Breed the horns out of your herd – understanding the inheritance of horns

Trisha Cowley, Pastoral Production Officer, Katherine Research Station

Imagine not having to dehorn calves or weaners because there were no horns to remove. Now, imagine that you have to:

- dehorn animals at no older than 2 months of age, or;
- administer anaesthetic and pain relief prior to dehorning, or that;
- you can only tip animals over 6 months of age unless they are dehorned under the supervision of a vet using pain relief and anaesthetic.

None of these scenarios are impossible. In fact, the last two form part of RSPCA’s current position on dehorning of cattle. Given society’s current attitudes towards animal welfare, it is evident that husbandry practices will have to change in order to meet future expectations.

Certainly, removing the need to dehorn is very appealing. It has positive implications for animal welfare, productivity and labour requirements and safety for station staff. Moving towards a polled herd could be achieved through crossbreeding with a polled breed (eg. Senepol), or through polled Brahman genetics. Either strategy could involve purchasing bulls and/or incorporating AI into your breeding program. Regardless of the strategy, you can be assured that it will take a long time to move from a 100% horned herd to a 100% polled herd, so if you want to go down that track, you had better start now!

This article will focus on breeding polledness in Brahmons and will discuss the inheritance of this trait. There are plenty of practical considerations to take into account when planning to include polledness into your breeding program and these will be discussed in the next edition of the KRR.

The Polled gene

In many Bos taurus breeds (but not Bos indicus) a single gene determines whether animals are polled or horned; the polled gene. The polled gene has 2 forms; polled (P) or horned (H). Every animal has two copies of the polled gene, so potentially they could have PP, PH or HH. An animal that has 2 of the same copies of the polled gene (e.g. PP or HH) is called homozygous, while an animal that has one of
each of form of the gene is heterozygous (e.g. PH). The polled form is dominant over the horned form. This means that even if an animal has only one copy of the polled form it is still visually polled (i.e. both PP and PH animals are visually polled). HH animals are horned.

An animal gets one copy of the polled gene from its mother and one copy from its father, and consequently randomly passes on one of its copies to its progeny. PP animals are considered “true polled” as they pass on the polled copy to 100% of their progeny. However, PH animals are carriers of horn, and will only pass on a polled copy to half of their progeny. Therefore, using PP sires in preference to PH sires will speed up the time taken to reach a polled herd. Since PP and PH animals look the same, it is desirable to be able to distinguish between them.

Several tests exist that can do just that, however they only work well in European breeds where polledness is controlled by the polled gene only. Until recently there were no tests available that worked in the Bos indicus breeds where the inheritance of polledness is more complex.

**Inheritance of polledness in Bos indicus cattle**

We still have more to learn about the inheritance of polledness in Bos indicus cattle. It was thought that the inheritance of polledness was controlled by 3 unrelated genes: the “Polled”, “African Horn” and “Scur” genes (scurs are loose horny growths that are not attached to the skull). However, a study carried out by the Beef CRC, CSIRO and MLA found very little evidence for the African horn gene in the animals studied. Further, it seems that the underlying genetics of scurs acts in combination with the Polled gene in some breeds. We still don’t know too much about the inheritance of scurs, but what we do know for certain is that Bos indicus animals (and some Bos taurus breeds such as Hereford) can be polled, scurred or horned due to the interaction of the Polled gene with scurs. There is also some evidence that scurs are sex linked, with scurs being more prevalent in males than females and that the prevalence of scurs differs in different breeds and in different lines of cattle.

**Polled Gene Marker Test**

Excitingly, a test has been released that works very well in Brahmans in determining whether animals are true polled (PP) or carriers of horns (PH), regardless of the interaction of scurs. The test uses gene markers (fragments of DNA that are not directly responsible for polled status, but are closely associated with the polled gene) to determine whether an animal is PP, PH or HH. The test also works well in Santa Gertrudis, Droughtmaster, Hereford and Simmental.

To assess the usefulness of the Polled Gene Marker Test, 402 animals from 38 Brahman studs were tested and then their result was compared to their actual poll/horn status (i.e. what they look like). The results are presented in Table 1 below.

<table>
<thead>
<tr>
<th>Genotype</th>
<th>Visual Appearance</th>
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<tr>
<td></td>
<td>Polled (%)</td>
</tr>
<tr>
<td>PP</td>
<td>98</td>
</tr>
<tr>
<td>PH</td>
<td>40</td>
</tr>
<tr>
<td>HH</td>
<td>2</td>
</tr>
</tbody>
</table>

Thus, in Brahmans scurred animals are highly likely be carriers of horns (PH) while polled animals are likely to be homozygous polled (PP), but could also be heterozygous polled (PH).

It is important to note that the Polled Gene Marker Test does not provide a conclusive result every time. In Brahmans, 11% of the test results were inconclusive (i.e. the test could not say whether the animal was PP, PH or HH). Of all breeds tested, the Brahman had the least number of ambiguous results. For more information on different breed results from the marker validation study, refer to the following report on the CSIRO website:


**How do I organise a Polled Gene Marker Test?**

The Pfizer Animal Genetics arm and the University of Queensland Animal Genetics Laboratory both carry out Polled Gene Marker Testing. The cost per animal is approximately $30 and involves collecting a tail hair sample that is sent to the lab. After which, you should receive your results in about 2-3 weeks. The
test is currently only suitable for use in Brahman, Santa Gertrudis, Droughtmaster, Hereford and Simmental breeds (and any combination of them).

What can you expect from using PP, PH or HH Brahman bulls?
Most Brahman herds will be largely HH, with very little polled influence. Obviously using a PP bull will infuse the largest amount of polled genetics into a herd. For example, PP sires over HH cows will give 100% PH progeny, whereas on average PH sires over HH cows will give you 50% PH progeny and 50% HH progeny.

Table 2. Expected percentage of Brahman progeny that will be PP, PH or HH for different poll/horn crosses

<table>
<thead>
<tr>
<th>Potential polled/horned crosses</th>
<th>Genotype of resulting Brahman progeny</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% Progeny PP</td>
</tr>
<tr>
<td>PP x PP</td>
<td>100</td>
</tr>
<tr>
<td>PP x PH</td>
<td>50</td>
</tr>
<tr>
<td>PP x HH</td>
<td>0</td>
</tr>
<tr>
<td>PH x PH</td>
<td>25</td>
</tr>
<tr>
<td>PH x HH</td>
<td>0</td>
</tr>
<tr>
<td>HH x HH</td>
<td>0</td>
</tr>
</tbody>
</table>

While Table 2 displays the genetic make-up of the progeny, it doesn’t show what percentage of animals that will be visually polled, scurred or horned. This is displayed in Table 3.

Table 3. Expected percentage of Brahman progeny that will be polled, scurred or horned for different poll/horn crosses

<table>
<thead>
<tr>
<th>Potential polled/horned crosses</th>
<th>Visual appearance of resulting Brahman progeny</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% Progeny Polled</td>
</tr>
<tr>
<td>PP x PP</td>
<td>98</td>
</tr>
<tr>
<td>PP x PH</td>
<td>69</td>
</tr>
<tr>
<td>PP x HH</td>
<td>40</td>
</tr>
<tr>
<td>PH x PH</td>
<td>44.5</td>
</tr>
<tr>
<td>PH x HH</td>
<td>21</td>
</tr>
<tr>
<td>HH x HH</td>
<td>2</td>
</tr>
</tbody>
</table>

Hence, on average a PP bull over HH cows will give you 40% polled progeny, 50% scurred and 10% horned, as opposed to a PH bull over HH cows which will give you 21% polled, 28% scurred and 51% horned. As the prevalence of the African horn gene and scurs are thought to differ in different breeds and in different lines of cattle, it is likely that the real world percentages will differ to those depicted in Table 3. However, this is the best estimate that we can give based on current knowledge. Regardless of the current prevalence of these, the use of true polled bulls will reduce scurs and horns in your herd. The key message is that about 90% of progeny from PP bulls and HH cows will not need dehorning, while about 50% of progeny from PH bulls and HH cows will need dehorning. Using PP bulls will almost immediately solve your dehorning issues, though it will take a lot longer to reach a 100% polled herd.

So is it that simple?
It’s never that simple! While the use of PP bulls over PH and HH bulls will certainly move you more quickly towards a polled herd, there are some considerations that should be taken into account when planning a polled breeding program. The next article will consider these.

For more information on the inheritance of polledness in Brahmans contact Trisha Cowley, 8973 9770 or trisha.cowley@nt.gov.au or check out the excellent range of publications available at the Beef CRC website: http://www.beefcrc.com.au/PolledGeneMarkerTest
Hay Producers: It’s time for a stack-take

Melissa Fraser, Regional Team Leader, Plant Industry Group

NT grown field and fodder crops contributed $18m to the Territory economy in 2010. The sector was dominated primarily with fodder crops (hay and maize) grown under both dryland and irrigated conditions by farmers and pastoralists across the Top End, Douglas Daly, Katherine, Mataranka and Barkly regions. The size of the industry has grown steadily over the past 15 years, supplying the local cattle industry with raw and processed fodder products. Despite this, little is currently known about the NT Fodder Industry in terms of size or volume of production, quality attributes, domestic consumption, the costs associated with transporting and processing fodder products, or the volume that is currently being imported and exported across Territory borders.

It is widely recognised that there is no basis of payment for product quality, other than legume hay (primarily Cavalcade) generally fetching a higher price than grass hay. This is in contrast to southern markets where fodder price is increasingly determined by quality parameters such as cents/Mega joule (MJ) of energy, $/kg of protein and c/kg of dry matter, rather than $/tonne of gross product. This lack of implementation of quality parameters provides little incentive to the producer and is seen as a significant barrier to the development of the industry.

In November 2009 a fodder information forum was convened by the NT Agricultural Association (NTAgA) in response to increasing concerns being raised by local fodder producers. The Association concluded “If the fodder industry is to advance, there is a need to develop better market intelligence, determine the true size, capacity and needs of the industry and provide information and training on quality and nutritional aspects of producing and feeding hay in the NT. There is also a need to explore alternative domestic markets”.

The Plant Industry Group of Department of Resources is responsible for the development and delivery of research, development and extension activities that support profitable and productive plant-based agribusiness in the NT. Much of the research previously conducted by the Department on fodder crops has been focused on increasing the efficiency of the farming system behind the farm-gate, with little or no effort dedicated to examining how efficiency and value can be increased beyond the farm-gate. To ensure the NT fodder industry remains economically viable in the future it is vital that industry gain an understanding of the current and future requirements of their customers, and then determine if and how these needs can best be met, i.e. a sound analysis of the value chain is required.

The concept of Value Chain Thinking and Analysis was brought to the fore in Australian Agri-food industries by the 2008 South Australian Thinker In Residence, Professor Andrew Fearne. Value chain thinking requires a shift in focus from the supply base and producers of the product, to considering the customer base and consumers, with the aim of identifying opportunities to differentiate and add value wherever consumer preferences make doing so profitable. In value chains the aim is to align the chain to the needs of the end consumer, using management (rather than markets) as the mechanism for coordinating product and information flow between the various players.

The NT Pastoral Industry is the major customer for locally produced fodder products. Hence, the future of the fodder industry is also exclusively geared to the fortunes of the cattle industry. The Department is currently conducting its Pastoral Industry Survey. The survey will collate data and information on management practices and includes questions specific to fodder production, consumption and demand on all NT stations that carry more than 300 head of breeder cattle.

To complement the data collected in the Pastoral Survey, a complementary fodder industry survey has been developed. This will target other fodder customers and value chain members in the NT, and gather market and production intelligence, assess opportunities and weaknesses, and determine the capacity of the fodder industry to meet current and future demand. The collection of these data will facilitate the development of future research and extension programs for the industry.
It will also capture information from input suppliers, producers, transporters, processors and customers of hay and processed fodder products in the NT. If you are one of these stakeholders and are willing to share your thoughts and experiences, then please get in touch to organise a time for me to visit to conduct the survey. Individual information collected in the survey will remain confidential and participation is voluntary.

I’ll be on the road in March to conduct the survey and look forward to meeting a range of Fodder Industry value chain members. You can contact me on phone: 08 8973 9738 or via email: Melissa.fraser@nt.gov.au if you would like to participate in the 2012 Fodder Industry Survey.

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**Nitrogen research underway at Maneroo**

*Melissa Fraser, Regional Team Leader, Plant Industry Group*

At an industry meeting held in July 2011, one of the priorities identified by participants was the development of a ‘ready reckoner’ for nitrogen (N) application in grass hay crops to assess the cost/benefit (both yield and quality) of fertiliser application.

Little research has recently been conducted on the N requirements of grass crops grown for hay in the NT. A paddock at Maneroo Station in the Douglas Daly has been selected to establish a trial investigating crop rotations and N fertiliser requirements during the 2011/12 wet season. The 200 ha paddock has been planted to Cavalcade (a nitrogen fixing legume crop) for the last 3 years, however in the 2010/11 wet season one third of the paddock was planted to Jarra Finger grass (*Digitaria milanjiana*) to enable the adequate control of weeds. During the 2011/12 wet season, another third of the paddock was converted to Jarra, with the final third remaining Cavalcade. The crop rotation combinations at Maneroo provide a good opportunity for assessing the contribution of N by the legume, after both a 1 year and 2 year period following Cavalcade. Overlaying a nitrogen (N) application rate trial across this area allows for the further assessment of Jarra grass N requirements, and the cost/benefit of N application.

Urea was applied (post emergent) at rates of 0, 40, 80 and 160 kg per hectare on January 30 and 99 mm of rain was received in the following 7 days. Plant nutrient content, crop yield and hay quality will be assessed for the different crop and treatment combinations. In addition, a suite of comprehensive soil tests will be conducted to determine the carbon and N status of the soil as affected by the treatments. Gross margins for the various N rate/yield/time after Cavalcade will also be prepared.

![Fig. 1](a) second year Jarra crop with no N applied, and (b) second year Jarra crop with 160 kg of urea applied per hectare.

A field day will be held at Maneroo in the coming weeks in conjunction with Fergal O’Gara and the NTAgA to discuss results and observations to date. Final trial results will be available following crop harvest. This research is jointly funded through the Department of Resources and the NT Agricultural Association, through their Caring for Country Project. For more information on the trial you can contact Mel Fraser at KRS on 8973 9738.
**Banding Castration: Is it a better option?**

*Whitney Dollemore, Pastoral Research Officer, Katherine Research Station*

In recent years, the use of banding has increased as an alternative to surgical castration due to its perceived ease of application and superior outcomes in terms of mortalities. Banding castration consists of placing a rubber ring around the neck of the scrotum to interrupt the blood supply resulting in the death of the scrotum and testes (necrosis) and finally detachment after 35-65 days (Figure 1).

**But is it a better option?**

All methods of castration have been shown to cause behavioural responses indicative of pain. However, the timing and duration of the pain response has been shown to vary between methods. Current scientific research is beginning to indicate that banding castration offers little benefit in terms of liveweight gain and animal welfare from conventional/surgical castration methods.

Surgical castration produces a short-term pain and inflammatory response, whereas banding delays these pain responses. In banded animals, it is suggested that a decrease in feed intake and growth and inflammation were greatest 3-4 weeks after banding, which is around the time of the scrotum detaching.

Current information on the effect of castration method on growth rates is conflicting. A number of studies suggest that surgical castrates grow faster than banded animals up to 56 days after castration (Figure 2), but by 84 days after castration the growth rate is similar regardless of castration method. However, other studies suggest that the method of castration has no effect on growth rates after castration (Cohen, 1990, King, 1991).

A recent study done by Carol Petherick from the University of Queensland, one of North Australia’s principal researchers on animal welfare, was carried out under northern Australian conditions and has confirmed that inflammation is significantly higher in surgically castrated animals for the first week after castration. However, 2 to 4 weeks following castration inflammation was greater in banded animals. There also appeared to be no difference in growth rates over a 3 month period. Final conclusions from this study are yet to be published.

Banding also has significant animal health risks that should be considered. The necrosis and lack of oxygen around the scrotum during the time of banding are ideal conditions for the development of *Clostridium tetani*, the bacteria responsible for tetanus. Surgical castration does leave a wound for bacterial infection. However, the tissue that remains when banding leaves a greater surface area for bacteria to enter the wound, so although vaccination against tetanus is recommended at branding for all methods of castration, it is even more important when bands are used.

If performed incorrectly any method of castration can cause unwarranted pain, increase the risk of infection or be ineffective. If banding castration is to be used, then the correct sized bands are critical. If the band is too large, the blood supply is not completely interrupted, the animal experiences high levels of pain and detachment of the scrotum is delayed. This increases the risk of infection and the time of recovery, while reducing the growth rate of the animals and the effectiveness of the procedure.
Banding castration has been shown to cause no pain or liveweight response in animals at 1 week of age. Hence, the current guidelines, the Model Code of Practice for the Welfare of Animals: Cattle states, “castration with rubber rings is only recommended for calves up to 2 weeks of age”. The code of practice can be found at http://www.publish.csiro.au/Books/download.cfm?ID=4831. The Code is currently being reviewed and converted to the Australian Animal Welfare Standards and Guidelines for Cattle which will be regulated under State and Territory legislation. These Standards will be available for public comment in 2012, for more information, visit http://www.animalwelfarestandards.net.au/.

Banding castration has become a topic of much debate. Ongoing research by Carol Petherick is indicating that banding castration offers little benefit in terms of liveweight gain and animal welfare from conventional/surgical castration methods. The final results of this research will be of great interest to answer the question, “Is banding castration really a better option?” Current best practice recommends the use of banding castration on calves up to 2 weeks of age with the correct sized rings or surgical castration on older animals as per the Katherine best practice manual, which can be viewed at http://www.nt.gov.au/d/Content/File/p/pi/KBP_Apr09_web_96dpi.pdf or the MLA guide to best practice husbandry in beef cattle: http://www.mla.com.au/Publications-tools-and-events/Publicationdetails?pubid=40.07.

References

**NTDoR’s involvement in ACIAR funded project in Indonesia**

*Kieren McCosker, Beef Research Officer, Katherine Research Station*

It is estimated that the demand for beef in Indonesia is rising by 4% per year due to the westernisation of diets and a larger Indonesian population living in urban centres. As a result, the domestic supply of beef is unable to meet demand. As part of the NT DoR’s efforts (along with the University of Queensland and Queensland Department of Employment, Economic Development and Innovation) to demonstrate to Indonesia our willingness to assist in their beef production development we are involved in an Australian Centre for International Agricultural Research (ACIAR) funded project “StrawCow”.

The StrawCow project commenced in July 2009 and is funded to December 2013, with the aim of providing feeding systems that improve the productivity and management of both local and Australian breeding cows and their progeny in low input systems of Indonesia. Sustainably improving production and management of cattle on smallholder enterprises, typically located in densely populated rural areas, requires the use of underutilised crop residues such as rice straw to increase the amount of biomass available to be fed to cattle. Rice straw on its own has low nutritive value and previous attempts have failed when fed to growing cattle but, it is hypothesised that with a mix of high-quality feeds it could maintain the weight and body condition of breeders during the dry period when feed resources are low.

Photo 1: Expatriated Northern Territory Brahman cows being fed young Elephant grass at the Lamongan village site.
Beef producers targeting the Live Export market now have another tool at their disposal to assist them in selecting bulls for their production system. The new Live Export Index is available on the Australian Brahman Breeders Association (ABBA) website, and allows producers to rank animals according to their genetic profitability when targeting the Live Export trade. This allows producers to combine both a physical appraisal of a bull with his genetic potential before selecting them for use in their breeding enterprise.

The Live Export Index was developed by the NT DoR with funding from MLA and technical support from the Animal Genetics and Breeding Unit (AGBU) and Tropical Beef Technology Services (TBTS). Development involved close consultation with people representative of all parts of the Live Export trade supply chain, from the farm to the feedlot and abattoir, to identify the key profit drivers specific to production of cattle for this market. These key profit drivers were then used in BreedObject software (developed by AGBU) to place economic weighting on individual traits according to their relative importance in influencing profitability of production systems breeding for the Live Export trade. Figure 1 illustrates the weightings of each single EBV, which are considered the key profit drivers of the Live Export production system, and make up the Index. This shows that most emphasis has been placed on fertility (reducing days to calving) and increasing 600 day weight EBVs.

This results in an animal having a single $ value EBV, which avoids producers having to decide which single EBVs or traits (for example growth, fertility or carcass) are most important for the Live Export production environment. Table 1 shows Live Export Index $ value results for the top 10 published Brahman sires. Notably most of these sires come from the CBV Brahman stud, which has been placing emphasis on selection for fertility EBV traits, in a similar management system to the DoR’s Selected Brahman (DDRF) herd.

Table 1. Top 10 Published sires ranked according to Live Export Index $ value

<table>
<thead>
<tr>
<th>Sire</th>
<th>Live Export Index $</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBV 02-0571 Tom Precose</td>
<td>64</td>
</tr>
<tr>
<td>CBV 96-6812 Impact</td>
<td>62</td>
</tr>
<tr>
<td>Waverley Dreamtime 008915</td>
<td>58</td>
</tr>
<tr>
<td>CBV 08-5831 Tom Impact</td>
<td>58</td>
</tr>
<tr>
<td>Lanes Creek Red Ranger</td>
<td>56</td>
</tr>
<tr>
<td>CBV 05-3097 Tom Radakovit</td>
<td>56</td>
</tr>
<tr>
<td>CBV 03-1716 Tom Ruxton</td>
<td>56</td>
</tr>
<tr>
<td>DDRF 15431</td>
<td>54</td>
</tr>
<tr>
<td>CBV 06-4813 Tom Gandhi</td>
<td>54</td>
</tr>
<tr>
<td>CBV 02-0556 Gandhi XL</td>
<td>54</td>
</tr>
</tbody>
</table>

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**Figure 1. Live Export Index – EBV weightings**

**Table 1. Top 10 Published sires ranked according to Live Export Index $ value**
So you may wonder what this $ value signifies when looking at a bull. The $ value is effectively an EBV of the animal’s progeny’s expected profitability in that particular production environment (Live Export), and is expressed as “net profit per cow mated”. For example, if we compare a bull with an Index of +$54 with a bull which has an Index of +$17 (Brahman Breed average), we can estimate that the difference in net profit from the progeny of the bulls would be:

\[ \text{difference in net profit} = \frac{1}{2} \times (54 - 17) = $18.50 \text{ per cow mated} \]

If these bulls were joined to 200 cows during their breeding life, this would equate to a difference of $3700 in net profit of all progeny.

This information could be useful when looking at bulls at sale, as although they may look the similar physically, one bull has far higher profitability potential for the Live Export production system.

Many trials have proven that EBV and Selection Index technology works in the paddock, with steers showing predicted differences in weights. The DoR is currently developing a Producer Demonstration Site trial which will aim to display the workings of the Live Export Index in the paddock.

**Further information:**
The following sources will provide you with a wealth of information on EBVs and Selection Indexes and also the ability to look at bulls and their values:

- **BREEDPLAN** – [http://breedplan.une.edu.au](http://breedplan.une.edu.au)
- **BreedObject** – [http://breedobject.com](http://breedobject.com)
- **TBTS** – (07) 4927 6066 or office@tbts.une.edu.au
- **Katherine Pastoral Production office** – 08 8973 9739.

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**Bull sale disperses genetics into the region**

Brahman bulls from the Department’s Selected Brahman herd were sold by tender over the past month.

These bulls form part of the Selected Brahman project run by the DoR over the past 15 years. The herd is managed using intense selection for fertility traits including culling of non-performing breeders and the use of Estimated Breeding Values (EBVs) to select animals of large scrotal size and reduced days to calving. This herd now boasts animals which rank in the top percentile for these fertility EBVs within Brahman Breedplan.

The idea of the sale is to allow producers the opportunity to benefit from the DoR’s research with this herd and disperse these genetics throughout our region. All sale bulls are ABBA registered, fertility tested and have complete Breedplan EBVs. This year progeny of the bull shown in Table 1 (previous article), DDRF 15431 (Photo) were available for purchase, and show qualities similar to their sire.

There are still some bulls available. For further information please contact Douglas Daly Research Station, phone 08 8978 2442.
Breeding fertility into your herd

Trisha Cowley, Pastoral Production Officer, Katherine Research Station

To state the obvious, it is pretty difficult to make money in the cattle game these days. The 2009 report outlining the financial situation of northern beef businesses (McCosker and Holmes) found that things were pretty grim and certainly recent changes to property values and cattle markets are only making things more uncertain. McCosker & Holmes stated that “the extremely poor performance of the extensive breeder herd is an alarming contributor to poor business performance”. Reproductive performance – i.e. weaning rate – is a key profit driver in northern Australia, so improving this is a major business objective. However, there is a perception that it is very difficult to do this cost-effectively as nutrition and disease are seen as the key limiting factors. The idea that you could get more calves from a breeder in her lifetime without drastically increasing inputs is a very appealing one.

Currently the Brahman is getting some flak for its fertility. But is this really deserved? There is growing evidence that there are Brahmans out there that can have a calf every year, even in the north. That is, some Brahmans are genetically more fertile than others. So what is going on? In general, selection within the Australian Brahman has focussed on growth and carcass characteristics rather than reproductive performance and this has led to a lack of genetic progress in fertility, despite progress in other important traits. Results from one of the longest running and largest cattle genetics projects in Australia; the Beef CRC’s Female Reproductive Performance project which tracked 2200 female Brahman and Tropical Composite cattle over 9 years and 3500 of their bull calves over 2 years; has found that there is a large variation in reproductive performance traits in Brahmans and that selection can use this variation to improve reproductive rates. This means that there is a real opportunity for producers to lift the reproductive performance of their herd regardless of environmental conditions through selection of animals that are genetically more fertile. So this is exciting news for northern producers!

So how are you currently breeding fertility into your herd? Are you culling non-performing females? Are you selecting bulls with a high genetic merit for reproductive performance – i.e. bulls who will sire daughters that have more calves in their lifetime? You can’t tell by looking at a bull what his genetic merit for fertility is, so what information are you using to assess this before purchase? How are you selecting replacement heifers – assuming that you want those that will produce the most calves in their lifetime? Are you buying bulls that have been semen tested or had a Bull Breeding Soundness Evaluation – i.e. do you know they can do the job? If you are breeding your own bulls, how are you incorporating reproductive performance into your selection process?

These are some of the topics that will be covered at a workshop to be held on the 11th and 12th of April at the Katherine CDU campus. The two course presenters are senior specialists in the field of beef cattle research and extension who have recently retired from their respective positions to concentrate more on delivering the message to forums such as these - Wayne Upton (formerly an extension specialist and consultant at the Animal Genetics and Breeding Unit, University of New England) and John Bertram (formerly based in Alice Springs and latterly a Principal beef cattle extension officer with Qld DPI).
Producer members of the Katherine Pastoral Industry Committee, which advises DoR on research and extension priorities, attended a similar workshop in 2010 as a part of their role in developing the Northern Live Export Index. The Committee strongly recommended that due to the productivity implications of the information presented, it was critical for all producers in the region to have the opportunity to attend workshops such as these. So, while the cost of the workshop would usually be in excess of $1,500.00 per participant, DoR will conduct this workshop at no charge for participants as a once off opportunity – you just have to get yourselves there and sort out accommodation. You can do your own sums on the value of investing your time if the information presented assists you to increase weaning rates by even just 1%. The workshop involves practical components of bull and breeder selection – actually getting out in the yards - as well as some time in the classroom.

For more information or to register your interest contact Trisha Cowley on 8973 9770 or email trisha.cowley@nt.gov.au

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Are you a producer, processor or customer of NT grown Hay and Fodder products?

If so, then Mel Fraser from KRS wants to speak to you. The Plant Industry Team will be on the road in March to conduct a survey targeted at the Fodder Industry.

The aim of the survey is to gather market intelligence and determine the true size, capacity and needs of the industry. Information collected will enable the development of a future research, development and extension program for the Industry.

Contact Mel Fraser on 8973 9738 to participate in the survey and see the article on page 4 for more information.
KPIAC - Your local research and advisory committee at work......

Trudi Oxley, Senior Extension Officer, Katherine Research Station

2011 will be remembered as a year of enormous upheaval for the cattle industry in the Katherine and Top end regions. In amongst sorting out the implications of the live cattle export suspension to their own enterprise, the members of the Katherine Pastoral Industry Advisory Committee (KPIAC) also took time and energy to ensure that the priorities for research, development and extension were reviewed and changed on behalf of the local industry to ensure they were relevant to meeting the challenges currently facing the industry.

KPIAC undertook a variety of tasks through their meetings in 2011. Some of the most significant involved providing producer representation for a number of key initiatives that will shape the way research and development funding is delivered in northern Australia for years to come.

The most significant exercise for the year was to assist in directing the priorities of the North Australian Beef Research Council (NABRC) facilitated by NABRC chairman, Ralph Shannon. NABRC has been involved in initiating and guiding beef industry research for many years, however, the organisation has recently become even more critical for producers due to its inclusion as a key body involved in assessing projects under the national Research, Development and Extension strategy, which will see major changes to how federal funding trickles down to research in the pastoral industry. KPIAC members also contributed input to the design of a major CSIRO Profitability Scoping study aimed at assisting alternative development pathways and improving the profitability of the beef industry. The committee was also called on to provide their advice and expertise in reviewing the Department of Resources research, development and extension priorities to ensure programs are on track to meet industry needs in the wake of the live export suspension.

KPIAC conducted a number of its “usual business” activities for the year which included providing input into the organisation of a Beef Up Forum at Daly Waters, reviewing and providing advice and input on ongoing projects such as the Producer Demonstration Sites project, the NT Pastoral Industry Survey, the national body condition scoring project, Climate Clever Beef and Northern Grazing Systems projects, ensuring they stay on-track, practical and relevant to local industry.

Whilst the committee has a very good track record for assisting in getting local projects funded, such as the Liveweight Gain project, the Katherine Best Practice Manual, the Heifer project, the Northern Selection Index project and the Northern Livestock Transporter Course, we did bid unsuccessfully for funding on a project assessing meat quality of Senepols under tropical environments.

Once again, Keith represented the Katherine and Top End regions at numerous MLA and NABRC meetings, I believe the count was 8 trips to meetings in Brisbane and Charters Towers in 2011, a sterling effort in order keep the interests of our local producers on the north Australian research and extension funding agenda.

KPIAC has a number of events planned for 2012, in addition to their usual business. These include a joint meeting with the Kimberley Research Advisory Committee who have flagged their interest in seeing how KPIAC works. This meeting will be held in April in conjunction with the major Breeding for Fertility workshop, another KPIAC initiative, arising out of the committee’s involvement in producing the Northern Selection Index.

Some of the feedback from the NT Pastoral Survey has been that many locals, especially those newer to the region, have not heard of KPIAC and don’t understand what they do. In an effort to improve this, the mid-year KPIAC meeting will be open to those interested to see how KPIAC does business. Contact Keith if you are interested. Further, DoR will communicate KPIAC’s work regularly through the KRR. And remember, if you have any ideas about what research needs doing in your area, please contact your local KPIAC member.
KPIAC Committee Member | Address
--- | ---
Keith Holzwart (Chairman) | Avago Station (8975 9974)
Michael Underwood | Riveren Station
Steve Craig | Mistake Creek Station
Allan Andrews | Newcastle Waters Station
Henry Townsend | Stapleton Station
Steve Petty | Northern Development Company
Helen Armstrong | Gilnockie Station
Tony Searle (Top End Rep) | Melaleuca Station
Adam Hill | Live Export Consultant
Jillian Kennedy | CDU – Katherine Rural College

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**Awards on offer in early 2012**

**AW Howard Memorial Study Award for Australian Graziers or Rangeland Pastoralists**

“This Award seeks to encourage and enable Australian graziers or pastoralists the opportunity to visit and examine successful grazing systems and practices being implemented either in Australia or abroad that are perceived to have either economic, social and/or environmental benefits to Australian pastoral industries and rural communities. This study award seeks to promote producer excellence and leadership within Australian pastoral industries through development and adoption of best pastoral practices, new practical management and approaches in pastures, grazing systems and natural resource management.”

The Department of Resources is willing to assist suitable candidates with the application process if required.

There is $20,000 up for grabs - be in it to win it!


Applications close: Friday 30th March 2012
A new tool to assist weaner management

*Trudi Oxley, Senior Extension Officer, Katherine Research Station*

A new publication “Weaner Management in northern herds” is a comprehensive look at the issues and current information around weaner management. The book provides a number of suggestions for maximising weaner performance, based on research results and producer case studies of successful weaning systems. Case studies of particular interest for Katherine producers include a look at the current weaner management system on Flora Valley Station, and results from the Heytesbury early weaning trial conducted there over a number of years.

Topics contained in *Weaner management in northern beef herds*

1. Why wean?
2. The calf’s stomach
3. Pasture and grazing management for weaners
4. Weaning strategies
5. Weaner health
6. Feeding weaners
7. Weaner training
8. Longer term benefits
9. Economic impacts

**Key messages from “Weaner management in northern herds”**.

- Calves are taken from their mothers mainly for the benefit of the cow.
- Stopping the need to produce milk reduces the cow’s nutrient requirement and allows her to regain condition.
- Stopping the need to produce milk is equivalent to feeding the cow with 2kg of grain or 3kg of fortified molasses each day.
- The cow needs to have a body condition score of 3 or higher at calving to maximise the chance of getting pregnant again while rearing her calf.
- With year-round mating, calves are at a wide range of ages at the first muster in late autumn; weaning of all calves over 100kg allows the cows to recover body condition and survive the dry season.
- If the wet season fails, all calves can be weaned younger under both seasonal and continuous mating systems.
- Weaning is the time for educating young animals to set them up for ease of handling throughout their lives.

The book was written by a team of north Australian researchers and extension officers from NT Department of Resources, Queensland Department of Employment, Economic Development and Innovation, the Department of Agriculture and Food, Western Australia and was funded by MLA.

The book will be available from the Katherine Research Station, or can be ordered from MLA.

This publication is an example of the type of product that a new extension initiative between these four partner organizations, known as Futurebeef will be producing.

Futurebeef will mean NT producers are better able to access information and programs that are of relevance from across northern Australia. The Futurebeef program and website will be launched at Beef 2012, and more information on the Futurebeef program and the benefits to Katherine producers will be in next Katherine Rural Review.
Fertilisers for pastures – Part 2

Arthur Cameron Principal Pastures and Extension Agronomist Darwin

How much fertiliser is needed?
The amount needed depends on what the pasture is used for and the intensity of use.

Pastures can be used for revegetation and erosion control, grazing of various intensities or for hay production, which is the highest intensity use.

For revegetation or erosion control, if they are not grazed, fertiliser applications may be necessary only in the first year to ensure establishment and growth to provide ground cover.

Removal of nutrients is generally low with grazed pastures, as the animals recycle most of the nutrients back onto the pasture in faeces and urine.

Nutrient removal in hay is much higher. The amount of the main nutrients (nitrogen, phosphorus, potassium and sulphur) removed in a good grass (Jarra) hay crop (10 tonnes hay/ha) and a good legume (Cavalcade) hay crop (6 tonnes hay/ha) are presented in Table 1.

Table 1. Nutrient removal in hay (kg/ha)

<table>
<thead>
<tr>
<th>Hay crop</th>
<th>Nutrient</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Nitrogen</td>
<td>Phosphorus</td>
<td>Potassium</td>
<td>Sulphur</td>
</tr>
<tr>
<td>Grass (10t/ha)</td>
<td>100</td>
<td>10</td>
<td>100</td>
<td>10</td>
</tr>
<tr>
<td>Legume (6 t/ha)</td>
<td>120</td>
<td>9</td>
<td>90</td>
<td>10</td>
</tr>
</tbody>
</table>

With this level of removal, it does not take many years of hay cropping to deplete the soil of nutrients and lead to deficiencies and poor growth and yields. Nitrogen is fixed by the legume, so the removal is only a problem for grasses.

The amount of each nutrient which needs to be applied to keep pastures productive in the Katherine District is presented in Table 2.

Table 2. Nutrient required to keep pastures productive (kg/ha)

<table>
<thead>
<tr>
<th>Use</th>
<th>Nitrogen</th>
<th>Phosphorus</th>
<th>Potassium</th>
<th>Sulphur</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grass grazing</td>
<td>20 - 30</td>
<td>5</td>
<td>0 - 25</td>
<td>5</td>
</tr>
<tr>
<td>Grass hay</td>
<td>50 - 100</td>
<td>10</td>
<td>25 - 50</td>
<td>10</td>
</tr>
<tr>
<td>Legume grazing</td>
<td>0</td>
<td>5</td>
<td>0 - 25</td>
<td>5</td>
</tr>
<tr>
<td>Legume hay</td>
<td>0</td>
<td>10 - 15</td>
<td>25 - 50</td>
<td>10 - 15</td>
</tr>
<tr>
<td>Mixed pasture grazing</td>
<td>0</td>
<td>5</td>
<td>0 - 25</td>
<td>5</td>
</tr>
</tbody>
</table>

In a mixed pasture, the legume is expected to fix nitrogen and provide it to the grass. This process mostly happens from one season to the next. There is little transfer of nitrogen from
legume to grass except from that returned in dung and urine, and dung can take a long time to break down.

If a lower level of production is accepted, the rates can be reduced.

An application of phosphorus and sulphur will provide some residual production for two years. The minimum application time for phosphorus and sulphur should be once every 3 years.

There is generally little residual effect from applied nitrogen in subsequent wet seasons. In grazed mixed pastures following a year with a good legume yield or in grass pastures following a legume pasture or fodder crop, there is some residual productivity from the nitrogen in the soil for about 5 years.

The soil generally supplies about half of the potassium required by pastures. During the wet season when the soil is wet, potassium comes out of the clay in the soil. There is little or no residual from applied potassium. As there is high removal of potassium in hay crops, soil levels can run down quickly. This is often first noticed in dry years when the soil is unable to supply potassium to the pastures.

Where zinc (Zn) is required, an application of 5 kg per hectare lasts 5 to 10 years. An application of 200 – 400 g molybdenum (Mo) also lasts for 5 to 10 years.

Have a Laugh!

Send your jokes to Jodie.Ward.dor@nt.gov.au

Seems a guy was driving for hours through desolate country when he passed a farmhouse, and before he could react, a cat ran out in front of him and “splat”... he flattened the cat. Out of kindness and consideration, he stopped, turned around and drove back to the farmhouse to notify the occupants. When the housewife came to the door, said he, "Pardon memadame, but I just ran over a cat in front of your house, and assumed that it must belong to you. I know this might be hard to hear, but I wanted to let you know instead of just driving off....."

"Not so fast", says she. "How do you know it was our cat? Could you describe him? What does he look like?"

The man promptly flopped down on the ground, and said "He looks like this" as he gave his best shot at a dead cat impression.

"Oh no, you horrible man", she replied. "I meant, what did he look like before you hit him?"

At that, the man got up, covered his eyes with both hands and screamed "Argggghhhhhhhhh!!!!!!"
Using genetics to improve fertility in Tropical Breed females

Alan Laing, Senior Beef Extension Officer, DEEDI Ayr
Kiri Broad, Beef Extension Officer, DEEDI Mareeba
Trisha Cowley, Pastoral Production Officer, Katherine Research Station

Key Points

- Use a balance of traits in selection (fertility, growth and carcass)
- Selection for these traits will not compromise tropical adaption
- Female fertility can be improved through genetics from the sires selected
- Scrotal size EBVs (larger, more positive) and Days to Calving EBVs (some breeds) (shorter, more negative) are available for identifying superior genetics for fertility
- Phenotypically, bulls should have above average scrotal size at 12 months and again at pre-mating Bull Breeding Soundness Evaluation (BBSE)
- Use bulls with higher percent normal sperm at 24 months

Research into fertility traits has been carried out by the CRC for Beef Genetic Technologies (Beef CRC) over the last 12 years. The research involved 1027 Brahman heifers by 54 sires and 1132 tropical composite heifers by 51 sires. The heifers were studied from weaning through to weaning of their sixth calf. The outcomes of the Beef CRC can be divided into phenotypic or physical measures of performance and genotypic revealing the genetic measure for various traits. The following findings will first be presented as the phenotypic measures of various traits and subsequently the genetic differences.

Heifer puberty

The heifers’s ovaries were regularly scanned with ultrasound and puberty was defined as the presence of a corpus luteum.

There was huge variation in age and weight at puberty among the research heifers (Table 1). Animals that take a long time or require a high live weight to reach puberty are obviously less desirable.

Age and weight at puberty were found to be highly heritable (Table 2).

<table>
<thead>
<tr>
<th>Age at puberty</th>
<th>Mean (months)</th>
<th>23</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range (months)</td>
<td></td>
<td>11-40</td>
</tr>
<tr>
<td>Weight at puberty</td>
<td>Mean (kg)</td>
<td>332</td>
</tr>
<tr>
<td>Range (kg)</td>
<td></td>
<td>186-485</td>
</tr>
</tbody>
</table>

A critical finding was the large influence of sires on heifer age at puberty. Brahman sires differed by up to 5.6 months in the average age at puberty of their daughters.
**Scrotal size**

Male scrotal size at 12 months was found to highly heritable in Brahmans and moderately so in Tropical Composites. Critically there was a moderate desirable correlation with heifer age at puberty for both breed types. This provides the opportunity to select bulls that will improve female fertility.

Scrotal size Estimated Breeding Value (EBV) is superior to the actual scrotal size measure and a valuable tool for identifying bulls that will produce daughters which reach puberty earlier. The actual scrotal size data can also be used in bull selection provided the animals being compared are from a contemporary group i.e. similar age and same management group. Ideally bulls will have above average scrotal size at 12 months and at the two year old pre-mating BBSE.

**Percent normal sperm**

Within the Beef CRC, bulls were evaluated using the Australian Veterinary Association’s Bull Breeding Soundness Evaluation (BBSE) Standards. These standards use 34 cm at two year old as the base measure which is similar to that found in the Beef CRC bulls at two year old.

Scrotal circumference and the output of the testicles as measured by the percent normal spermatozoa are independent yet valuable traits. The threshold indicated by the ACV is >70% normal for bulls used in single sire mating or for Artificial Breeding and >50% normal for bulls used in multiple sire mating. In the Beef CRC, bulls were evaluated for semen production and quality to indicate changes in testicular growth and production (Table 3).

**Table 3.** Scrotal circumference and percentage normal spermatozoa by breed and age

<table>
<thead>
<tr>
<th>Trait</th>
<th>Breed</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>12 months</td>
</tr>
<tr>
<td>Scrotal circumference &amp; live weight</td>
<td>Brahman</td>
<td>SC (cm)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Weight (kg)</td>
</tr>
<tr>
<td></td>
<td>Tropical Composites</td>
<td>SC (cm)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Weight (kg)</td>
</tr>
<tr>
<td>Percent normal spermatozoa</td>
<td>Brahman</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>Tropical Composites</td>
<td>55</td>
</tr>
</tbody>
</table>

The CRC research found that percent morphologically normal sperm is heritable and genetically correlated with the interval from calving to first oestrus cycle after calving. Females sired by bulls with higher levels of percent normal sperm will tend to return to cycling sooner after calving.

**Return to cycling**

The Beef CRC found a large genetic variation between sires in the interval between calving and the first oestrus cycle after calving of their daughters. That is, sires have a large effect on the time taken to return to cycling after calving.

In the Beef CRC Brahman sires, this difference was 4.4 months. This can equate to a 40% difference in calving rate.

Days to Calving EBVs (available for some breeds) are an indicator and selection tool to address this trait. Select bulls with negative DTC figures - the more negative the better.

National Livestock Identification System (NLIS) and Live Export

NLIS was implemented in the NT in 2007 and is a requirement under the Livestock Regulations. NLIS applies to cattle, buffalo, sheep and goats. Cattle use a radio frequency identification device (RFID) to record the animal's movement on the NLIS database.

Under the Livestock Regulations all cattle require an approved NLIS device attached to the right ear prior to leaving the property. The one and only exemption where a RFID is not required for a movement from a property is when the cattle are leaving their property of birth and going direct to live export via an approved export yard. In this case no RFID is required under the Livestock Regulations. There are no exemptions for applying NLIS tags to buffalo, sheep or goats prior to leaving a property.

Although it is not currently a legal requirement by the NT Government, the exporter or agent may request that cattle have a RFID for access to specific live export markets. If you intend to sell your cattle for live export, you should check with your exporter or agent to see if a RFID is required.

A completed NT Waybill is required to accompany the livestock being moved for the following livestock, cattle, buffalo, sheep, goats, pigs, camels and deer. A registered brand is required for cattle travelling over 8 months of age.

Penalties may apply for not meeting the requirements for moving livestock under the Livestock Regulations in the NT ranging from an infringement notice of $685 to prosecution.

For more information contact, Greg Scott, Regional Livestock Biosecurity Officer, ph: 8973 9754
Email ntnlis@nt.gov.au or NLIS Helpdesk ph 1800 654 743 (between 8am and 6pm EST) or email nlis.support@mla.com.au

Looking for your Mad Cows ........

Bovine Spongiform Encephalopathy (BSE), commonly known as Mad-Cow Disease, is a fatal neurodegenerative disease in cattle that causes a spongy degeneration in the brain and spinal cord. BSE has a long incubation period with symptoms showing when cattle are adults. All breeds of cattle are equally at risk of the disease. The disease has not been reported in Australia to date.

BSE belongs to a group of fatal disorders called Transmissible Spongiform Encephalopathy's (TSE's) that occur in both humans and animals. It is believed that prion proteins produce holes in the brain causing it to appear like a sponge, hence the name 'spongiform'.

It is believed that BSE is caused by cattle consuming the remains of other cattle in the form of rendered meat and bone meal (MBM). Fortunately Australia banned the importation of MBM from all overseas countries except NZ in 1966, imposed a voluntary ban on feeding ruminant material in 1996 and prohibited feeding MBM in 1997. The prohibited feed is now known as Restricted Animal Material (RAM).

RAM is meat, meat and bone meal, blood meal, poultry meal, feather meal, fish meal and compounded feeds made from these products. RAM does not include milk and milk products, tallow and gelatine or oils extracted from poultry and fish.
RAM audits are carried out on stations feeding supplement, feed suppliers and feed manufacturers each year to ensure that the products being fed to cattle do not contain RAM. This is a measure to reduce the risk of cattle developing BSE.

The National Transmissible Spongiform Encephalopathy Surveillance Program (NTESP) was initiated in Australia in 1998. NT producers actively supported the program with 12 submissions in 2011. We encourage all producers to report cattle eligible for the program. Eligible cattle must be between 3-8 years of age showing changes in behavior such as nervous signs or inco-ordination. Producers receive a payment of $300 for eligible cattle.

This is an important program which is safeguarding our export markets and maintaining our reputation as a supplier of high quality livestock and beef products to the rest of the world.

For further details on BSE or to report an animal with nervous signs please contact John Eccles, Katherine Regional Veterinary officer, on 8973 9716.


Bluetongue virus (BTV) activity was widespread in the north, being detected at Beatrice Hill in November 2010 and Katherine and Victoria River in October 2010 and in all northern sentinel herds between January and June 2011. BTV1, BTV2 and BTV20 were identified by virus isolation at Beatrice Hill and BTV1 by serology at all other sentinel sites. The detection of BTV1 activity in a serosurvey herd in the southern Victoria River District resulted in an extension of the BTV zone south.

BEF virus activity was widespread, with activity in the northern herds from February to May 2011 and also on the Barkly Tablelands in May. Clinical disease was reported from several locations in the north.

Akabane activity was found in all of the northerly sentinel herds. Apart from Beatrice Hill, where activity was in January and February, most activity occurred in April 2011.

The National Arbovirus Monitoring Program (NAMP) is an industry and government funded program which monitors the distribution of three important insect-borne viruses (arboviruses) of livestock: Bluetongue virus, Akabane virus, and Bovine ephemeral fever (BEF) or 3 day sickness. NAMP information is used to:

- **Support trade**
  NAMP information is used during export protocol negotiations and to assist exporters in meeting export certification requirements

- **Provide an early warning to producers**
  Surveillance detects new incursions and warns producers of arboviral spread into new areas where cattle not previously exposed may suffer severe symptoms

- **Manage risk**
  Exporters can identify areas free from arbovirus activity to source live export cattle for arbovirus sensitive markets.
Monitoring is achieved by using sentinel herds at various sites around the Northern Territory. These herds are bled at regular intervals and tested for antibodies to a number of viruses. Surveillance is also conducted at a number of different sites (see map) around the BTV surveillance zone.

Please contact the Katherine office if you are interested in participating in the surveillance in 2012. Blood will be collected once from 30 heifers and/or steers born in 2011


Territory visit by FSANZ for new Australian Meat Processing Standards

During October 2011, Canberra-based officers from Food Standards Australia and New Zealand (FSANZ) visited the Territory to meet with members of the Biosecurity and Product Integrity Group and industry stakeholders. The delegation is currently on a fact finding visit to all jurisdictions prior to development of a new Australian Standard for meat processing. The information gathered will be presented for adoption by the Australian and New Zealand Ministerial Council during 2014.

While in the NT, the group visited two crocodile abattoirs to view their slaughtering and processing procedures which the group had no previous exposure to. The delegation also visited Berrimah Veterinary Laboratories to view diagnostic testing procedures, some of which may be incorporated into the new Australian Standard. The visit was completed with travelling to the Gunbalanya abattoir in Arnhem Land. The Gunbalanya facility processes cattle from Indigenous Land Corporation properties as well as wild caught buffalo. The Gunbalanya facility employs 25 people in the abattoir and pastoral production, providing an increased skill base for Indigenous people in the Gunbalanya community. The meat is currently being sold into the Darwin and Sydney markets with favourable reviews. During the last two years, David Frost, Senior Meat Industries Officer has assisted the team at Gunbalanya to obtain a higher level of compliance against the Australian Standards.

Animal Health – Biosecurity & Product Integrity Webpages

The Animal Health Team has put together a new website which allows users to obtain all their animal health and cattle movement information in one place. You can find it at:

www.nt.gov.au/d/animalhealth

The role of Animal Health is to protect and facilitate market access for Northern Territory livestock and livestock products to domestic and international markets. This includes disease surveillance and control, livestock identification, meat industries, livestock welfare, veterinary laboratory services and legislative compliance.

Animal Health has 18 staff located in Darwin, Katherine, Tennant Creek and Alice Springs.

There is also 17 staff at the Berrimah Veterinary Laboratory in Darwin.

- Animal Biosecurity Contacts
- Animal Welfare
- Animal Health & Disease
- Brands in the NT
- Crocodiles and Honey Bees
- Livestock Identification and Movement
- Meat Industries

- National Livestock Identification System (NLIS system in the NT)
- NT PIC search database
- NT Brands Register search database
- Other Animals
- Pastoral Market Update
- Veterinary Laboratory
New faces at KRS

Khamla Mott
Born: Springsure, QLD
Raised: Queensland
Position: Technical officer, Plant Industry
Story before now: After finishing school Khamla was bitten by the travel bug. Although keen to head overseas, she thought she’d “better figure out if I could make it by myself in my own country first”. So after purchasing a plane ticket out of the newspaper, Khamla flew to Kalgoorlie, after which her passion for travel exploded, taking her back and forth across the country before spending a year in the Netherlands. After this, Khamla joined the harvest trail in New Zealand where she became interested in the horticultural industry supply chain which inspired her to obtain a Bachelor of Applied Science from the University of Queensland. Khamla then worked for UQ at the Centre for Native Floriculture, Bureau of Sugar Experiment Station in Mackay and then for King Producers here in Katherine, assisting with product quality assurance.
Role at KRS: Khamla started with the Plant Industry Team in late January, where she is filling Di Renfree’s boots while Di is on maternity leave, working predominantly with the broad acre research programs.

Sarah Phillips
Born: Mt Gambier
Raised: South Australia
Story before now: Sarah grew up on a beef cattle and fat lamb property south of Mt Gambier, where her interest in food production and livestock management was cemented. After completing school Sarah attended the University of Canberra where she completed a Bachelor of Applied Science and then went home to work on the family property during which Sarah studied externally and obtained an Advanced Diploma in Agriculture. After this, Sarah took the opportunity to travel to New Zealand where she studied further an animal health course at the Massey University. It was while chasing sheep up and down the hills of New Zealand that Sarah discovered her fondness of flying which motivated her to obtain her helicopter licence. Sarah then worked for two local NT helicopter companies for a few years before opting for a change of scenery at KRS.
Role at KRS: Sarah is responsible for the development and expansion of the mango orchard at the KRS horticulture block and also assisting with plant and pastoral research.
Bookworm’s review

Jodie Ward, Pastoral Production

**Title:** Attracting and retaining staff in the northern beef industry

**Author:** MLA Publication

Major finding: Pay cheques alone do not attract and retain staff!

Forty percent of producers in the Katherine region surveyed in the 2004 Pastoral Industry Survey indicated that their operations were limited by staff availability. In a different survey commissioned by Meat and Livestock Australia and Australian Wool Innovation, titled, 'Attracting and retaining staff in Australia’s beef, sheep and pastoral wool industries’, it was discovered that staff shortages may cost as much as $31,000 for small enterprises and up to $218,000 for large enterprises. It is from this survey that a number of fact sheets have recently been published, including ‘Attracting and retaining staff in the northern beef industry’.

A number of findings resulted from this survey, including that in northern Australia, pastoral industry workers pursue jobs with different sized enterprises for reasons other than the size of the pay cheque; workers looking to join a small enterprise do so as they are looking to have a high level of variation in their day-to-day activities and the opportunity to work independently, whereas workers looking to become employed in a medium to large enterprise are attracted by career opportunities, company reputations and pay and benefits.

Other information contained in this fact sheet includes:

- how to attract employees,
- engaging employees to ensure job satisfaction and increase retention rates,
- the main reasons employees leave and how these issues can be rectified, and
- how station managers can be the quintessential component of staff retention.

Other publications were also derived from this survey and are available free of charge from the MLA website: [www.mla.com.au/Publications-tools-and-events](http://www.mla.com.au/Publications-tools-and-events).

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**Cyber Geek – website of interest**

**Website:** Help a Mate


**What information does it provide?** Helpamate.org has been created by Incitec Pivot Fertilisers and is dedicated to providing practical and relevant information and support on mental health issues in rural and remote communities. After the free and confidential registration, members can access detailed information on stress, depression and suicide as well as why and when to seek help and a number of contact details to do so. All of the material on the site has been thoroughly researched and reviewed by Dr. Chris Day who is a clinical psychologist with a strong background in mental health in rural communities.

There are also farmer testimonials and an interactive forum where users can ask Dr Chris Day for help and direction.

This website is discreet. The “Help A Mate” web page looks just like the other pages on the Incitec Pivot Fertiliser website pages and no names, or even user names are mentioned on the forum.

If you are concerned about yourself or somebody else, take the time, check out this website.
Territory Natural Resource Management

LOCAL GRANTS

Grants of up to $20 000 available towards Improving Management Practices

- Feral animal management to improve ground cover
- Grazing management strategies to improve ground cover
- Maintenance of inter row cover, terracing contour planting
- Implementation of fire regimes to improve ground cover to prevent loss of soil through erosion
- Other rehabilitation projects that will reduce soil loss and improve native vegetation
- Activities such as workshops, field days or demonstration sites that extend knowledge to landholders

Territory NRM Local Grants are also available to projects that fall under the following categories:

- Increase native habitat
- Reducing the impact of weeds
- Reducing the impact of vertebrate pests
- Protecting critical aquatic habitats
- Indigenous participation
- Coastal community engagement

For more information:
Call James Wright, your Regional Coordinator on 08 8973 8837

or visit www.territorynrm.org.au

Caring for Our Country
Above: Malcolm Bennett and Johnny Cooper sampling soil within a Jarra Grass hay crop.

Above: District Agronomist, Malcolm Bennett, marking sampling sites. The two PVC pipes are being used to measure the soils natural capacity to mineralise Nitrogen.

Below: Khamla Mott and Jane Douglas harvesting hay crop biomass yields 21 days after topdressing with urea.

Above: Principal Veterinary Officer, Sue Fitzpatrick and Regional Stock Inspector, Greg Scott, bleeding sentinel chickens to monitor the spread of diseases throughout the NT.