colic
- Loss of appetite
- Difficulty breathing
- Irregular heartbeat
- Recumbency
- Scours do not always occur; if present are heavily blood stained
- Death within 24-48 hours

#### When are stock most likely to eat Ironwood plants?

Stock with little to no exposure to the Ironwood tree are more likely to eat it particularly if hungry and have travelled long distances and released into a yard or paddock without hay or other feed sources.

Ironwood suckers appeal to stock in drier times when little to no feed or only dry grass is available.

### References

Future Beef 2012, *Poisonous Plants of the Kimberley*, viewed 9<sup>th</sup> November 2015, <<https://futurebeef.com.au/resources/newsletters/futurebeef-ebulletin/poisonous-plants-in-the-kimberley/>>

Lemcke, B 2006. Agnote: Ironwood Poisoning, No. K27. Northern Territory Government, Viewed 9<sup>th</sup> November 2015, <[http://www.nt.gov.au/d/Content/File/p/Anim\\_Dis/646.pdf](http://www.nt.gov.au/d/Content/File/p/Anim_Dis/646.pdf)>

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- Ionophore (monensin) poisoning
- Pox Virus
- Tick fever outbreaks



Figure 9. Ironwood tree leaves.



## Animal Biosecurity Branch

# Do you keep horses, poultry, pigs, pigeons, sheep, goats, deer, cattle, buffalo, camelids?

It is mandatory for owners of livestock on an identifiable property/block to have a Property Identification Code registered for that property, whether they are pets or one or more.

*Livestock Regulations* Section 32(1) states:

The owner of an identifiable property must have a PIC registered for the property.

An identifiable property is a property that keeps any of the following livestock:

Alpacas; buffalo; camels; cattle; deer; goats; horses; llamas; pigs; poultry pigeons sheep.

### Property Identification Codes – Why?

The purpose of property identification is for tracing and controlling disease but also for locating properties/blocks and notifying owners quickly.

In the event of disease detection, it is crucial to identify properties/blocks in the surrounding area where livestock reside so the disease can be isolated and managed rapidly; this also serves as a direct way of contacting livestock owners to keep them informed.

PIC Registration is free of charge and simple - [On-line PIC Registration](#) or [PIC Registration](#) [printable form] or contact the [Livestock Biosecurity Officer](#) in your region for assistance.

Darwin Region	Katherine Region	Tennant Creek Region	Alice Springs Region
Rob Wait (A/RLBO)	Josh Haigh (RLBO)	Tom Haines (RLBO)	Greg Crawford (RLBO)
Ph: 08 8999 2034	Ph: 08 8973 9767	Ph: 08 8962 4458	Ph: 08 8951 8125

DEPARTMENT OF PRIMARY INDUSTRY AND FISHERIES – [www.dpif.nt.gov.au/animalhealth](http://www.dpif.nt.gov.au/animalhealth)

## Ionophore toxicosis in buffalos

Contained in a number of food supplements given to livestock, Ionophores such as monensin increase feed conversion efficiency and assist with the prevention of coccidiosis; however consumption of monensin at high levels can cause skeletal and cardiac muscle damage with deaths being common.

Losses of 30 head in a group of 110 heifer buffalos were reported over a 10 day period on a property in the Katherine region. The animals had been held at the property for a three month period with minimal stress. Adequate shade and water sprays were provided and the buffalo were quiet and in good condition. The animals had chopped cavalcade hay and pellets on an ad hoc basis in feed troughs, along with jarrah/sorghum baled hay fed from containers in the yards.

The main histological finding in both animals was moderate to severe heart muscle degeneration, which likely lead to pulmonary congestion and oedema, and generalised vascular congestion in various other tissues. Extensive concurrent myopathy was observed in a single sample of skeletal muscle which had been randomly selected; this finding is highly suggestive of ionophore toxicosis. Monensin toxicosis has previously been reported in water buffaloes.

On investigation, it was found that the pellets offered were a mixture of various types, including a weaner cattle pellet containing the ionophore monensin at a level of 1.5kg/1000kg. Management estimated that these weaner pellets had been used for approximately 7 weeks before losses were reported. Buffalo are suspected of having increased susceptibility to the toxic effects of monensin. There were no losses in the approximately 2000 head of cattle being held in the same property and receiving an identical ration to the buffalo.

The monensin containing feedstuff was withdrawn from the buffalo and no further losses occurred. As the surviving animals are likely to have varying degrees of subclinical myocardial degeneration and fibrosis, advice was given to minimise physical stress when handling these animals in the future.

Clinical signs of Ionophore poisoning:

- Loss of appetite
- Diarrhea
- Tremor
- Ruminal atony
- Weakness
- Rapid heart rate

Although clinical signs can commence within 24 hours if the animal has had a heavy dose, signs may not appear until five days after. In cases where there has been a large outbreak, deaths may still occur in the months following, particularly if the animals experience stress, such as mustering or calving.

### How to prevent Ionophore poisoning

Dosage levels vary between animals and will depend upon the size, age and reason for providing the supplement. A suggested level for cattle, from Radostits (2007), is 50-200mg per head per day. Clinical signs of poisoning and deaths have been known to occur when cattle ingest 10 mg/kg body weight. Horses have a significantly lower tolerance with signs showing from as little as 1mg/kg body weight, deaths are likely to occur when dosage reaches 2-3mg/kg body weight.

The majority of feed supplements containing monensin do not contain it in levels toxic to the stock for which the feed is intended. Problems arise when products are fed to animals the feed was not intended for. Buffalo are similar to horses in that they are up to four times more sensitive to ionophores than cattle and should not be fed products meant for cattle.

### Reference:

Radostits, O.M., Gary, C.C., Hinchcliff, K.W. and Constable, P.D. 2007. *Veterinary Medicine, A Textbook of the Diseases of Cattle, Horses, Sheep, Pigs and Goats*, 10<sup>th</sup> Ed. Elsevier Ltd., Philadelphia, PA. 2156 pp.



Figure 10. Buffalo waiting for transportation

## Poxvirus

Multiple skin lesions were noted in a three-month old bottle-fed buffalo calf which had been found orphaned on a remote flood plain. A few days old, the calf was taken to a rural property, where there was no other livestock. The calf was in poor condition and suffering from intermittent diarrhoea and anorexia for several weeks. There were multiple, round, well-demarcated areas of depigmentation over the dorsal head and nose. Some lesions appeared to have a slight scabby outline and others were more pigmented and appeared as if they were resolving.

Blood and faecal samples, and full thickness skin biopsies of the lesions were collected from the calf. Results revealed a mild anaemia, normal serum iron and moderate dehydration. The faecal egg count was low. Biopsy of the skin lesions were consistent with poxvirus infection.

Poxvirus is not common, and despite the poxvirus not being identified in this case, a number of pox viruses are known to infect a number of species. It is likely that poor nutritional management contributed to the susceptibility of this calf to poxvirus infection, which may have been transmitted by rodents or wildlife which were known to be in the area.

Buffalo pox has been reported throughout major buffalo rearing pasts of the world, including Indonesia, Egypt and Pakistan.



**Figure 11.** Buffalo with lesions

Nutritional advice on hand-rearing buffalo calves was given, including the need for buffalos calves to get calf milk specifically for them or to give them a more concentrated dose of calf milk as they require milk with a higher fat concentration. There were no reports of zoonotic infection of the handlers.

### Differential Diagnosis

A few viruses that present with similar signs to what is seen in poxvirus

Although test results confirmed that the buffalo did not have Bovine Herpesvirus 2 (BHV2), also known as pseudo-lumpy skin disease, the clinical signs were very similar.

BHV2 occurs mainly in southern Africa, however it has been found in both cattle and buffalo in a number of areas throughout Australia. Blisters occur at the base of the teat where they are often not noticed as they rupture easily. Swelling of the teat may occur, as well as a scab forming over the ruptured lesions. Occasionally the virus will present itself as circular lesions over the animals' head, neck, shoulders and back. The lesions often appear as a darker ring with hairless skin in the centre and are often around 2cm in diameter, varying from numbers of 5 to 50. Fortunately, the disease is not severe and lesions heal over a few weeks with little to no scarring (Radostits et al, 2007).

If you see something like the above, please contact your private or government veterinarian as Lumpy Skin Disease (which is exotic to Australia) presents similarly, so this would be notifiable under the Livestock Act.

### Reference:

Radostits, O.M., Gary, C.C., Hinchcliff, K.W. and Constable, P.D. 2007. *Veterinary Medicine, A Textbook of the Diseases of Cattle, Horses, Sheep, Pigs and Goats*, 10<sup>th</sup> Ed. Elsevier Ltd., Philadelphia, PA. 2156 pp.

## Tick fever outbreaks

Recently there have been two cases of tick fever diagnosed in the Katherine region. In both cases the cattle involved were purchased in Queensland from within the tick free area. Prior to moving, the cattle had all been 'back-lined' with an approved chemical commonly used for tick control, but in both cases the stock had not been vaccinated - 'blooded' - against tick fever.

Within a month of arrival, it was noted that there were serious losses occurring. Following a diagnosis of tick fever, the sick animals were treated with a subcutaneous injection of Imidocarb whilst the rest of the introduced cattle were vaccinated with the trivalent tick fever vaccine. All the cattle were sprayed with Bayticol, as there were no plunge dips available on the properties plus a percentage of cattle would have been too weak to have put up with the added stress of dipping.

**Note:-** the popular and highly effective pour-on and injectable chemicals do not kill seed ticks quickly enough to prevent the cattle developing tick fever. Spray and dip chemicals have only a short residual activity and can't be relied on to give continuous protection for 28 days. This is the period that it takes for effective resistance to develop in the vaccinated animal. If resistant ticks are present, the likelihood of protection diminishes even further.

Immunity after vaccination is usually lifelong, but it is important that the cattle remain tick free until immunity has been given time to develop. In both these cases of tick fever, the cattle were kept and fed in the yards or house paddocks under close supervision.

All sick cattle that had been treated with Imidocarb (Imazol® and Imidox®) were vaccinated 8 weeks after treatment. It must be recognised that there is still a period of 3-4 weeks before immunity to *Babesia* develops, while a full two months is required before immunity to *Anaplasma* is adequate.

### Just a few notes on Vaccination

- The tick fever vaccine is a live vaccine containing attenuated strains of *Babesia bovis*, *Babesia bigemina* and *Anaplasma centrale*. Vaccine can be ordered from stock and station agents, vets or directly from the tick fever centre.
- Ideally cattle should be vaccinated at least **two months** prior to movement from a tick free zone into a 'ticky' area.
- If for some reason cattle are only vaccinated on arrival, close monitoring is essential while the immunity to the vaccine is developing. Keeping cattle tick free to prevent tick fever during this time (a minimum of 28 days) will be difficult.
- Cattle introduced from within the tick infested area should also be vaccinated as they may not have had sufficient tick exposure on the property of origin.
- One vaccination is usually enough to protect cattle for life.
- Vaccination should ideally be carried out at / or before weaning when calves have some age-related resistance.

## Further Animal Health Information

Want information on a particular animal health topic?

Requests for articles on topics of interest are invited. Please send requests to:

Renae McLean

Ph: 08 8973 9765

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

DEPARTMENT OF PRIMARY INDUSTRY AND FISHERIES

## **KATHERINE RESEARCH STATION CHRISTMAS CLOSURE**

DPIF Katherine Research Station front office will be closed from Thursday 24 December 2015 to Friday 1 January 2016 inclusive.

Normal office hours will resume on Monday 4 January 2016.

For emergencies during the closed period:

**Animal Health / Stock Movements: 0467 740 233**

**Other Emergencies: 0427 600 388**

We wish you all a very Happy Christmas, and a safe and prosperous New Year.



### **Small grants available**

TNRM is offering grants of up to \$1000 per year to community groups working in the Northern Territory on natural resource management projects and activities. Grants are aimed at supporting groups and schools to undertake small scale on-ground activities, communications and capacity building of volunteers. Applications will be accepted at any time.

For more information about eligibility and conditions, and to apply visit <http://www.territorynrm.org.a...u/resources/grants/>

TNRM Community Support Grants are supported through funding from the Australian Government's National Landcare Programme.

For more information, contact:

**Daniel Chapman**

**NRM Regional Coordinator – Gulf Savanna**

Territory Natural Resource Management

T 08 89710405

M:0428770101

## A snapshot of 2015



2015 was a hard year for many in the Katherine region as two local legends left us all behind. Tony Moran (left) will always be remembered for his long drawl and beautiful smile and Tom Kerwin's (right) ability to spin a yarn, always with a gleam in his eye will never be forgotten. Both men are sorely missed by all here at KRS and Kidman Springs.



Calves copying their mothers. The rain finished early for many in the Katherine region/VRD leading to an earlier than normal dry season supplementation program.



The forage sorghum crop proved too tempting for the corellas who had a great time attempting to destroy the crop.



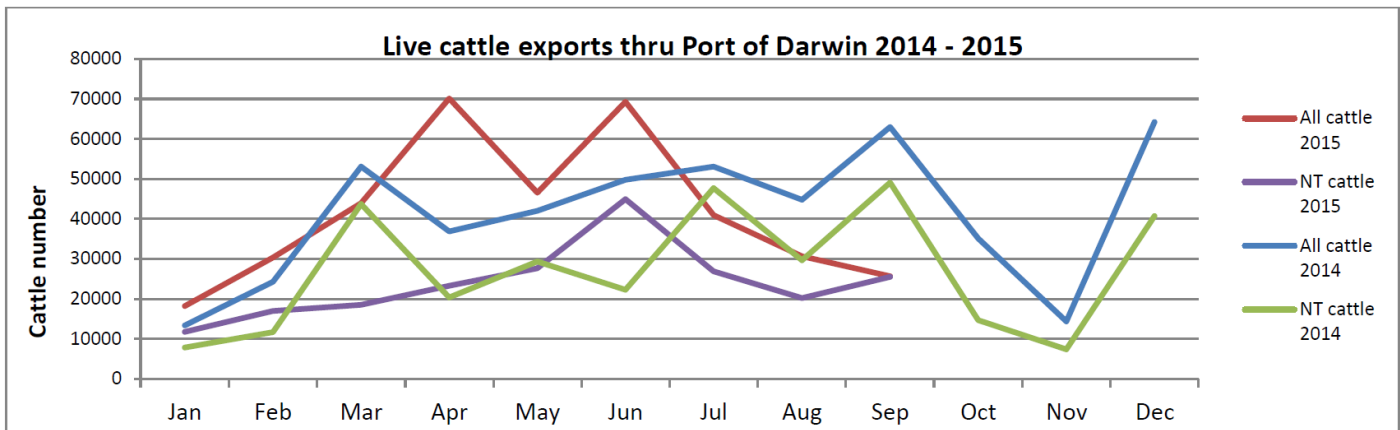
## Live Cattle Exports via Darwin Port – SEPTEMBER 2015

Please note: figures are for cattle exported through the Port of Darwin only; some NT cattle are exported through interstate ports

Destination	Export of ALL CATTLE (including interstate) from Darwin Port							Export of NT CATTLE from Darwin Port (estimate only)						
	2013	2014	Last year to 30/09/14	YTD to 30/09/15	Sep	Last month	Difference	2013	2014	Last year to 30/09/14	YTD to 30/09/15	Sep	Last month	Difference
Brunei	4,043	4,925	4,132	3,249	0	920	-920	4,043	4,925	4,132	1,450	0	607	-607
Indonesia	282,022	386,183	299,652	240,768	7,000	12,819	-5,819	243,978	251,232	199,271	126,776	5,250	8,461	-3,211
Philippines	22,403	16,080	13,546	17,704	2,431	2,190	241	15,063	11,221	10,546	9,211	1,823	1,445	378
Sabah	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sarawak	800	0	0	300	0	0	0	800	0	0	0	0	0	0
Malaysia	14,952	22,309	17,920	11,503	0	697	-697	12,094	15,708	14,920	7,499	0	460	-460
Vietnam	35,396	64,461	45,050	94,548	16,227	10,953	5,274	32,806	41,391	32,850	59,957	12,170	7,229	4,941
Egypt	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thailand	0	0	0	6,154	0	1,599	-1,599	0	0	0	3,610	0	1,055	-1,055
<b>TOTAL</b>	<b>359,616</b>	<b>493,958</b>	<b>380,300</b>	<b>374,226</b>	<b>25,658</b>	<b>29,178</b>	<b>-3,520</b>	<b>308,784</b>	<b>324,477</b>	<b>261,719</b>	<b>208,503</b>	<b>19,244</b>	<b>19,257</b>	<b>-14</b>

### SEPTEMBER at a glance

- 25,658 cattle through the Darwin Port during September; 3,520 less than last month and 37,356 less than at the same time last year
- 19,244 NT cattle through the Darwin Port during September; 14 less than last month and 29,884 less than at the same time last year



### OTHER LIVESTOCK EXPORTS VIA DARWIN PORT

Includes NT and interstate stock

Destination	Buffalo		Goat		Camel	
	YTD	Sep	YTD	Sep	YTD	Sep
Brunei	625	0	1,000	0	0	0
Indonesia	0	0	0	0	0	0
Philippines	0	0	0	0	0	0
Sabah	0	0	0	0	0	0
Sarawak	0	0	0	0	0	0
Malaysia	0	0	0	0	0	0
Vietnam	3,560	751	0	0	0	0
Egypt	0	0	0	0	0	0
Thailand	0	0	0	0	0	0
<b>TOTAL</b>	<b>4,185</b>	<b>751</b>	<b>1,000</b>	<b>0</b>	<b>0</b>	<b>0</b>

### NT CATTLE MOVED INTERSTATE

Destination	Number
NSW	0
QLD	8,303
SA	2
VIC	0
WA	249
<b>Total</b>	<b>8,554</b>

**NATIONAL CATTLE PRICES**  
[www.mla.com.au/Prices-and-markets](http://www.mla.com.au/Prices-and-markets)  
**CURRENCY EXCHANGE RATES**  
[www.oanda.com/currency/converter](http://www.oanda.com/currency/converter)

Total Cattle, Port of Darwin								NT Cattle, Port of Darwin							
2007	2008	2009	2010	2011	2012	2013	2014	2007	2008	2009	2010	2011	2012	2013	2014
283,046	364,944	347,314	295,605	269,617	246,990	359,616	493,958	247,281	295,539	304,818	272,749	253,797	234,249	308,784	324,477

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## Katherine region events calendar

Event	Location	Date	
NTCA AGM and Industry Conference	Alice Springs	17-18 March 2016	<a href="http://www.ntca.org.au">www.ntca.org.au</a>
Farm and Garden Day	Katherine	16 April	<a href="mailto:Jodie.Ward@nt.gov.au">Jodie.Ward@nt.gov.au</a>

Please email us with updates of events happening in your area: [Jodie.Ward@nt.gov.au](mailto:Jodie.Ward@nt.gov.au)

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