Katherine Rural Review

DEPARTMENT OF **PRIMARY INDUSTRY AND RESOURCES**

EDITION #329
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Inside this issue:

Wild dog activity: Prevalence of bitten young cattle in the Northern Territory.

Kieren McCosker, Beef Production Scientist, Katherine

We are calling for Northern Territory stations interested in monitoring the impacts of wild dogs. The overall aim of the study is to establish a practical system that captures frequency data on wild-dog damage on calves and weaners within breeding herds of the Northern Territory.

Data will be analysed to derive overall regional and property estimates for the frequency mauled young cattle appear at muster. The variation in prevalence of young cattle with signs of non-fatal attacks will be described, and associations between risk factors (cow age class, baiting attributes, location, proximity to a national park, etc.) investigated. Equally of interest is assessing the predictability of reproductive failure rates using indicators of wild dog activity, and gauging the effectiveness of practices to regulate the control of wild dogs.

Using email forms, paper-based forms, and electronic survey methods, collaborating stations will be asked to report, on a paddock or management group basis, the number of calves and weaners processed observed with wild-dog bite damage and the total number mustered. A draft version of the web-based form is available at https://www.surveymonkey.com/r/dogbite. Alternative options will also be available to contribute bulk information or historical records.

For participating properties that also monitor, and are willing to contribute, information to calculate reproductive failure rates (losses from pregnancy diagnosis to branding/weaning), project staff will be available to assist in collating this information to compare with prevalence of mauled cattle.

The project team ensures that the identity of individual properties will be anonymous in any oral, written, or electronic reporting of the findings from the project. Each enrolled property will be identified in code within a database, with the key held by only the project manager. All project findings for individual properties will be reported directly only to the property owner or manager. External reporting of findings for specific properties will occur only after receiving written permission from the property owner or manager. The copyright for all data collected will be held by the project exclusively.

If interested in participating in the study, or would like to know more information, please do not hesitate to contact Kieren McCosker, Beef Production Scientist, Katherine; phone: 08 8973 9771 or email: kieren.mccosker@nt.gov.au

Pastoralists to benefit from new detailed land use maps

Pastoralists will benefit from a new mapping project detailing the use of each plot of land in the Northern Territory.

"Pastoralists, fodder producers, farmers, industry groups, developers and many others will find uses for these new maps," said Bob Williams, Director of Plant Industries Development with the Department of Primary Industry and Resources (DPIR).

The maps will show how much land—and which areas—are devoted to animal industries, horticulture, urban areas, Indigenous uses, forestry, animal industries, and more.

The mapping project will also assist biosecurity risk management and emergency disease preparedness. If a biosecurity incursion threatens a specific fodder crop, for example, all the areas where that crop is grown can be identified so DPIR can respond quickly.

Detailed mapping will inform decisions about regional development, private and government investment and sustainable and efficient use of soil and water. By better understanding existing production land uses, we can better understand further intensive agricultural development and sustainable use of resources to support potential new agriculture.

The Department of Environment and Natural Resources (DENR) is leading the project in collaboration with DPIR and NT Farmers. The nationwide project is funded by the Commonwealth Government's Department of Agriculture and Water Resources in collaboration with the states and territories.

Project collaborator NT Farmers can add details including which crops are irrigated or which fodder crops are being produced on any particular plot.

This represents the first major update to the Territory's land use maps in 10 years, and will contribute to a national land use picture of the NT's 1.4 million square kilometres.

The project will align with the Commonwealth Government's Stronger Biosecurity and Quarantine Initiative and the objectives of the National Landcare Programme according to project leader DENR, which brings extensive experience in mapping land resources to the project.

The maps will be freely available through the NRMaps web portal.

The project is due to be completed in June 2017.

Horticultural Happenings

Dr. Ali Sarkhosh, Senior Research Horticulturist Katherine

KRS horticulture staff have been very busy over the past few months working on mangos and bananas in the Katherine region and table grapes and mangos in Central Australia.
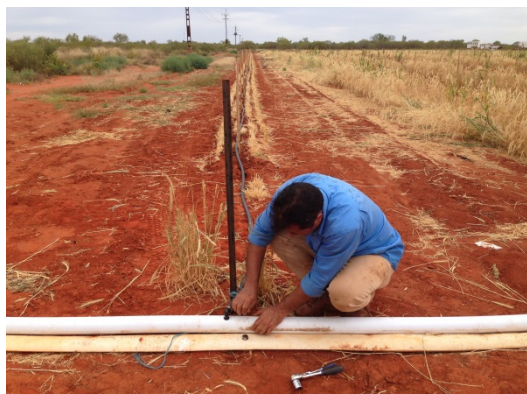

Improving table grape quality in Ti Tree in Central Australia

Tissue culture banana (for banana freckle program) in Katherine

Banana germplasm inKatherine

Mango varieties trial in Ali Curung in Central Australia

Tip pruning trial on mango in Katherine

Tip pruning trial, using NIR gun for dry matter in Katherine

Tip pruning trial in Katherine

New app helps exporters

Export Essentials is a new app developed by the Export Credit Agency (EFIC) and the Export Council of Australia. It has been designed to help new and less experienced exporters understand how to take advantage of opportunities and develop export strategies. Export Essentials provides key details often overlooked by businesses when planning to export. From checklists and calculators, to understanding how to manage currency risk and export finance solutions.

For more information go to: https://www.efic.gov.au/news-events/latest-news/2016/september/export-essentials-an-app-to-help-aussie-small-businesses/

2016 Australian Pulse Conference

Callen Thompson, Senior Extension Agronomist Katherine

The Australian Pulse Conference held in Tamworth in September celebrated the International Year of the Pulse. The theme of the conference was "Feed the farm—feed the world".

Pulses are legume crops, where the grain is harvested dry. This includes but is not limited to mung beans, chickpeas, lentils and faba beans. The Department of Primary Industry and Resources is interested in exploring the potential for pulse crops to fit into a future cropping system for the north. I was fortunate to travel to Tamworth to attend the 2016 conference, to learn about new research in pulse production so that I can extend new technologies that might be useful to producers in the NT.

The first day of the conference focused on breeding and trait selection using molecular markers and phenotyping. Traits included pest and disease tolerance, nitrogen fixation, yield improvement, environmental suitability and herbicide tolerance. Herbicide tolerance is relevant to potential pulse or soybeans (a legume, but not technically a pulse) producers in northern Australia. One of the factors that have led to limited uptake of these crops is the inability to control broadleaf weeds like sickle pod and sida. Through conventional breeding, plant breeders have been able to develop varieties that are resistant to group B and C herbicides. These herbicides are able to control a variety of broadleaf weeds without significantly reducing crop yield. This is not through genetic modification.

A number of speakers addressed the adaptation of plants to tolerate a harsher climate, in particular higher temperatures and lower moisture. This could benefit the Territory in two ways. Firstly as breeders select plants which will tolerate higher temperatures, especially at key times like flowering and grain fill, it increases their suitability to our hotter environment.

Secondly breeders are looking to adapt varieties for harsher conditions expected with climate change. This means they are interested in conducting trials outside of the main growing areas to take advantage of hotter drier climates. Therefore they are interested in working with research organisations within northern Australia. Collaborations like this allow us to access new agronomic technologies and genetics. It also brings capacity and knowledge to our area.

The second day began with a focus on the development of the different pulse industries. The need for strategic but flexible breeding programs was explained, in particular how the formation of Pulse Breeding Australia has benefited the industry.

The development of the chickpea industry was of particular interest. Grower Sam Gourley and former NSW Department of Primary Industries (DPI) plant breeder Edmund Knight spoke about the history of chickpeas in Australia. It was a great example of government departments working with growers to solve problems in a cropping system. Sam explained that initially chickpeas were not profitable but they could see the benefits in including them in a rotation. NSW DPI used plant breeding, pathology and improved agronomy to make chickpeas one of the more profitable crops in the rotation.

The second part of the day commemorated the International Year of the Pulses (IYP). Keynote speaker Tim McGreevy spoke about how the IYP committee had used social media to promote the four themes which are:

- creating awareness
- food security, nutrition and innovation
- market access and stability
- productivity and environmental sustainability.

One of the ways they promoted pulses was to take successful cooking bloggers and teach them how to cook with pulses. Before the initiative only five percent of the American population knew what a pulse was. As of June 2016 it was 25 percent.

The third day was supposed to be a field trip to the Liverpool Plains to visit NSW DPI and University of Sydney's research stations. Unfortunately for the delegates, the Liverpool plains received around 40 mm of rain overnight, which, when added to the already wet conditions, meant that roads were closed. Fortunately the event organisers had anticipated this and sent a couple of committee members out with a drone the day before. The delegates were able to get a virtual tour of the research stations from the comfort of the Tamworth Town Hall.

The rain was very welcome to pastoralists and cereal grain producers who were struggling with drought this time last year. Unfortunately for the region's chickpea and faba bean producers, the rain caused disease issues which would heavily reduce their potential yield.

Attending this conference allowed me to learn about new technology within the pulse industry, it also allowed me to make valuable contacts in both industry and research development and extension. I would like to thank the Department of Primary Industry and Resources for giving me the opportunity to attend. For more information, contact Callen Thompson 8973 9724.

30 Years with DPIR for Jack Wheeler

Teagan Alexander, Technical Officer, Katherine

For recognition of 30 years of service to the Department of Primary Industry and Resources, Jack Wheeler has received a milestone award. His three decades within the department have not been without adventure. Jack joined the department in February 1986 as a Stock Inspector and his first years were spent in southwest Arnhem Land, then at Victoria River Downs. Jack reflects on his early career:

Hon. Gerry McCarthy MLA, Minister for Public Employment, congratulates Jack Wheeler

"Life as a Stock Inspector certainly had its moments but we were a close knit group and one didn't need to look far for support. Under the guidance of Dave Napier, Keven Paterson, Peter Flanagan, Tony Cooley, Mick Geraghty (The Fox) and too many other fine gentlemen to mention, they made sure that the department's name was never used in vain because of them."

Then in August 1990 Jack started as the Farm Manager at Katherine Research Station and had a very steep learning curve:

"Under the watchful eye of Tom Stockwell and Peter Ridley, I learnt things like shopfront window diplomacy, and on a serious note though just how important animal and plant research and development is to the industry."

Highlights for Jack since being Farm Manager have been Peter Ridley's Meeting Market Specifications, the Broadacre Cotton trial, Senepol Cross Breeding, the Critical Weaning Weight trial and watching 30 hectares of grain sorghum reduced to stubble under a screeching, whirling, mass of cockatoos. "I have enjoyed my time and the company of so many generous friends and colleagues, not only in the job, but the industry as well."

Predicting heifer pregnancy rates from pre-mating weights

Tim Schatz, Principal Pastoral Production Research Officer

There is a strong relationship between weight/body condition and pregnancy rates in heifers at both their first (maiden) and second (first lactation) matings. Generally when heifers are heavier or in better condition they have higher pregnancy rates. Due to the strong relationship between pre-mating weight and pregnancy rate, it is possible to develop models that predict pregnancy rates from pre-mating weights and to set target mating weights that will ensure good pregnancy rates. These can be used to make management decisions and to do cost-benefit analyses of strategies to increase re-conception rates.

Research conducted with commercial Brahman heifers at Victoria River Research Station (VRRS) and Douglas Daly Research Farm (DDRF) has established the relationship between pre-mating weight and pregnancy rates for three different situations (Figure 1):

- when heifers are first mated at two years old and pre-mating weight is recorded in October/November
- for two-year-old heifers when weight is recorded in late December
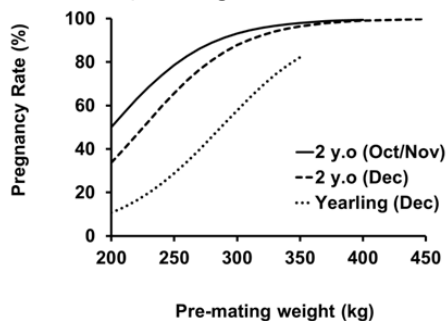- for yearling mated heifers when weight is recorded in late December.

Figure 1. The effect of pre-mating weight on pregnancy rate in maiden Brahman heifers

From these relationships, tables have been produced that show the predicted pregnancy rates for Brahman heifers at different pre-mating weights. These tables can be used to identify target weights for different situations and to predict the number of calves likely to be produced by groups of heifers, which is useful for budgeting and assessing the profitability of different management strategies or scenarios.

However it should be noted that there are a number of things that can affect the weight recorded for heifers and the relationship between pregnancy rates and pre-mating weight (and they should be taken into account when using these tables):

- gut fill: If heifers are weighed straight after mustering then they will have more gut fill than heifers that have been in the yards overnight (or for several days). On average the difference in weight after an overnight curfew (12 hours) without feed or water is usually 7% (which equates to about 20 kg in a 280 kg heifer) although individual animals vary around this average
- time of year when heifers are weighed: Often it is convenient to weigh heifers before the wet season (eg. October) for practical reasons, but many pre-mating weights quoted in research papers are actually recorded at the start of mating (usually in January). Usually rain falls between these times and heifers can grow considerably so a heifer weighed in October may be >30 kg heavier by the time mating actually starts in January
- age of heifers: While weight is the most important factor affecting pregnancy rates, there is an interaction with age. Younger heifers usually have lower pregnancy rates at the same weight as older heifers. For example, heifers which grow faster and are mated as yearlings usually have lower pregnancy rates than heifers joined at the same weight as two-year-olds. Note: this applies more to *Bos indicus* heifers than *Bos taurus* heifers
- the growth that occurs during the mating period: Heifers that grow more during mating are likely to have higher pregnancy rates than heifers that don't grow as much (as they will reach heavier weights during the mating period). For example if there is a poor wet season and/or the stocking rate is too high then heifers that only grow 50 kg over a wet season will have lower pregnancy rates than heifers that had the same pre-mating weight but grew 120 kg over the wet season

So when someone says that their heifers have a pre-mating weight of 275 kg we need to know more information about that weight to properly understand what it means. For example, was it recorded after a

curfew or straight after mustering? Was it recorded in October or January? For example; a heifer that weighs 230 kg in October after a curfew may weigh 275 kg at the start of mating in January without a curfew.

Understanding these things then the tables shown here can be used for heifer management, planning and budgeting. To use the tables find the PM Wt column that best suits your situation eg. if you weigh your heifers in October after they have been in the yards overnight then use the first column. Read down the column to find the average weight of your group of heifers and then read across to the Predicted pregnancy rate column to find the pregnancy rate predicted for that weight.

Table 1. Predicted pregnancy rates for two-year-old maiden Brahman heifers when grazing on native pasture. (The average growth over the Wet Season = 105 kg and growth from Oct to 20th Dec = 26 kg).

PM Wt (kg) Oct/Curfew	PM Wt (kg) Oct/No curfew	PM Wt (kg) Dec/Curfew	PM Wt (kg) Dec/No curfew	Predicted Pregnancy rate (%)
200	215	226	243	50
210	226	236	254	57
220	237	246	264	63
230	247	256	275	69
240	258	266	286	74
250	269	276	297	79
260	280	286	307	83
270	290	296	318	86
280	301	306	329	89
290	312	316	340	91
300	323	326	350	93
310	333	336	361	95
320	344	346	372	96
330	355	356	383	97
340	366	366	393	98
350	376	376	404	98

Table 2. Predicted pregnancy rates for yearling Brahman heifers when grazing on improved pasture. *(3.5 month period mating from 20th Dec to end of March. The average growth from weaning to the end of mating = 102 kg)*

PM Wt (kg) Dec/Curfew	PM Wt (kg) Dec/No curfew	Predicted Pregnancy rate (%)
186	200	11
195	210	13
205	220	16
214	230	20
223	240	24
233	250	29
242	260	34
251	270	40
260	280	46
270	290	52
279	300	58
288	310	64
298	320	69
307	330	74
316	340	78
326	350	82

Predicting pregnancy rates from weights in first lactation heifers
When it comes to predicting pregnancy rates from weights in first lactation heifers (ie. re-conception rate after first calving) the other factor to take into account when evaluating pre-calving weights is whether the weights have been corrected for the weight of the pregnancy. Most weights quoted in research papers have been corrected for stage of pregnancy as the weight of a pregnancy (including the foetus/calf, fluid, membranes and placenta) varies greatly depending on how advanced the pregnancy is. For example, a two-month pregnancy weighs two kg while a nine month pregnancy weighs 59 kg. The weight of the pregnancy is lost at calving, so it is not actually part of a heifer's body weight and does not reflect her body reserves. It is best to measure pre-calving weights a couple of months before calving so that the heifers are not stressed in late pregnancy and don't calve while being handled. Also many producers are not familiar with correcting pre-calving weights for stage of pregnancy. Therefore Table 3 shows the pregnancy rates for weights that have either been curfewed or not curfewed and corrected or not corrected for stage of pregnancy. Where weights have not been corrected for stage of pregnancy it is assumed that heifers are weighed about two months before calving and so most heifers are around seven months pregnant at the time of weighing (when the weight of the pregnancy would be about 30 kg).

Table 3. Predicted re-conception rates (by weaning) for Brahman first lactation heifers when grazing on native pasture. *The pregnancy rate is shown for weights that have either been curfewed or not curfewed, and corrected for stage of pregnancy or not. Where stage of pregnancy has not been corrected for, the weights are shown for a seven-month pregnancy (weighing 30 kg) assuming that heifers are weighed about two months before calving*

PM Wt (kg) Corrected Curfew	PM Wt (kg) Corrected No curfew	PM Wt (kg) 7 Months preg. Curfew	PM Wt (kg) 7 Months preg. No curfew	Predicted Pregnancy rate (%)
260	280	290	312	6
280	301	310	333	8
300	323	330	355	11
320	344	350	376	15
340	366	370	398	21
360	387	390	419	28
380	409	410	441	35
400	430	430	462	44
420	452	450	484	53
440	473	470	505	62
460	495	490	527	70
480	516	510	548	78
500	538	530	570	83
520	559	550	591	88
530	570	560	602	90

These tables can be used to identify target mating weights for different situations, and to predict the pregnancy rates likely from groups of heifers which will be useful in budgeting and to assess the profitability of different management strategies.

Example: *A manager wants to know whether a supplementary feeding program that is designed to increase the pre-calving weight of his first calf heifers by 40 kg will be profitable.* To determine this he can use Table 3 to find out how much the re-conception rates will be increased by when the pre-calving weight is increased by 40 kg. If the heifers are due to start calving in October and he weighs them in August straight after mustering them and does not know how to correct for stage of pregnancy then he should use the fourth column in Table 3. If their weight is likely to be 440 kg at this time without feeding, then they are likely to have a re-conception rate of about 35%. If they were 40 kg heavier they would likely have a re-conception rate of 52%. So the feeding program is likely to give an extra 17 pregnancies per 100 heifers fed. If we value a weaner at $630 (ie. 180 kg x $3.50 per kg) then the benefit of feeding 100 heifers is $10,710. This can be compared to the cost of feeding 100 heifers to determine whether the strategy is cost effective.

Predicting pregnancy rate from body condition score

If heifers cannot be weighed prior to calving then it is possible to estimate pregnancy rate from pre-calving body condition score (BCS).

Table 4. *The predicted pregnancy rates for Brahman first lactation heifers in different pre-calving body condition scores*

Pre-calving BCS (1-5 system)	Pre-calving BCS (1-9 system)	Pre-calving Weight (kg)	Predicted Pregnancy Rate (%)
1 (poor)	2	335	12
2 (backward)	4	395	30
3 (moderate)	5	450	55
4 (forward)	7	510	77
5 (fat)	9	570	90

Tim Schatz: NT DPIR   Phone 08 8999 2332 Email: tim.schatz@nt.gov.au

Are you interested in improved pasture?

With improved cattle prices many producers in the Northern Territory are looking at ways to improve production through improved pastures. The Department of Primary Industry and Resources (DPIR) is conducting a survey to better understand the needs of producers regarding improved pasture.

The aim of the survey is to identify knowledge gaps to allow researchers and extension staff to have a more targeted approach to developing improved pasture projects.

The survey can be found here: https://www.surveymonkey.com/r/NTDPIRPASTURE

For further information please contact Callen Thompson on 8973 9724 .

Pastoral Market Update

DEPARTMENT OF PRIMARY INDUSTRY AND RESOURCES

Live Cattle Exports via Darwin Port – NOVEMBER 2016

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)						
	2014	2015	Last year to 30/11/15	YTD to 30/11/16	NOV	Last month	*Difference*	2014	2015	Last year to 30/11/15	YTD to 30/11/16	NOV	Last month	*Difference*
Brunei	4,925	4,122	3,249	3,379	0	0	0	4,925	2,069	1,450	2,314	0	0	0
Indonesia	386,183	341,759	311,704	257,176	34,151	17,582	16,569	251,232	197,155	175,816	167,426	24,042	0	24,042
Philippines	16,080	23,611	21,561	4,697	0	0	0	11,221	13,559	12,103	3,236	0	0	0
Sabah	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sarawak	0	300	300	1,220	0	0	0	0	0	0	843	0	0	0
Malaysia	22,309	11,503	11,503	10,959	1,105	0	1,105	15,708	7,499	7,499	7,476	778	0	778
Vietnam	64,461	100,119	96,682	31,737	1,644	0	1,644	41,391	63,998	61,558	21,483	1,157	7,158	-6,000
Egypt	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thailand	0	6,154	6,154	0	0	0	0	0	3,610	3,610	0	0	0	0
Cambodia	0	0	0	2,766	0	0	0	0	0	0	1,936	0	0	0
TOTAL	**493,958**	**487,568**	**451,153**	**311,934**	**36,900**	**17,582**	19,318	**324,477**	**287,892**	**262,037**	**204,714**	**25,978**	**7,158**	**18,820**

November at a glance

- 36,900 cattle through the Darwin Port during November; 19,318 more than last month and 4,888 more than in Nov last year.
- 25,978 NT cattle through the Darwin Port during November; 18,820 more than last month and 6,130 more than in Nov last year.

Live cattle exports thru Port of Darwin 2015 - 2016
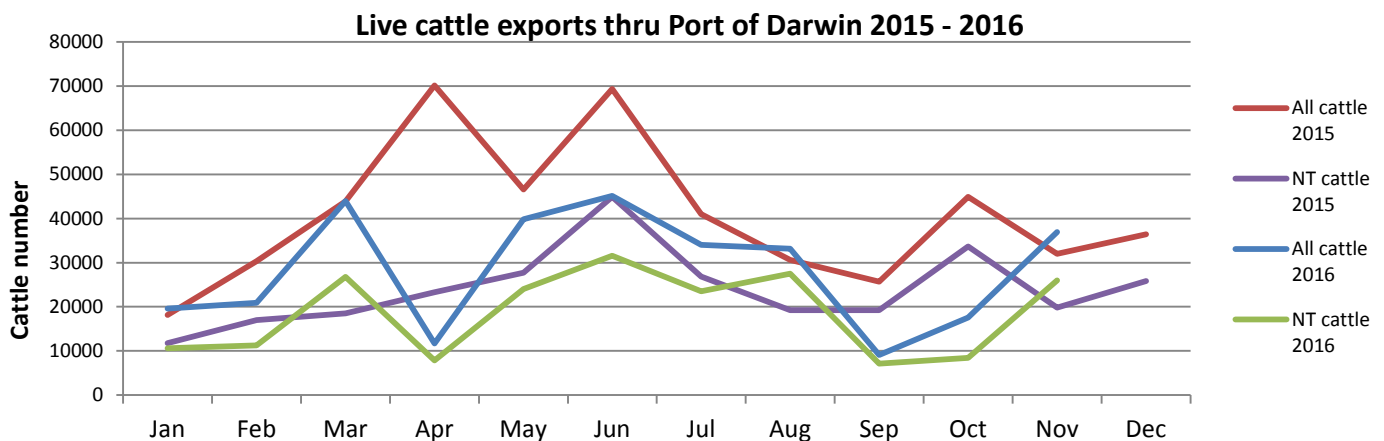
OTHER LIVESTOCK EXPORTS VIA DARWIN PORT

Includes NT and interstate stock.

Destination	Buffalo		Goat		Camel	
	YTD	NOV	YTD	NOV	YTD	NOV
Brunei	599	0	0	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	1,212	372	0	0	0	0
Vietnam	3,981	300	0	0	0	0
Egypt	0	0	0	0	0	0
Thailand	0	0	0	0	0	0
Cambodia	0	0	0	0	0	0
TOTAL	**5,792**	**672**	**0**	**0**	**0**	**0**

NT CATTLE MOVED INTERSTATE

Destination	Number
NSW	1,902
QLD	13,215
SA	6,393
VIC	1,249
WA	1,288
Total	**24,047**

NATIONAL CATTLE PRICES
www.mla.com.au/prices-and-markets

CURRENCY EXCHANGE RATES
www.oanda.com/currency/converter

Total Cattle, Port of Darwin								NT Cattle, Port of Darwin							
2008	2009	2010	2011	2012	2013	2014	2015	2008	2009	2010	2011	2012	2013	2014	2015
364,944	347,314	295,605	269,617	246,990	359,616	493,958	487,568	295,539	304,818	272,749	253,797	234,249	308,784	324,477	287,892

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Katherine region events calendar

Event	Location	Date	
Kidman Springs field day	Kidman Springs	August 2017	jodie.ward@nt.gov.au
Spray technology workshops	Douglas Daly Katherine Alice Springs	Early 2017	callen.thompson@nt.gov.au

Please email us with updates of events happening in your area: callen.thompson@nt.gov.au

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