Department of Agricutture, Fisheries and Forestry, Queensalnd

Northern muster

Information for rural business in north Queensland

Producing quality food and fibre for a healthy bottom line

in this edition

Issue 30 December 2012

editorial

Welcome to the summer 2012 *Northern muster*.

This will be the last printed edition of the Northern muster. Future editions will only be available for download online or via email. To continue receiving the *muster* you must register your details by subscribing on the Futurebeef website (www.futurebeef.com.au/resources/newsletters/) or by sending us an email at northernmuster@daff.qld.gov.au

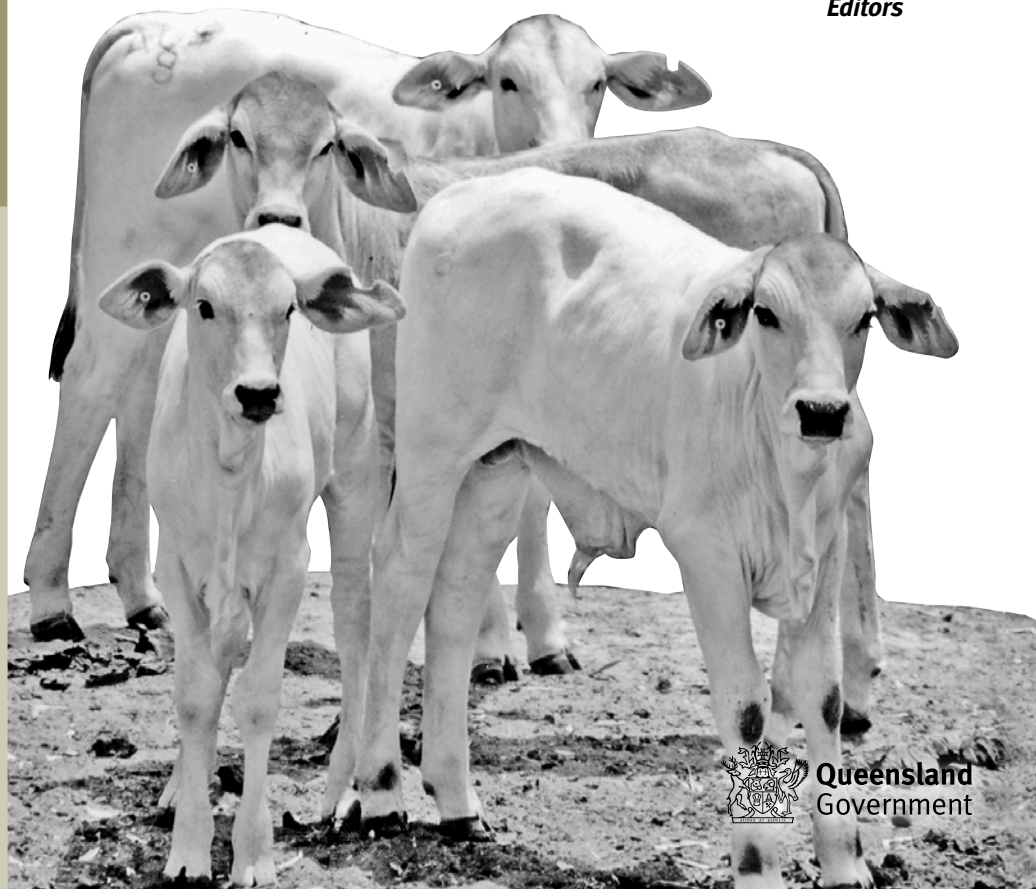
Alan Laing has handed over the editing reins for this edition, and we thank Alan for his 22 years bringing up to date technical information to northern beef producers through the *muster* – a major contribution to industry.

We have a jam packed issue to keep you occupied over the Christmas break. This issue sees the introduction of some new sections – 'Around the Southern Gulf' to keep readers up to date with Southern Gulf Catchments; a dedicated 'Beef Challenges' spread, and a 'Meat Mattters' section.

We hope you enjoy this edition. Bring on the wet season!

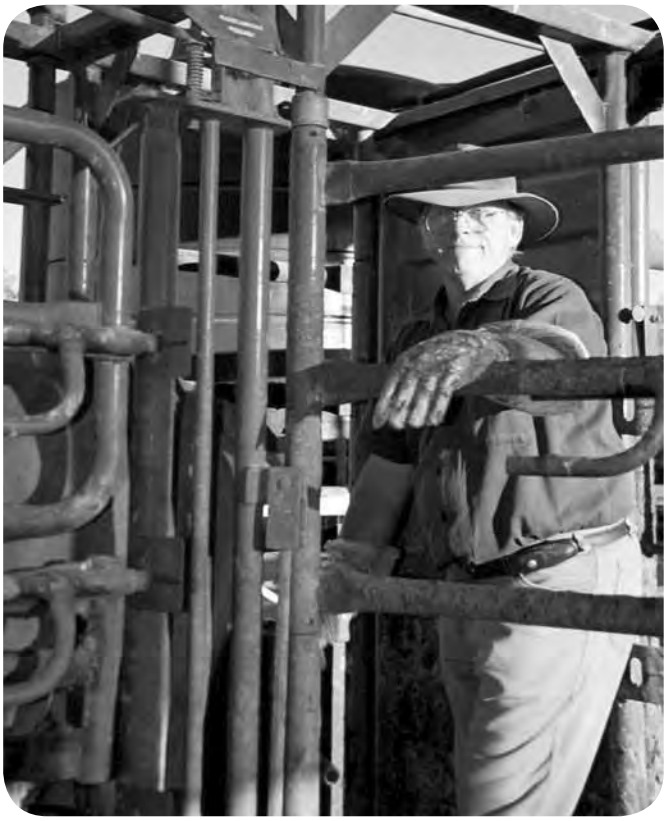
Phone 13 25 23 for advice and contacting DAFF staff. Please register your details for future electronic editions.

Emma Hegarty and Rebecca Gunther
Editors



Queensland Government

Thank you Alan Laing



It's been 45 years since 'Laingy' joined the department as a cadet in 1968. Passionate about making a difference in the industry, Alan has spent a great deal of time working towards the ultimate goal of reaching out and helping producers. But before we get ahead of ourselves lets not get carried away – he's not retiring. However he has finished up as editor of the *Northern muster*.

The *Northern muster* began in Townsville in 1984. Alan came on board in October 1990 and has been sole editor for the past 22 years. By networking with colleagues across all areas of the department, agribusiness and producers, he has brought together 75 issues of the *muster*. Throughout this time he has fought to maintain its original name and keep it going, even organising advertising to help fund the printing process.

We wanted to take this opportunity to thank Laingy for all of his hard work and dedication pulling multiple editions together, sometimes directly from crush side. Considering many of these editions were compiled before the rise of technology, stories say there was a fair bit of reliance on old fashioned facsimile and the occasional carrier pigeon. We hope that we can continue to provide an informative publication for the producers of northern Queensland.

Editorial Team

This publication has been compiled by Rebecca Gunther, Emma Hegarty, Kate Brown and Tonia Grundy of Agriscience Queensland, Department of Agriculture, Fisheries and Forestry.

Spyglass on show for the North Australia Beef Research Council

At the North Australia Beef Research Council's (NABRC) October meeting in Townsville, delegates travelled to the Upper Burdekin for a field tour of Spyglass Beef Research Station – the Queensland Government's recently acquired 38,000 hectare property 100km north of Charters Towers.

Being an amalgamation of the two original properties, 'Lucky Break' and 'Spyglass', the property has the potential to run 4000 adult equivalents. Adapting these commercial properties to a 'research ready' facility was outlined by Station Manager, Stephen Anderson. Stephen also presented his views on the management of Spyglass, including improved water, fencing, environmental considerations, managing riparian areas, animal welfare and infrastructure (such as specially designed yards) to suit future technology and research.

The complete infrastructure development plan for Spyglass, including office and residential accommodation for permanent and visiting staff, and communication systems, was detailed by Paul Naughtin, Project Leader, Research Infrastructure. Two stages of initial development totaling $5.0M has been budgeted for the property for the 2011/12 and 2012/2013 financial years.

Further presentations and inspections throughout the day showed how current and future projects on Spyglass relate to NABRC's four major Research, Development and Extension (RD&E) priorities: Improving the animal; Improving the feed-base; Technology; and Bringing it all Together.

Improving the animal

Spyglass now runs the most highly recorded Bos Indicus infused cattle in the world for reproductive performance data. Tim Grant, Senior Scientist, described how the herd of 300 breeders, which were originally part of the Beef CRC herd at Swan's Lagoon and Toorak Research Facilities, have had growth and reproductive performance measured since 2002. Some of the progeny have been kept, with the herd now at approximately 400 head. The key goal with this herd is to maintain a well described herd both genotypically and phenotypically, for future research needs.

A twelve week mating period has been applied in order to lift reproductive performance to achieve a cow that calves every year.

Improving the feedbase

A research site showing the options for improving pasture production on severely degraded land was discussed by Trevor Hall, Principal Grazing Systems Scientist. The rehabilitation methods applied are:

- deep ripping
- chisel ploughing
- crocodile seeding
- reshaping a gully head and covering with a hay mulch
- an untreated area as a control.

All areas were seeded with a grass and legume pasture mix. The trial commenced in October 2011 and after 12 months, the effectiveness is already evident with pasture yields increasing on average from 100 kg/ha to 3000 kg/ha and total ground cover increasing on average from 5% to 80%.

Giselle Whish, Senior Land Production and Modeling Scientist, spoke of a project to assess pasture growth on the main land types of Spyglass. This information will then be used in pasture models to obtain a more accurate estimation of potential carrying capacity of the range of land types. These pasture models will aid decisions for future paddock designs on the property.

Technology

The Digital Homestead project was profiled by Angela Anderson, Senior Biometrician at Spyglass. This is a joint program between CSIRO, JCU and DAFF to remotely obtain information on a range of aspects including:

- livestock e.g. weight via walk over weighing or location via GPS tracking collars
- pasture quality and quantity from satellite imagery
- weather data (rainfall/ temperature) from automatic weather stations
- water supplies e.g. levels in tanks and troughs via a UHF radio or mobile phone technology.

All this information will be available on a computer screen back at the homestead to aid management and decision making. The screen, to be called a 'dashboard', could be set up to have alerts when the water levels are getting too low,

or if a bull has jumped into the wrong paddock. A producer reference group will be established to ensure the information collected is relevant and to determine the most useful way to set up the dashboard. The project will be first trialed on CSIRO's Lansdown Research Station near Townsville then extended to the larger Spyglass property.

Bringing it all together

Bob Shepherd, Principal Grazing Land Management Extension Officer, brought the talks of the day together by discussing 'the big picture'. He highlighted the links between research, development and extension in the northern beef industry and how this can be achieved on Spyglass.

Bob described how the pivotal point of all these aspects is industry needs, as identified at a range of industry and departmental levels. From the broad scale at MLA, NABRC and Qld Government levels, to the regional and local scale via a Spyglass Advisory Committee with representation from the producer-based NQ Beef Research Committee.

The integration of R&D outcomes highlighting the economic, production and environmental benefits at the individual beef enterprise level was seen as critical. The suitability of Spyglass to research and demonstrate a range of diversification options was also emphasized.

We will keep you updated on the progress of the development of the station and the outcomes of the RD&E conducted on Spyglass. Stay tuned!

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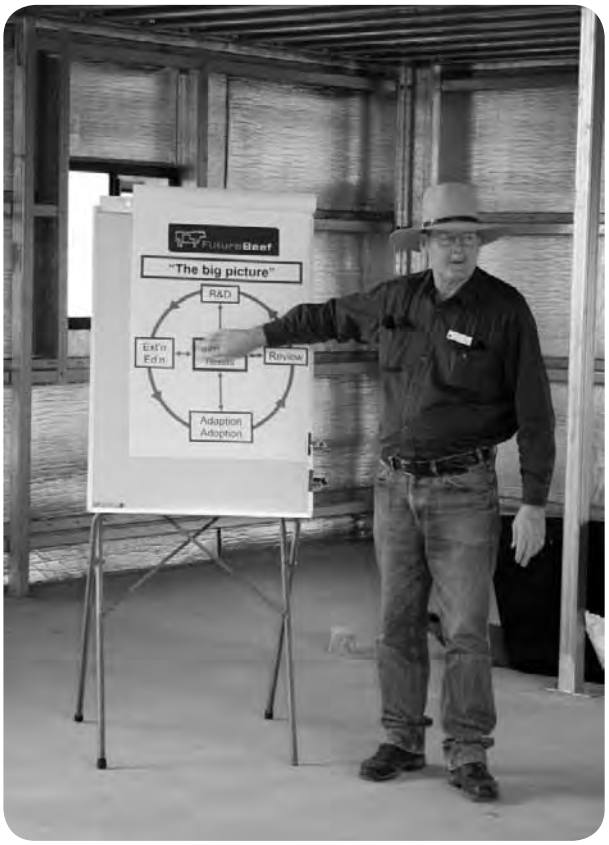


Bob Shepherd, QDAFF Charters Towers, discussing 'the big picture' for Spyglass.

The North Australian Beef Research Council delegates and guest speakers at Spyglass Beef Research Station.

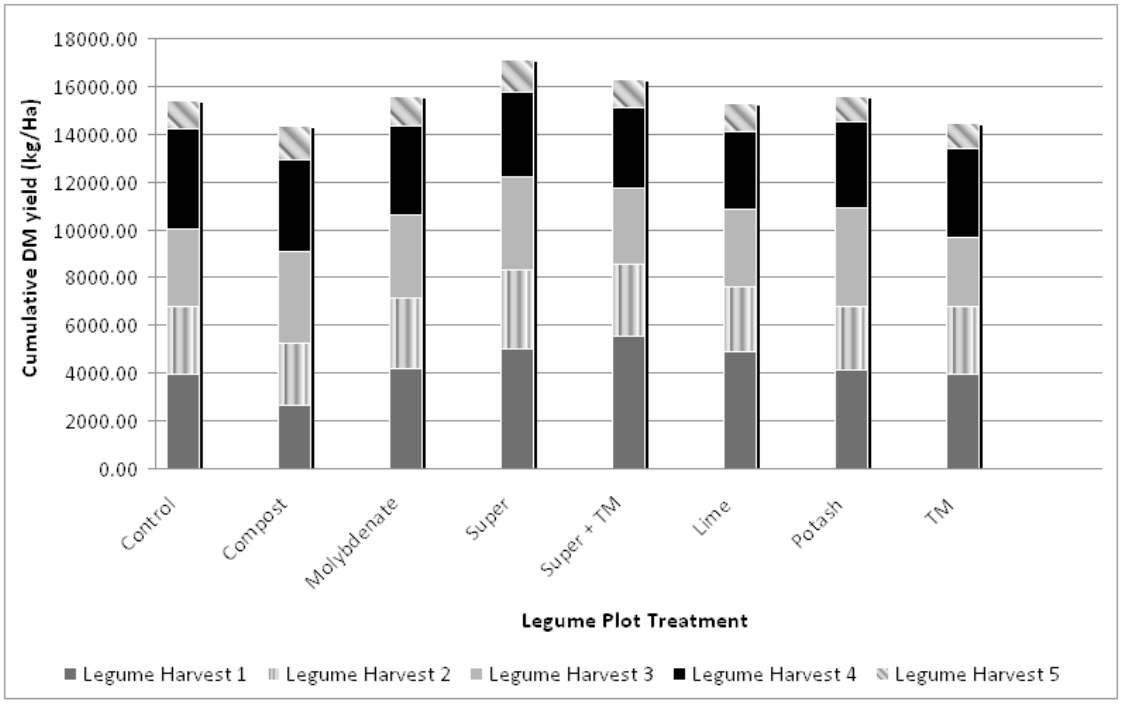
Results update from Tablelands fertiliser trial

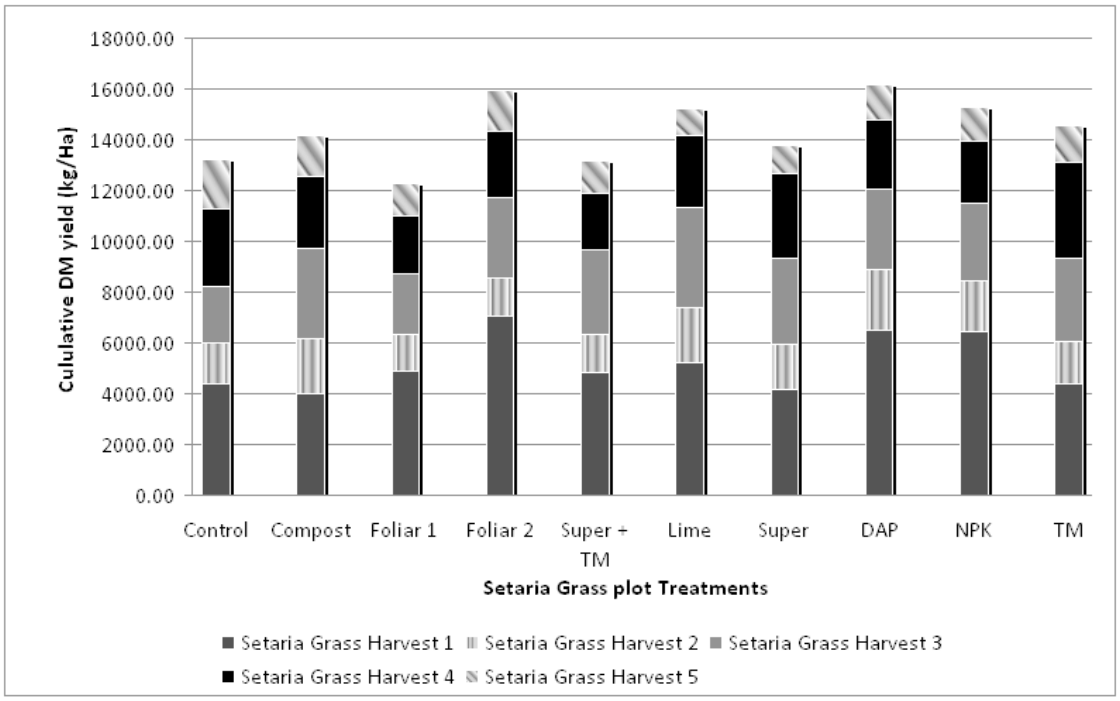
As part of the ReefSafe grazing project, the Far North FutureBeef team have been undertaking a trial to compare the various types of fertilisers on the market to evaluate the impact of treatments on pasture quantity and quality. The trials have been underway since October 2011 with five harvests now completed. Yield values have been collected and a selection of samples from each treatment was sent for quality testing.

The following three plots were established in late 2011:

- signal grass pasture with established legumes
- signal grass pasture only
- nandi setaria pasture only

The various fertiliser treatments were applied at this time, with each site also having a non-treated control.





Results have been varied across the three sites. The graphs below show the cumulative dry matter (DM) yield (in kg/ha) of each treatment following the 5th harvest. (Note: TM treatments were applied late- Harvest 1 and Harvest 2 for this treatment have been given the Control treatment values)

On the legume plot, the treatments included: potash, sodium molybdate, superphosphate, TM (a soil microbe enhancer), compost, two foliar fertilisers and lime.

On the two pasture sites, the treatments consisted of diammonium phosphate, NPK fertiliser, superphosphate, compost, two foliar fertilisers, TM, and lime.

Initial pasture quality results show that pastures with established legumes have higher protein values than those with grass only. Quality differences between treatments at the pasture sites are still being assessed and more results will be available in the coming months. In addition, microbial activity for the various treatments has been assessed and is also showing varied results across treatments.

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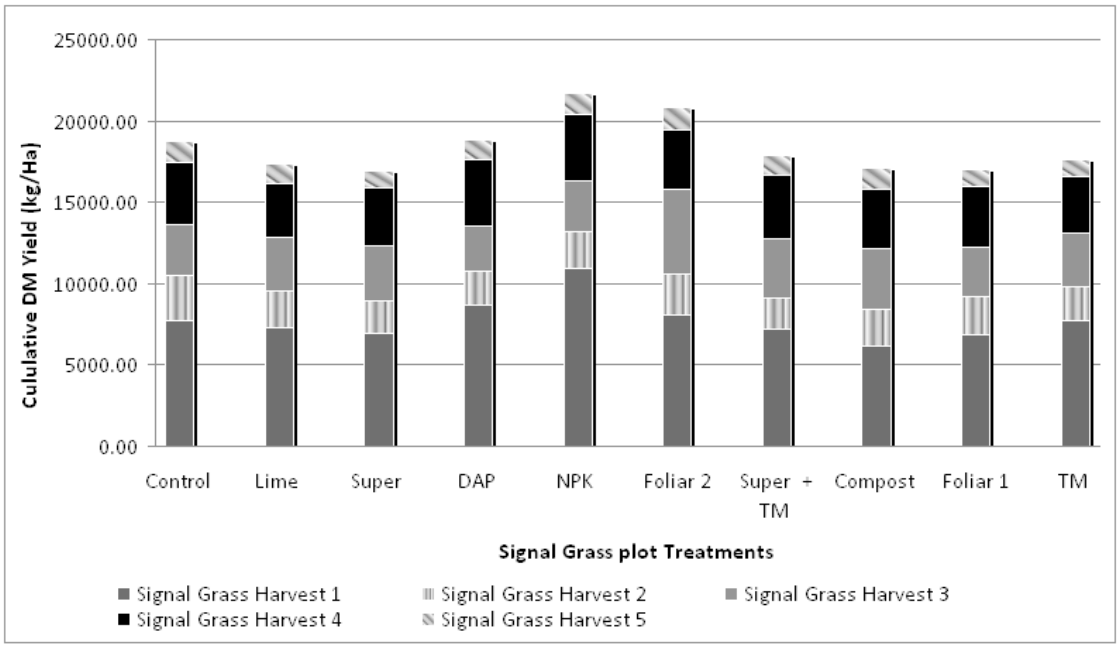

Market report 2012

As per usual for this time of the year the only good news is a small upward movement in fat cattle prices to $3.25 kg dressed for best bullocks in Townsville. In North Queensland where the export situation has a large impact on prices received we have had nothing but negative news for months. The Australian dollar has come back a little but is still high enough to give our exporters a hard time competing on international markets and impact on producer prices at home. Our major export destinations in Japan and USA are still in economic downturns with no light at the end of the tunnel.

India is on track in 2012 to be the largest beef exporter in the world with forecast exports of approximately 1.5 million tones, followed by Australia 1.4 mt, Brazil 1.3 mt, USA 1.2 mt, New Zealand 544,000 t, and Canada 450,000 t.

Russia is on track to be the biggest importer of beef in 2012 with 1.14 mt, followed by US 1.1 mt, Japan 756,000 t, Vietnam 400,000 t, and South Korea 390,000 t.

USA is on track to again top the list of total domestic beef production for 2012 at 11.4 million tones followed by Brazil 9.2 mt, European Union 7.9 mt, China 5.5 mt, India 3.5 mt, Soviet Union 2.9 mt, Argentina 2.6 mt, and Australia 2.1 mt.

Live exports

The live export trade situation is in a critical state with a renewed setback with no forth coming import permits for the last quarter of 2012. It had been hoped for between 50 and 100 thousand head would be exported to Indonesia before Christmas. Exporters will be further out of pocket and facing large loses with live export charter vessels costing them big money per day with no work, and others in the supply chain will also be severely out of pocket.

In 2009, Indonesia took just over 750,000 head of live cattle. In 2011, that dropped to 410,000 head after the ban was introduced and then lifted. So far this year, approximately 283,000 head have been exported. Reports from Indonesia tell of rising beef prices in wet markets and consumers shifting to chicken and pork for their meat.

Other live export destinations have shown some growth including: China 25,346 head; Russia 19,145 head; Malaysia 8683 head, Turkey 20,710 head, Israel 16,853 head, and Philippines 4931 head.

For North West Queensland and the Northern Territory the boat trade has been an important and profitable marketing option. With the issues in Indonesia these cattle will have to be marketed back in Eastern and Southern Australia putting downward pressure on prices. To add to this, after several good seasons over a wide area of Eastern Australia, our bean counters are predicting our national herd will grow towards 30 million head or slightly more. The subsequent rise in cattle slaughter numbers will put further pressure on finding profitable market outlets around the world.

Chilled export markets

Another cost was added to our large abattoirs in July with the introduction of the carbon tax. Companies with annual emissions over 25,000 tonnes will be liable to pay the federal carbon tax. No doubt this cost will be passed on down the line.

A bright note in the 2011-12 financial year has been the steady growth in our exports to other South-East Asian markets like China, Taiwan, Hong Kong and Singapore with export values reaching A$755 million.

Approximately 69% of our exports at present are going to the big three – Japan, Korea and the USA. Remaining 31% of exports have been going to the expanding Asian, Middle Eastern and Russian customers.

Domestic market

On the Australian domestic market, 2012 has seen some vigorous beef marketing activity from our two big supermarkets. As of September, Woolworths and Safeway are holding approximately 30%, Coles 26%, and the butchers 24.7%.

New supermarket chain in Australia, Costco, has opened their first store in Melbourne followed by Sydney and Canberra. They are the first supermarket in Australia to only stock MSA beef in their stores. Plus the beef must have a minimum marbling score of 2. Their Melbourne Docklands store typically has meat sales of over a million dollars a month.

USA

There has been some good news in our exports to the US this year with 169,000 tonnes exported to the end of September, a 38% rise on last year's figures. Last year, the USA drought conditions

resulted in higher than usual slaughter numbers which may result in a significantly lower calf drop this year, and a future shortfall in grinding beef which may be to our advantage. The US herd is forecast to decline to around 90 million head, the lowest level for over 50 years.

Japan

Total Australian beef exports to all markets this year to the end of September, approximately 693,360 tonnes. Our Japanese exports for the same period are back 6% to 232,999 tonnes. Most of the decline in Australian exports has been high value feedlot beef.

The US over the last few months of 2012 has made some serious gains in Japan. In 2011 Japan consumed approximately 870,000 tonne of beef. Imported beef totaled 513,000 tonnes.

Korea

In Korea, our exports for the 9 months to September have fallen 25% to 82,202 tonnes. The shortfall has been taken by the USA which is not surprising since their re-entry into Korea in 2007 after their BSE problems of 2003. Also in January of this year, Korea/USA negotiated a free trade agreement which will reduce their 40% tariff to zero over 15 years. This and the USA currency advantage is making their beef far more attractive to Korean importers.

In the meantime, our beef industry leaders in Australia are still squabbling amongst themselves on the tariff reduction deal offered to us, which is not as attractive as the USA deal but it is still an annual reduction in the 40% tariff. To date we are 6 months behind with no solution in sight, and our exporters will be under an ever increasing disadvantage.

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Greg Brown
Meadowbank Station, Mt. Garnet.

Multimin® makes a major impact on weaners

In October 2010 George Hacon and his son Rick, Kallala Station, Mt. Isa, decided to try Multimin® Injection for Cattle on a mob of steers. Multimin is a trace mineral injection containing selenium, copper, zinc and manganese and has no ESI or withholding periods.

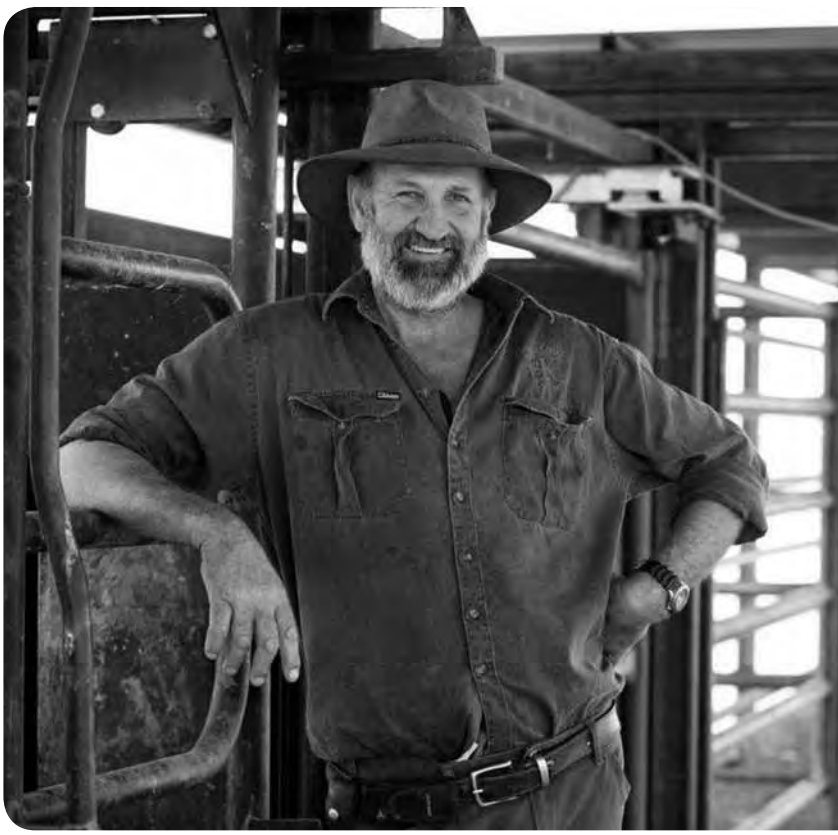
The Hacons treated 116 steers with Multimin and compared them against another mob of 110 steers.

After just one injection of Multimin, George says he's been amazed by the results. "I'm the first to admit this wasn't a fair comparison. We selected the poorest performing steers to be injected with Multimin and the other mob was in much better condition. All of these steers were the same age, origin and all living in the same paddock so the results have really impressed me" Mr Hacon said.

During the 197 day trial the 110 steers without Multimin gained 95% of their start weight, while the Multimin treated group gained 115 per cent of their start weight. The Multimin mob, which wasn't fairing well to begin with, managed to keep up with the other mob and become viable for sale.

"Before we began we'd brought the 116 steers in from another property where the grazing conditions were certainly a lot tougher. We really had nothing to lose by using Multimin on this mob. They were by far our worst performers".

"The weight gain by the Multimin mob was excellent. I wasn't expecting them to do well, so it surprised me big time".



George Hacon, Kallala Station, Mt. Isa.

Improved animal health leads to improved productivity

Mr. Robert Lethbridge from "Warren Point", Mitchell Qld, comments on his experience with trying different animal health products on his cattle and the response he saw.

"It is now 12 months since we treated half of our draft of 100 yearling Poll Hereford bulls with Multimin® Injection. Another 57 bulls that were neutered because they didn't meet the stud criteria were also drafted randomly and half treated with Multimin. These bulls were elastrabanded after the first treatment of product, and had a slight set back initially. It was also suggested we look at Cydectin® Long Acting Injection as a comparison to our standard Ivermectin drench program".

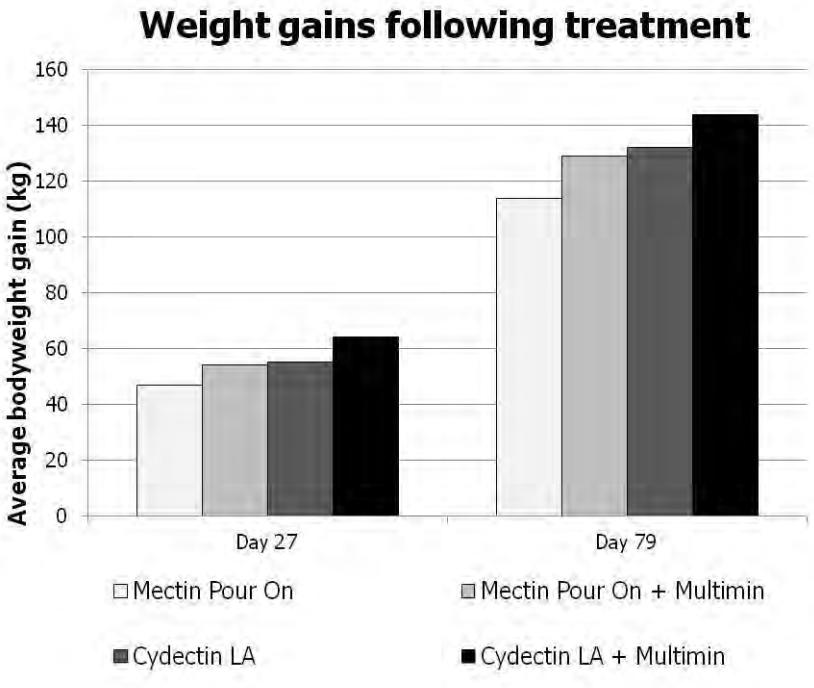
"I have always had a keen interest in minerals and was very interested to see how the Multimin Injection would work", Mr Lethbridge said. "Both groups responded above my expectations. The bull calves responded very well with 1.8 kg daily gain on grass over 79 days for the Multimin and Cydectin LA group". This was 0.38 kg per day or 26% more than the straight Ivermectin group.

The bull portion went into the sale team of 80 bulls, of which 69 were offered; 64 sold with an average weight of 710 kg and $4300 average price. The steer portion performed almost as well, with the top group gaining 1.71 kg per day, which was 0.33 kg per day or 24% better than the base Ivermectin group.

"The response of these cattle was very noticeable. Purely from observation you could tell which animals got the works".

Contact your local Virbac Area Sales Manager today on 1800 009 847 to find out more about Multimin Injection for Cattle.

Robert Lethbridge "Warren Point" Mitchell Qld.



Results of Robert Lethbridge's cattle over the 79 day trial.

Combining progeny testing and AI technology to benchmark bulls

As part of an extensive trial, Angus breeders are participating in the Beef Information Nucleus (BIN) program overseen by Meat and Livestock Australia (MLA).

Although smaller scale trials are included in the program with Brahman, Hereford, and Limousin breeds, the herds that make up the Angus section are by far the largest part of the program.

Bob Dent is the coordinator of the Angus Sire Benchmarking Program. The aim of the six year project is to collect a wide range of ongoing data including pregnancy, growth, carcass performance, feed conversion, and DNA data.

The program plans to progeny test around 40-50 bulls per year for three joinings to identify bulls whose calves perform in a number of commercially important traits. To do this, semen has been collected from elite bulls, with the aim of inseminating approximately 50 cows per sire on commercial properties, each year.

To make the program possible, the latest reproductive technology needed to be used, which in this instance is Fixed Time Artificial Insemination (FTAI).

Angus Australia sought assistance from Bayer, the manufacturer of many of the products used in the BoSynch™ FTAI programs. Bayer is providing key products to the program – Cue-Mate®, is a flexible intra-vaginal device that releases progesterone to synchronise oestrus, and a cutting edge hormone treatment which helps in the development of a larger dominant follicle, and improved conception rates.

Although AI has been used in the dairy industry for many years, the time and labour involved in 'heat detection', made this impractical for beef herds.

The BoSynch™ program is based on new research. The key benefit is that heat detection is not required, due to the cows and heifers being inseminated at a designated time.

By adopting a BoSynch™ FTAI program, producers can generate long term economic benefits.

An AI technician can inseminate superior genetics into a large numbers of cows and heifers on the same day. This results in a more even line of calves that drop earlier and weigh comparatively more at weaning.

In 2010, the first year of the trial, 2000 cows and heifers from five commercial Angus herds in Victoria and NSW participated in the trial, along with 35 bulls. In the following year (2011), 2336 cows and heifers were joined to 48 bulls.

The overall pregnancy rate of the FTAI program for 2011 was 52.4%, and the final pregnancy rate at the end of the joining period was 88.8%.

These pregnancy rates in the first year exceeded expectations as the program's objective was to achieve a 50% pregnancy rate, and that's been exceeded in both the first and second years of the program.

Analysis of the pregnancy data also showed that some bulls appeared to be more fertile than others.

In the latest results there was a slightly higher pregnancy rate in cows in oestradiol based hormone programs, compared to those in programs using GnRH (Gonadotropin-releasing hormone) based protocols.

However, the opposite was found in heifers, where the GnRH programs were slightly more successful.

International Bovine reproduction expert, Professor Gabriel Bo analysed the Angus trial data. Professor Bo commented that similar programs were used in his home country, Argentina, and that the FTAI pregnancy results were amongst the best he had seen!

Bayer Animal Health Customer Information
1800 678 368
ww.farmadvisor.com.au

Pregnancy testing for profit at Mt Emu

The Borello family from Mt Emu, north of Hughenden, have implemented a basic mob segregation system which has resulted in significant improvement in business performance.

Strategic foetal aging, pregnancy testing and breeder mob segregation has given the business predictability in stock and cash flows, and has allowed the business to make tactical decisions, boosting profitability in the business.

The production system

Mt Emu is a 60,000 ha Basalt block situated 100km north of Hughenden. It carries around 10 000 breeders with all progeny grown out on southern properties. Heifers are mated on the Downs and brought back to Mt Emu for calving.

Bulls are taken out at second round muster to avoid calves from May to September. Bulls are returned to the breeders in late January. Cows are pregnancy tested into 3 main calving groups during second round muster.

Group 1: Cows calving in October to December

These are the optimal animals and have the best chance of producing a first round weaner and rebreeding within 90 days of calving. The superior wet season pasture quality is best matched to the nutritional requirements of lactating breeders. These animals are placed on the better country and fed the appropriate supplements e.g. salt and sulphur, dry lick and/or M8U depending on the year.

These group 1 cows produce the most amount of income for the business and are looked after accordingly.

Group 2: Cows calving in January to March

These cows will produce a first round calf, a second round weaner, and be in a poor body condition at second round. By leaving the weaner on for longer in this group it stops the cow re-conceiving until after weaning. They are then managed (bulls out at 2nd round) so they come back in line with group one and reconceived in January–February.

Late calving group of cows at Mt Emu in August 2012. These cows are being managed to re-conceive in January-February 2013.

Table 1. Breeder segregation versus previous management system at Mt Emu.

Management practice	Breeder segregation	No breeder segregation
Branding, weaning	One or two musters annually. Over 90% of the annual calves are weaned at first round muster. 7000 cows are pregnancy tested in 10 days at a cost of $2.20 per head.	Minimum of two rounds. Previously started mustering in March and pull weaners off all year until the wet season prevented mustering. No pregnancy test cost.
Utilization of pasture	Better able to match cows' nutrient needs and body condition score with the seasonal pasture quantity and quality.	Impossible to match up cow's nutritional needs with forage quality and supply.
Selection and culling	Accurately evaluate cow performance allowing adequate and objective culling decisions.	No real breeder productivity information. Therefore limited information to support herd/grazing management and marketing decisions.
Supplementary feeding	More efficient because cows are in the same production stage. Reduced annual lick bill by over $200, 000	Large mobs of breeders fed supplement regardless of need Very inefficient, labour intensive, and costly because cows are at different production stages.
Marketing	Uniform calf drop means more marketing options. Foetal age pregnancy test accurately identifies your livestock inventory to be marketed.	Can be more difficult marketing different and/or uneven lines (size and age). No accurate way of forecasting sale numbers or pregnancy status.

This has resulted in 97% pregnancy rates in these cows. A urea based supplementation program through the dry season will have little influence on the rebreed rate of these cows.

Group 3: Cows pregnancy tested empty

These cows have the lowest nutrient requirements and general don't require supplementation. Depending on the business needs, these cows can be set up to rebreed in late January and be kept, or marketed as a fat cow or P.T.I.C. after the wet.

From the data collected at the pregnancy test the business can accurately predict the stock and cash flow over the next year. Each year a decision is made whether to keep the late calvers. This decision is based firstly on the availability of pasture, then whether the business needs more calves or cash. Often there are opportunities in the market to trade these late calvers to create cash flow and relace them with under-valued suitable animals and generate a profit.

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Please note:

This is the last edition of the Northern Muster that will be printed. Future editions will only be available in electronic format.

Register your email address to receive future issues direct to your inbox.

Visit the newsletters page on the FutureBeef website (futurebeef.com.au/resources/newsletters/) or email northernmuster@daff.qld.gov.au to subscribe.

Focus on herd productivity to lift profit

Improving breeder and herd productivity is essential to increasing the profit of northern beef businesses.

There is little variation between businesses in beef prices received and running costs per animal equivalent (1 AE is a 450 kg dry animal). There is little relationship between beef prices, running costs, and the profit of businesses.

These are the key findings of a benchmarking analysis of beef businesses in Northern Queensland by Bush AgriBusiness' business analysis and benchmarking service, The Business Analyser.

Following attendance to one of MLA's BusinessEDGE workshops earlier in the year, a number of Northern beef producers decided to conduct a benchmarking analysis in order to better understand the productivity and profit of their beef businesses.

Results

1. Strong relationship between productivity and profit/AE

The analysis found a strong relationship between kg beef/AE (productivity) and the profit/AE of the herd. This relationship is shown in Figure 1 where kg of beef/AE is plotted against profit as measured by earnings before interest and tax (EBIT) per AE.

This graph shows that as the kg of beef per AE increases, so does profit/AE. Seventy-six per cent of the difference in profit/AE is explained by the variation in productivity.

Kg beef/AE is therefore a major profit driver and has much more influence on the profits of a beef herd than price received or even running costs.

Kg Beef/AE has such a big influence on profit because, not only does it increase income by having more kg to sell, it also lowers your cost of production by giving you more kgs to spread your largely fixed costs over. Costs are looked at in more detail further on.

2. Price received is not a profit driver

Little relationship was found between the price received and profit/AE . This analysis was consistent with other analyses of beef businesses throughout Australia in that it identified that price received is generally not a profit driver, as shown in Figure 2. This may seem counterintuitive but beef is a commodity and typically, little can be done to influence price without reducing kilograms produced, or increasing costs.

3. Costs explained little in differences between beef business' profit

Of the businesses analysed, there was little difference in running costs per AE between each business and no clear relationship between running costs and profit. Nearly all the variation in profit of the businesses analysed was due

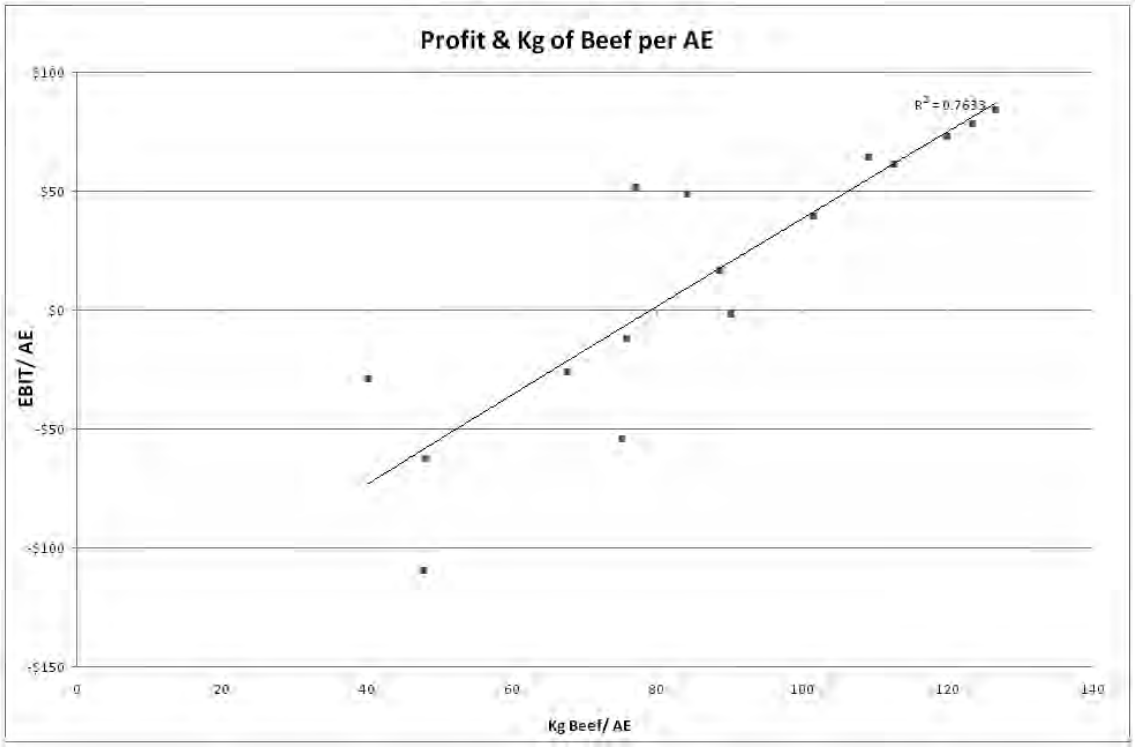

Figure 1. Strong relationship between profit and productivity

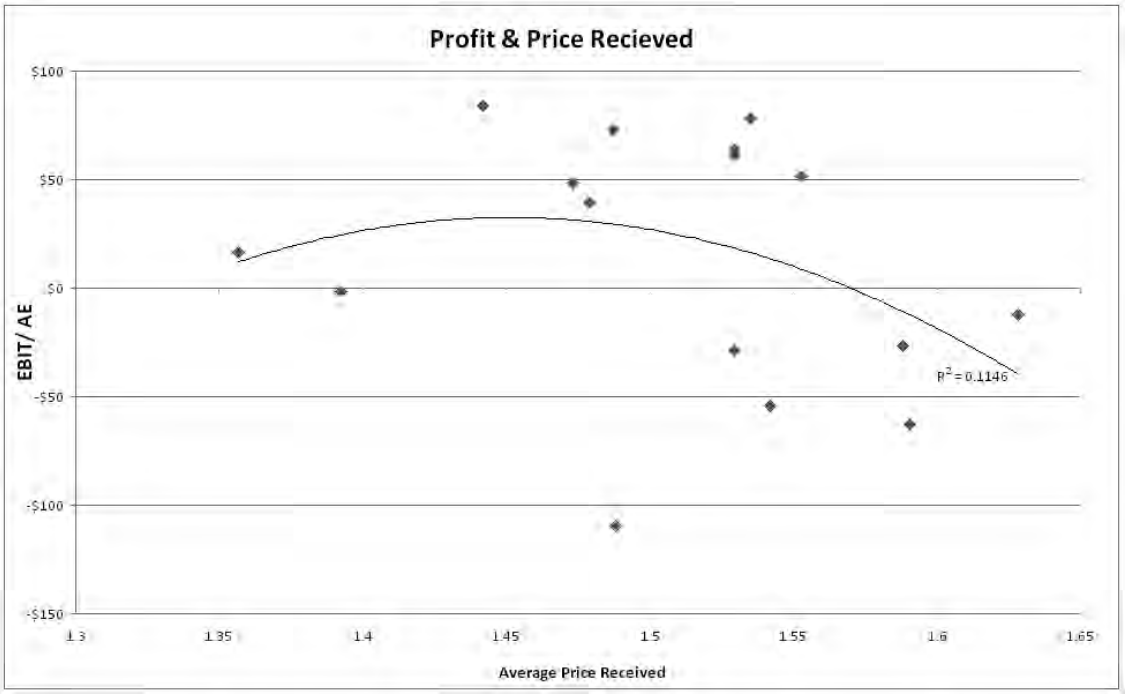

Figure 2. Little relationship between profit and price received

to differences in income. These differences in income were due to productivity (kg beef/AE) and not price received.

Costs, like beef prices, are often a focus when people are considering how to lift their profit. While costs are an important part of the equation, there is usually a limited amount that can be done to reduce them without being detrimental to the business.

4. Low weaning rates are contributing to low herd productivity

Weaning rates were generally low across all the businesses analysed. This is a major constraint on their profit/AE. The generally accepted estimate for weaning rates is 75%-80% in most districts, however these levels were not seen in any of the businesses analysed.

The analysis showed a strong relationship between weaning rates and overall productivity (kg beef/AE), which in turn has a strong relationship to profit/AE, as detailed above. As all the businesses involved in the analysis ran over 60% of their total AE's as breeders, this indicates that strategies to lift weaning rates will have a significant effect on the bottom line of these businesses.

Detailed modelling of the analysed data found that if the average business was able to increase their weaning rate by 10% (i.e. wean a calf from 10 more cows per 100) they nearly triple their profit/AE.

Strategies to increase weaning rate include;

- more focussed heifer management to set them up as breeders
- managing timing of calving to coincide with when feed is available
- emphasis on managing breeder body condition
- strong selection focussing on fertility

Conclusion

To improve your herd and business performance, you must first know how your business and herd is currently performing, and what your strengths and weaknesses are. Once this is known, you can focus your attention on the right strategies to make the greatest gains in improvement.

Benchmarking your business and herd's performance will allow you to make decisions with confidence that you are focussing on the things that will have the greatest impact on the business.

The authors, Ian McLean and David Counsell work with pastoral businesses across Northern Australia, providing business advice and benchmarking services. They also deliver the BusinessEDGE workshop, a workshop developed by MLA specifically for Beef Businesses in Northern Australia.

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Tick Fever Centre update

The general advice for control of tick fever has not changed much over the years; and it remains pretty much business as usual at Tick Fever Centre. However, there are some changes which we have highlighted below.

1. Second booster shot may be warranted for some animals

All literature and advice over many years states that the tick fever vaccine is a live vaccine and a single shot should be all that is required to give adequate lifetime immunity. Especially for animals born and raised in ticky areas. The vaccine organisms multiply in the red blood cells and persist in the animal for years.

We now know however that a small percentage of animals do not develop immunity to each of the three organisms after initial vaccination and might still be susceptible to babesiosis or anaplasmosis. **For this reason, a second or "booster" shot of vaccine may be warranted**; particularly for animals introduced from outside the tick area, bulls, and/or other valuable animals. This gives a second chance for animals that missed developing immunity at the first vaccination.

2. Increased risk of tick fever

There have been recent tick outbreaks in the tick free and marginal areas of the state. The risk of tick fever in these herds may be increased. This is discussed in the August 2011 (Issue 28) of *Northern Muster* if you wish to refresh your memory (available for download from www.futurebeef.com.au/resources/newsletters/).

3. Dispatch Tuesday and Thursday only

We now make and dispatch chilled tick fever vaccine on just 2 days per week – **Tuesdays and Thursdays**. Unless you live close to Brisbane, most will receive the order the day after dispatch. The cut off for orders is 4pm Monday and Wednesdays. The shelf life is still 4 days from the day the vaccine is made (so that is usually 3 days after you receive the vaccine).

Therefore, vaccine made and dispatched on Tuesday must be ordered by 4pm Monday, will be delivered by Wednesday, and must be used by Saturday night.

Vaccine made and dispatched on Thursday must be ordered by 4pm Wednesday, will be delivered by Friday, and must be used by Monday night. Fewer vaccine production days means bigger days for the vaccine staff - please understand we cannot accept late orders, because it is a rigorous process to meet both our APVMA registration requirements and the early afternoon deadline when the couriers arrive to collect the vaccine for distribution.

4. Frozen vaccine is still available

For more remote clients where overnight delivery of vaccine is difficult, or those prefer to have vaccine on hand, please contact us directly for further information about use and delivery of frozen vaccine (Combavac 3in1).

5. Fax orders on public holidays

We realise that public holidays present some difficulties (typically a Monday holiday) and so **we will accept faxed orders** that come through by 4 pm on a Monday public holiday for dispatch on the Tuesday. Anzac Day obviously moves around, but some are also caught out by the Wednesday EKKA holiday in August (because the rest of the state is still at work!).

The order form to fax can be found on the QDAFF website (www.daff.qld.gov.au/4790_5819.htm). Alternatively, please phone the Tick Fever Centre and we can fax or email you a copy of the order form to have on hand for public holidays. **We DO NOT accept orders by email.** Faxed orders should always receive a confirmation back from us by fax – so if you don't hear back, give us a call!

6. Leacaena Rumen Inoculum

We now distribute the ***Leucaena Rumen Inoculum*** – we took over this role from Brian Pastures Gayndah early in 2012. Orders can be dispatched Monday to Thursday – again orders are required by 4 pm the afternoon before. We are merely the distribution agent and can only answer basic technical questions about its use – for detailed advice about Leucaena growing and grazing go through your local Futurebeef Beef Extension Officer and Leucaena Network channels.

7. Christmas / New Year closure 2012

The last day for Tick Fever vaccine and Leucaena Rumen Inoculum dispatch this year will be Thursday 20 December, and the first day of dispatch in 2013 will be Tuesday 08 January. The office will close lunchtime on Christmas Eve; and reopen on Wednesday 02 January.

Peter Rolls
Veterinary Officer, Tick Fever Centre
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Weighing up phosphorus options

Northern beef producers recognise the impact of phosphorus (P) on their productivity. It is easy to measure the response of adding P to an animal's diet in severely P-deficient country. However, determining the economics of it in not-so-deficient areas is a bit trickier.

MLA's Northern Beef R&D Research Coordinator, Geoff Niethe, outlines some of the options for northern cattle producers.

In an attempt to provide more certainty into the P supplementation debate, MLA is funding several research projects to establish a more reliable and practical P test, and to determine the responses in growth rates and fertility that occur at various levels of P in the diet.

Challenges include accurately defining the marginal phosphorus deficient areas, and the classes of cattle and the seasonal conditions when a positive response will occur.

In the interim, a new P manual has been produced using all the knowledge that has been accumulated to date. The manual addresses the key principles to consider when applying strategies and practices to get the best economic returns from feeding supplementary phosphorus. Contributors to the manual include representatives from Department of Agriculture, Fisheries and Forestry, Queensland, Northern Territory Department of Primary Industry and Fisheries, Department of Agriculture and Food, Western Australia, and the Queensland Alliance for Agriculture and Food Innovation.

Some of the important facts on P are:

Which animals most need P?

The animals that need P the most are growing animals, late-pregnant breeders and wet cows.

Soil P levels are an easy way to determine if P supplementation should occur, but it can prove problematic where various soil/land types exist in the same paddock. In general, where soil P levels:

- are deficient (5 mg/kg or less), feed P supplements to all classes of stock
- are marginal (6–8 mg/kg), feed P to young breeders and test older breeders
- exceed 8 mg/kg, the economic benefits from feeding cattle are marginal

Responses to P supplement will be variable if animals on P deficient country have access to adjacent high P soils such as frontage country.

Signs of severe phosphorous deficiency in animals include bone chewing, broken bones, peg-leg, poor body condition of breeders, and botulism.

There are no simple diagnostic tests for the P status of cattle. Blood tests on growing steers immediately after the wet season are still the best indicator of P status, while faecal P is a more practical and readily obtainable procedure.

When should P be fed?

Deficient animals respond best to P supplement when their diet has adequate protein and energy. This is why P supplementation is most effective during the wet season.

On deficient country, feeding P over the wet season to:

- young growing stock can increase their growth by 40–60 kg/year
- lactating breeder cows can increase conception rates by 15–20%
- Where the native pasture on deficient country contains at least 30% stylo, cattle may respond significantly to P supplement during the dry season.

A typical wet season P supplement will contain 10–12% P; a typical dry season supplement will contain 2–4% P and also non-protein nitrogen (e.g. urea).

Supplements should be compared on the cost of their P content, on the practicality of feeding out and on whether the animals will be able, or willing, to eat target amounts.

How do P supplements affect the stocking rate?

As cattle eat more pasture when P supplements are fed, the stocking rate should be reduced to avoid overgrazing.

On deficient country, lowering the stocking rate will not reduce the need to feed P.

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Phosphorus management manual for beef cattle

A manual outlining strategies and practices for feeding phosphorus to beef cattle in northern Australia is now available to graziers, station managers, stockmen and students of animal husbandry.

Aimed at northern Australia where phosphorus (P) is a serious nutritional limitation to cattle production, Phosphorus management of beef cattle in northern Australia contains key messages to improve the efficiency and profitability of beef cattle producers.

Many northern Australian soils are deficient in phosphorus and cattle are unable to get sufficient phosphorus from the pastures on these soils without supplementation.

Phosphorus deficiency results in poor performance and affects the efficiency and profitability of beef production. The animals that need phosphorus most are growing stock, late-pregnant heifers, cows, and lactating cows. These animals are important drivers of production so ensuring they are in optimal condition increases efficiencies and profitability.

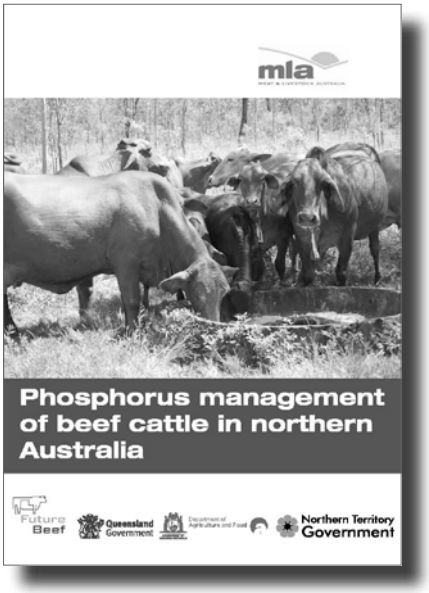
The manual explains why phosphorus is vital for northern cattle production, how to determine if phosphorus supplementation is required for a herd and the different types of phosphorus available. It progresses to when, how much and how to feed phosphorus depending on different scenarios.

The manual also includes a look at the economics and costs of supplementation, plus seven different case studies of producers in WA, the NT and Queensland who have used phosphorus and the results they achieved. The economic benefits from feeding phosphorus are maximised when done in conjunction with other aspects of good herd management.

The manual was a joint effort of the QLD Department of Agriculture, Fisheries and Forestry, The University of Queensland, the WA Department of Agriculture and Food and DPIF staff with funding from Meat and Livestock Australia (MLA).

The publication can be downloaded at: http://www.mla.com.au/Publications-tools-and-events/Publication-details?pubid=6024

To order hard copies, call the MLA membership services hotline on 1800 675 717 or email publications@mla.com.au



FutureBeef conducted online webinars to discuss phosphorus management of beef cattle in northern Australia in November. A recording is available at http://futurebeef.com.au/resources/multimedia/#phosphorus

Please note:

This is the last edition of the Northern Muster that will be printed. Future editions will only be available in electronic format.

Register your email address to receive future issues direct to your inbox.

Visit the newsletters page on the FutureBeef website (futurebeef.com.au/resources/newsletters/) or email northernmuster@daff.qld.gov.au to subscribe.

Wet season phosphorus – latest research results

A pen experiment to determine the response of feed intake, liveweight and hip height of steers to diets of increasing phosphorus (P) content was recently completed by Simon Quigley and Dennis Poppi at the University of Queensland Centre for Advanced Animal Science at Gatton.

Phase 1 of the project involved feeding 5 groups of steers (average weight 225 kg) pelleted diets providing energy and protein comparable to that found in the early wet season with approximately 0.09% (very low), 0.13% (low), 0.18% (med), 0.21% (high) and 0.25% (very high) phosphorus diets over 24 weeks. It took 6-8 weeks for a P deficiency to depress feed intake and liveweight gain.

A lick shed near Weipa keeping the rain off the loose lick.

During Phase 2 all the steers were fed the very high P diet (0.25%) for 12 weeks and were then slaughtered with the following results recorded:

- Feed intake and liveweight gain increased within two weeks when steers previously fed very low P diets were put on a very high P diet.
- Steers previously fed a low P diet gained 1.33 kg/day with hip height change of 57 mm/100 days. This was comparable to growth rates of steers fed a very high P diet during Phase 1.
- Steers previously fed the very low P diet were lighter and leaner than steers previously fed very high P diets at slaughter (Table 1). However, differences in carcass characteristics were related to liveweight and carcass weight. This suggests that P depletion followed by P repletion will have no adverse effects on carcass characteristics at a similar carcass weight.

It is critical to consider this pen trial data in terms of extensive breeding enterprises and P response in northern Australia. Firstly, in un-supplemented herds, the feed intake of breeders coming into the wet season will be depressed. Secondly, it is critical to supply adequate P supplement from Day one of the wet season if feed intake and liveweight gain is to be maximized.

Table 1. Carcass characteristics and MSA grading measurements of steers fed a diet of 0.25% P after previously fed diets with lower P content.

Carcass characteristic	Previous dietary P content (%)				
	0.09	0.13	0.18	0.21	0.24
Number steers/treatment	6	6	6	6	6
Hot carcass weight (kg)	**224.6**	**220.7**	**243.1**	**255.6**	**275.0**
P8 Fat depth (mm)	6.0	7.7	5.2	8.2	11.7
Hump height (mm)	85.0	80.8	80	85.8	83.3
Ossification score	115.0	125.0	116.7	116.7	120.0
AUSMB score	0.17	0.33	0.33	0.83	1.00
MSAMB score	225.0	255.0	253.3	291.7	336.7
Rib fat (mm)	3.0	3.3	4.3	4.5	6.2
Eye muscle area (cm2)	65.7	64.5	66.7	78.8	72.7
Dressing %	52.5	52.9	53.5	54.4	54.9

Can you afford not to feed P?

Family beef businesses across the Gulf are under significant pressure with rising costs, static cattle prices and average debt levels approaching $1M. Beef producers are searching for ways to cut costs and run their operations more efficiently. Feeding wet season phosphorus (in P deficient areas) and removing the calf as soon as possible after the wet can minimise the need (and cost) of dry season supplementation. The wet season is also the cheapest time to put weight on cattle because all other nutrients are in the green grass – for free.

On P deficient country you need to budget between $10 to $15 per breeder/year to maximise liveweight gain and branding rates. The ways to ensure you are getting bang for every buck you spend on wet season phosphorus include:

- Understand your land type mix in each paddock and likely phosphorus needs of breeders, heifers and steers. With the exception of Frontage, Basalt, Downs and Goldfield soils, most properties need to feed wet season phosphorus in north Queensland (see Table 2).
- In the early stages of developing a phosphorus supplementation program, start feeding in a paddock easily accessed over the wet season and closely monitor intakes. Trial feeding will help avoid costly outlays for large tonnages of loose lick, blocks or bulk bags that cattle may not readily consume.
- Phosphorus supplements need to be available all wet season or at least while cattle have access to green feed.

Table 2. Likely phosphorous status of paddock.

Country or soil type	Phosphorus status	Phosphorus required per breeder/day (grams)
Basalt, River Frontage Mitchell Grass Downs and Goldfields	Adequate	None – questionable economic response to P
Deep Sands	**Deficient**	**10 grams**
Everything else (including grey clays south of Normanton & Burketown)	Marginal	5 - 7 grams (heifers are a priority group to feed in marginal P areas)

- Keep paddock records of numbers fed and lick consumed. Use this information to adjust recipes and correct daily intakes. Intakes can vary enormously between paddocks and even water sources (bore or dam) can influence lick consumption.
- Be prepared to experiment with different recipes until you find the right recipe that gives the right intake for your country and your cattle.
- Compare the cost and practicality of various delivery systems (blocks vs loose lick vs bulk bags), (Table 3).
- When getting lick quotes consider the percentage of phosphorus in the lick as well as cost per tonne. The P % in a supplement has a major impact on intakes required/head, costs/head, freight costs and workload in paddock distribution. Higher P concentration mixes will usually cost more per tonne but will be cheaper on a landed cost per unit of P.

Joe Rolfe
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Table 3. Pros and cons of phosphorus delivery systems.

Loose lick	Blocks	Loose lick in bulk bags
Need lick sheds/covered troughs	Weather resistant in most cases	Reasonably weather resistant with limestone
Lower cost/kg of P	Higher cost/kg P	Lower cost/kg of P
Recipe can be changed to achieve target intakes	Set recipe	Recipe can be changed to achieve target intakes
Difficult to put out full wet season requirements	Adequate supplement can be distributed in paddocks before onset of wet	Adequate supplement can be distributed in paddocks before onset of wet
Labour intensive	Less labour intensive	Less labour intensive But need suitable lifting gear to distribute
Severe storms/cyclonic rain can spoil supplement	Storm resistant	Prolonged heavy monsoon rain can spoil supplement
Freight efficiency Option to increase P% and reduce freight cost/tonne of P	Less freight efficient as P% is usually lower	Freight efficiency Option to increase P% and reduce freight cost/tonne of P

Carbon farming initiative

The carbon farming initiative (CFI) is a carbon offset scheme which has been developed by the Australian Government to allow landholders to gain carbon credits. These credits can either be traded on the carbon market to other companies as a means to offset their carbon emissions, or can be used by the landholder to offset their own emissions. It is important to note that the CFI is a completely voluntary emissions scheme and it is at the landholder's discretion whether they choose to undertake a CFI project or not.

Agricultural activities included in the CFI fall into two categories:

Sequestration offset projects

These projects reduce carbon dioxide in the atmosphere by storing carbon in vegetation or by increasing the density of organic matter in the soil; projects may include:

- Restoration, reforestation or revegetation of rangelands
- Protection of native forests*
- Avoidance of de-vegetation*

**The Vegetation Management Act 1999 may restrict the ability to implement projects of this nature on some Qld properties.*

Emissions avoidance projects

Projects which fall into this category will restrict or prevent emissions of methane or nitrous oxides into the environment.

- Reduced methane emissions from stock and the release of methane and nitrous oxides from the decomposition of dung
- Feral animal management
- Management of savannah burning to reduce emissions

These examples are very broad and there are a number of projects which can be undertaken in these, or other areas. The steps involved in undertaking a CFI project are shown in the flow chart below taken from **'The Carbon Farming Initiative Handbook'**.

Approved methodologies used to achieve the project outcomes are available on the CFI website at www.climatechange.gov.au/cfi. Landholders who wish to discuss additional project methodologies or who are interested in developing new methodologies can contact the Department of Climate Change and Energy Efficiency at CFI@climatechange.gov.au

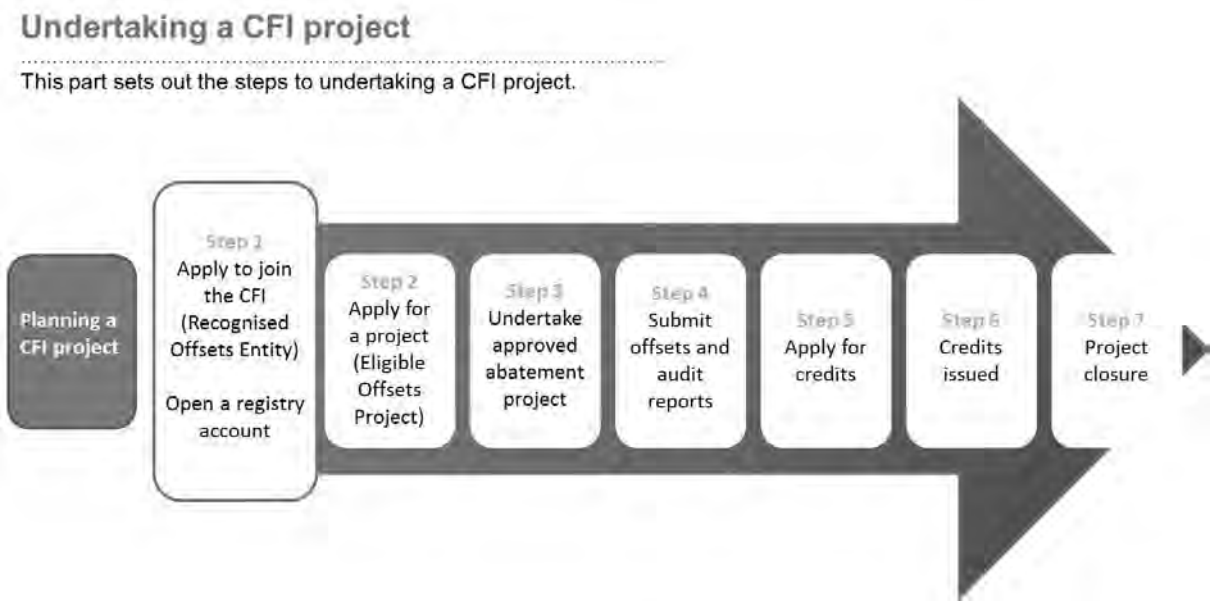
Further information regarding the Carbon Farming Initiative is available from:

Australian Government

http://www.climatechange.gov.au/cfi
Clean Energy Future – 1800 057 590
The CFI Handbook is available at www.tinyurl.com/CFI-handbook

Northern Gulf Resource Management Group

http://www.northerngulf.com.au/carbonfarming
Naomi Hobson - 0499 059 907
Kristjan Sorensen – 0427 000 774



Croydon next gen beef up forum

Young producers in the Gulf have been treated to a fantastic event held at Croydon in the lead up to the annual Poddy Dodgers Festival.

On the 22nd June 2012, Croydon hosted a Next Generation Beef Up Forum. Presenters came from all over the country to inspire and enrich the lives of our next generation of beef producers and farmers.

The day kicked off with a marshmallow and toothpick challenge to break the ice. An inspirational story from AA Co CEO, Troy Setter followed highlighting success and challenges of working in the beef industry.

Topics covered throughout the remainder of the Forum included helpful hints and advice regarding personal and business investing, north Australian market opportunities and challenges, latest research and development outcomes and how to apply them to create a profitable production system. A Succession Planning session offering tips to manage generational change was also well received.

Chef David Carew demonstrated getting maximum value from different meat cuts with a hands on muscle seaming session and proceeded to cook up the different cuts into delicious dishes, which were sampled at the end of the day.

Outdoor trade displays included a huge array of promotional material and advice from Northern Gulf Resource Management (NGRMG), Meat and Livestock Australia, Frontier Services, The Red Cross, Biosecurity Queensland, Southern Gulf Catchments, Agforce and QDAFF's Northern FutureBeef Team.

Marshmallow and toothpick game to get the day started.

MLA Chef David Carew gave a hands-on demonstration about carcass utilisation - photo courtesy of NQ Register.

Presentations throughout the day informed attendees on a variety of topics relevant to the next generation of beef producers.

The day was sponsored by Meat and Livestock Australia and NGRMG. The steering committee for the event was led by local young producers, NGRMG and QDAFF FutureBeef staff.

For more information on future NGRMG events for the Beef Industry contact Grazing Lands Officer Naomi Hobson (07) 40 621 330.

Gulf kids environment day

More than 100 students gathered in Croydon from across the Gulf to celebrate Gulf Kids Environment Day (GKED) on the 31st of August 2012. Northern Gulf Resource Management Group hosted the event which was themed around the Australian Year of the Farmer, as well as celebrating growing and cooking food at school.

Local producer, Peter Kennedy from Alehvale Station, opened the day with a speech about sustainable farming, and what graziers on the Gulf Plains and Einasleigh Uplands are doing to manage their properties sustainably. This was followed by a working Collie demonstration by Tom Mauloni, from Mena Creek.

Students from Croydon, Karumba, Normanton, Georgetown and surrounding properties participated in activities that reflected the measures local producers take to look after their local environment, including monitoring pasture and biodiversity, dealing with weeds, feral animals and erosion, and looking at technology used such as solar power and GPS.

Another aspect of the day was exploring how to grow food sustainably at school, investigating worm farms, no dig gardening, composting and permaculture design. In addition to this, the older children cooked up a kitchen garden feast, while the younger kids made some delicious damper on the campfire.

The event was supported by Queensland Department of Agriculture Fisheries and Forestry, Biosecurity Queensland, Education Queensland, Frontier Services and Savannah Regional Health Services. Connellan Airways Trust contributed to the travel costs for remote families attending the day.

Erica Blumson from Northern Gulf Resource Management Group said, “Gulf Kids Environment Day was a great opportunity for students to get a feel for the work that land managers do to look after their local environment and to learn what they can do at home and in their school gardens”.

Visit the Gulf Kids Webpage at www.northerngulf.com.au/gulfkids for more photos of the event as well as info and competitions for kids exploring their local environment.

Erica Blumson
Northern Gulf Communications Officer
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communications@northerngulf.com.au

Peter Kennedy, Alehvale station and Erica Blumson, NGRMG.

Working Collie Dog display by Tom Mauloni to kick off the ‘Gulf Kids Environment Day’.

Rebecca Gunther from QDAFF showing Emmanuel Hughes and friends spear grass in the pasture session.

Wet season spelling – good for your pastures and pocket

There are approximately 190 beef businesses in the Northern Gulf region covering 20M ha. These businesses rely principally on native pastures to turn off around 200,000 head of cattle per year. Set stocking and overgrazing can lead to a significant decline in carrying capacity and herd performance. Aside from getting the stocking rates right, wet season spelling must be in place on all properties to maintain 3P (perennial, productive and palatable) pastures.

The '*Ecobeef*' project was established in 2007 to quantify the impact of wet season spelling on land and pasture condition. A section of the Einasleigh Town Common was spelled annually from 2008 to 2011.

Initial surveys showed the paddock had lost fifty to eighty percent of original carrying capacity through many decades of heavy grazing. In 2008 average pasture yields were 1046 kg/ha with 60% made up of 3Ps and Indian Couch. After 4 successive wet season spells and moderate stocking rates over the dry season, the paddock is now dominated by productive pastures. In 2011 the average pasture yield was 1876 kg/ha with 3Ps and Indian Couch making up nearly 80% of total yield.

A paddock on 'Namuel' near Georgetown was also involved in the *Ecobeef* project. The paddock was spelled for successive wet seasons over a similar period. During most years the paddock was heavily stocked over the dry season with stocking rates equivalent to a beast to 4 ha. In 2007, end of wet season pasture yields averaged 1474 kg/ha. In 2011 average pasture yields were 1669 kg/ha at the end of the wet season.

Although yields were similar, the proportion of 3P grasses and stylos in the total yield at 'Namuel' almost doubled. Yield of 3P grasses and stylos in 2007 was 32% of total pasture yield but by 2011 these made up 58% of the total pasture yield.

Research and producer experience shows there is more rapid recovery when pastures are spelled during the better seasons. Pastures respond more slowly when paddocks are destocked during poor or below average wet seasons. With our variable climate and unreliable seasons **it is therefore very important to spell some country every year** to capitalise on the better years when they arrive.

The Wambiana trial

The Wambiana trial was initiated in 1998 near Charters Towers to test the ability of 5 grazing strategies to cope with rainfall variability, and develop principles for sustainable, profitable management. The different grazing strategies on Wambiana include:

- Heavy stocking rate (HSR – 1 animal equivalent (AE):4 ha)
- Moderate stocking rate (MSR – 1 AE:8 ha)
- Rotational wet season spelling (R/Spell – 1 AE:8 ha)
- Variable stocking rate adjusted annually in May depending on available feed (1 AE:3-12 ha)
- Variable stocking rate adjusted annually in November based on available feed and the SOI (1 AE:3-12 ha).

A fenceline dividing moderate stocking rate (left) from wet season spelled area (right).

Wet season spelling wisdom

- After 14 years, the basal cover (area covered by tussock base) of 3P grasses in the R/Spell paddocks was 3-4 times greater than the other treatments, and twice that of the MSR.
- The density of 3P grasses across the R/Spell paddocks was 5-6 times greater than the HSR, and slightly higher than the MSR.
- The R/Spell treatment has shown the biggest recovery over the wet years following the 2002–2005 drought.
- MSR and R/Spell annual gross margins generally out performed the HSR, particularly in drier years.
- Modelling the R/Spell on a typical 20,000 ha property shows the 14 year Accumulated Gross Margin is $1.5 to 2M higher than the HSR. The research team in Charters Towers believe that the R/Spell would have performed even better than this had it not been for an ill-timed fire in 2001 followed by several below average seasons.
- Pastures respond more quickly to wet season spelling during above average years. It is difficult to predict the better years so **spell some country every year**.
- Experience at the trial showed that wet season spelling does not buffer the effects of heavy stocking, so it is still important to match stocking rates with available forage and long term carrying capacity.

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Peter O'Reagain
QDAFF Charters Towers
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Welcome Naomi Hobson – Grazing Lands Officer

Hello, I'm Naomi Hobson, the new Grazing Lands Officer with the Northern Gulf Resource Management Group based in Georgetown.

I am originally from Gunnedah, NSW, and have grown up on a 6500 acre mixed beef and cropping enterprise running a herd of approximately 550 breeders. Our family runs a composite breeding operation with Charolais, Limousin and Angus cattle. We also produce a number of composite bulls for sale each year.

I followed my passion for agriculture and beef production through to university and completed an honours degree in animal science, with a focus on cattle production, breeding and reproductive disease, and meat science.

In January of this year I was selected in the Australian National Meat Judging Team which travelled to the United States for a 3 week industry tour. This provided a fantastic opportunity to learn about the US meat industry and Australia's role as a player in an international market.

As Grazing Lands Officer with Northern Gulf, I look forward to working with graziers in the region to identify challenges and issues that our organisation can assist in developing strategic management responses to, as well as providing relevant sources of information to the grazing community.

My contact details are below; please don't hesitate to contact me if you have any queries or are looking for some information.

Email: grazing@northerngulf.com.au
Mobile: 0499 059 907
Office: 4062 1330
Fax: 4062 1488

Planting stylos still a great option

In the northern beef Industry environment where margins are tight, input and operational costs are continuing to rise, producers need to improve efficiencies within their business, and there is still one input that has stood the test of time, and consistently delivered returns on investment when managed correctly: STYLOs!!

There has been considerable emphasis over the past few years on increasing weaner growth rates and improving reproductive rates of first and second calf females, with improved nutrition being one of the key driving forces. The cheapest feed source will always be the feed you grow. Surface sown stylo seed into native pasture is one of the most cost effective options, producing reasonably high returns on investment.

Similarly, weight for age is becoming increasingly important when selling cattle to any market, plus low branding rates across herds in North Queensland means producers cannot afford to sell six month old weaners unless the prices are very high. Therefore, the first dry season after weaning is a critical time for reasonable nutrition for the weaners and with the increasing costs of supplements producers should consider the stylo option.

Supplements do a good job on weaners if used correctly, but it is an annual ongoing cost and planting stylos (seca and verano) into weaner paddocks has been shown to do an excellent job of improving live weight gain over straight native pasture. In most cases, stylos allow for an increase in stocking rates once the stylo becomes well established.

The only exception to the success of stylos across the North has been the heavy clay soils including the Mitchell grass downs country between Hughenden and Cloncurry.

The data from trials conducted over the past 30 years, consistently show that having Seca and/or Verano type stylos can add an extra 30-50 kg per annum on a weaner (see table). Stocking rates can be increased after the stylo is well established.

It is important to spell these new paddocks each wet season to allow native pasture grasses to regrow and seed.

A common observation when these legume-grass pastures are overgrazed, and or not wet season spelled, is there is a rapid loss of native grasses resulting in a pure stylo pasture. Subsequent nitrogen build up in the soil results in invasion of weeds such as hyptis and sida.

While considerable investment may be required to cover large breeder paddocks with sufficient stylo seed, concentrating on weaner and heifer paddocks provides a good starting point, while providing a measurable return on investment.

Before stylo

A common problem encountered across many properties is the size of weaner paddocks. Often by October-November, the weaners have very little of anything to eat. Therefore, the first issue to address is to have big enough paddocks for expected numbers and adequate water distribution with weaners not having to walk more than 2 km.

It's also ideal to have several paddocks to allow segregation on size in both weaning rounds. Segregation will enable targeted supplement feeding and lower overall costs. Wet season spell these weaner paddocks to maximise feed availability and quality.

Treatment	Stocking rate	Liveweight gain per day May-August	Total liveweight gain per head in 78 days
Native pasture + cottonseed meal**	1 weaner:4 ha	0.29	22
Unfertilised stylo + cottonseed meal**	1 weaner:1.33 ha	0.42	32
Fertilised stylo + cottonseed meal**	1 weaner:1.33 ha	0.54	42

A "Weaner Nutrition Demonstration" was conducted at Forest Home west of Georgetown from 1987 to 1994. This included 3 paddocks, namely native pastures and stylos established with and without fertiliser. This shows how weaner stocking rates and daily weight gains can increase with stylos in the pasture.

**All weaners were fed 0.5 kg/day of cottonseed meal and had free access to Kynofos and salt. Fertiliser was only used during stylo establishment.

Planting stylo

Most successful stylo plantings in North Queensland have been done following a fire. The ideal system is to wait for a break in the season – usually December. Burn the paddock and immediately plant the seed into the ash before the next rainfall event.

Large areas are usually planted by aircraft. Usual planting rate is 1-3 kg per ha of seca and verano seed. After planting, spell the area over the next wet season, and introduce the weaners 6 months later.

It is important to exclude fire from your new grass-legume pasture for several years after establishment to allow the legume to seed and thicken up.

Key points:

- Be prepared to spell the paddock after sowing stylo to ensure successful establishment. Seca types will need 6–8 months wet season spell, followed by a light grazing in the dry, and another wet season spell to reach maximum potential.
- Match the stylo seed mix to suit, depending on soil type, grazing / burning management, and rainfall reliability.
- Ensure weaner paddocks are adequate in size.
- Plant legumes into your best country first if possible. Soils below 4 ppm phosphorus will be very slow to establish.
- Don't burn the new pasture for several years after planting.
- Spell paddocks over the wet season.
- Stylo does not reduce the need for wet season phosphorus supplementation in deficient areas.

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New pasture legumes for clay soils in dry environments

Nitrogen is the most limiting element in agricultural production and deficiency reduces the productivity of pastures and animals. Legumes are rich in nitrogen as they have the ability to biologically fix nitrogen and transform it into leguminous protein where it becomes available to the grazing animal and to associated plants such as grasses.

One of the major ways that livestock production can be improved is to increase the legume content within the pasture. In general, legumes provide a higher quality diet for livestock due to higher digestibility leading to higher intakes. Legumes tend to be used more efficiently than grasses and their nutritive value tends to remain higher as plants mature. Grazing livestock always eat more pasture when legumes are present as they tend to leave the rumen faster. These various attributes can all translate into increased animal production. Having legumes in a pasture also promotes a healthier soil. A tap root can allow legumes to have advantages over grasses in extracting soil moisture and nutrients from deep within the soil profile.

In northern Australia the success of incorporating the Stylo legumes, such as Seca and Verano, into native grass pastures on light textured soils is well known. Associated benefits in liveweight gains in the order of 35-65 kg/hd/yr and improved stocking rates and fertility have been identified. However in semi-arid regions with heavy textured soils (often brown or dark clay soils with neutral to alkaline pH) the stylos are not usually well adapted and few other sown legume species have been shown to persist.

Persistence is critical for the success of a pasture legume in our northern environment. For a legume to be persistent it must have:

- Grazing tolerance
- Longevity
- Disease and insect resistance
- A suitable flowering and seed maturity time to cope with our sometimes short and variable wet seasons
- Adequate seed production, and
- Hard seededness for seed soil reserves.

A successful sown legume therefore needs to mimic the adaptability and environmental tolerances of native plants but also be productive, grazing tolerant, non toxic and palatable.

Trials to evaluate many legume species on heavy textured soils in semi-arid environments, originally planted by the DPI and CSIRO in northern and western Queensland in the 1980s, have been re-evaluated by Chris Gardiner at James Cook University. Of the many legumes originally sown various types of the legume Desmanthus were found to be the only ones still surviving one to two decades after being originally sown. These survivors have withstood the test of time and the full gambit of environmental tests such as drought, floods, frosts, fire and grazing. These plants have been selected, bred and multiplied up and re sown in new trials across north, central and western Queensland. The seed has been planted, with success, in trials and demo plots in native grass pastures, such as Mitchell and Flinders grass, on Downs country as well as buffel on cleared gidgee/boree country. Some of these newer plantings have now survived and thrived for a decade.

The best of these varieties have been released by Agrimix P/L, JCU's commercialization partner, and are now available as a blend named Progardes™ (see:www.progardes.com). Progardes™ has been sown successfully over the past several years in trials, demo plots and commercial paddock scale plantings from the coast to the NT border and into central QLD across a range of clay soil environments. DAFF and other agencies are also including Progardes™ in their trials in the north, western, central and southern parts of QLD as well as in northern NSW.

Having a well adapted, persistent, good quality pasture legume in our semiarid clay soil regions potentially has a number of benefits for the grazing industry. These include improved liveweight gains, faster turn off, improved herd fertility, improved carrying capacity, less reliance on supplementary feeds and maintained soil fertility (particularly soil nitrogen).

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Progardes growing amongst Mitchell Grass near Cloncurry.

A typical progardes leaf, stem and seed pod.

Progardes growing amongst Buffel Grass in central Queensland.

Keeping your country one step ahead

If you are interested in near-real-time satellite imagery to enhance the management of your grazing land, then please read on.

Satellites have been photographing the earth's surface for 40 years. With programs like Google Earth, graziers can access images of their property from their office computer. But that imagery maybe five or more years old and several scenes of varying ages and clarity may be needed to cover one property. There are many satellites capturing this imagery, however there is usually a trade-off between how clear the imagery is, the frequency at which the imagery is available and cost.

Consider the following examples for a commercial grazing property:

- Imagery with 1.0 metre resolution refreshed twice a week would be exorbitant but very useful
- Imagery with 0.5 km resolution refreshed twice a day is cheap but of very limited use for grazing management purposes

Fortunately Landsat satellites have been faithfully recording every point on the globe since 1972. The current satellite, Landsat 5, has been capturing this imagery since 1984 and has outlasted its more recent cousins Landsat 6 and 7. However since November 2011 even good old Landsat 5 has deteriorated significantly (you would too if you had been working in space for 28 years!!) This satellite has a resolution of 20 metres and passes over every point on earth every 16 days (a good compromise between clarity and refresh period). It also has the advantage of continually recording, so it doesn't have to be switched 'on and off'.

In February 2013 Landsat 8 will be launched by NASA. It will have the same resolution and refresh period as its predecessors.

A group of scientists from the Queensland Department of Science and Innovation in Brisbane are keen to work with a few graziers to use this satellite imagery to enhance grazing management decisions at the paddock and/or property scale. They will provide the satellite imagery to you within a couple of days of the satellite passing over your area. This is referred to as 'near-real-time'.

What use could this imagery be to you the grazier? Please consider the following:

- An accurate record of burnt areas
- Monitoring the changes in the density or spread of woody plants (woodland thickening, woody weeds or regrowth in pulled country)
- Distribution of the changes in forage quality – either gradual changes eg as the dry season advances, or rapid changes eg frosted pastures or rainfall across only half a paddock
- Changes in available pasture from grazing or plagues (locusts or army worms) as reflected by ground cover
- Quantify land type grazing preferences by livestock
- Map the effects of the location of watering points on grazing distribution
- Identify areas that need land reclamation.

The scientists will do the data enhancement to highlight the changes that you are interested in. Feedback from graziers on the usefulness of the imagery and suggestions for improvement will be sought.

If you recognise a need to improve your land management and are interested in being a part of this exciting project – please let me know. Only a limited number of properties can be accommodated at this stage – so "first in best dressed". By the way, the cost is your time and interest only!

If you are interested, please contact:

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Southern Gulf Catchments collaborating with the pastoral industry

In North West Queensland, Southern Gulf Catchments (SGC) is working closely with the Pastoral Industry Advisory Group (PIAG) to ensure that funding received is being spent on local industry priorities.

PIAG was formed in 2010 to provide collective industry feedback to SGC on the development of strategies as well as guide projects and investment programs relevant to local producers.

Charlie Hawkins, PIAG Chair and Pastoral Director of Southern Gulf Catchments.

Charlie Hawkins, PIAG Chair and Pastoral Director of SGC explained, "In north west Queensland we face a lot of the same issues as other graziers but are also affected by unique land types, seasonal patterns and remote locations. PIAG provides valuable input and industry insight into trends and future needs for the grazing industry, identifying issues which can be addressed through SGC's funding programs."

PIAG members are involved in the grazing industry from a range of businesses including family holdings, corporate pastoral companies, agribusinesses, Landcare groups and government extension officers. Meetings are held three times a year to review SGC's progress against the joint objectives and to identify any emerging issues.

"PIAG members have a variety of industry background, information and experience. Gathering regularly to share this knowledge is beneficial to both SGC and the individual PIAG members." Megan Munchenberg, Gregory River Landcare Group

A number of key priorities and gaps in local knowledge have been identified and as a direct result the following events and projects have been launched by SGC:

- Erosion Control Workshops, May 2012
- BusinessEDGE workshop, May 2012
- Soils4Grazing Project, 2012-2015
- Prickly Acacia Field Day, August 2012

PIAG are also guiding SGC on how to best communicate with producers and agribusinesses in the region. Emphasis is on increasing the number and scope of field days and practical demonstrations as well as regular communications and raising their profile in the community. PIAG members also promote SGC projects and upcoming events - Simone Parker, Operations Manager explains, "Members of PIAG are often the first to put their hands up to trial new technologies or to host field days. Most producers are quite happy to have a look over the neighbours' fence and this is a really good way of promoting positive practices."

Membership of PIAG is free and nominations are welcome from anybody involved in the grazing industry within the Southern Gulf Catchments region.

Charlie Hawkins
PIAG Chair
4741 7333

or contact SGC on 4743 1888.

Erosion Control workshops were identified from the PIAG meetings as a priority for local producers.

Producers watch on as Darryl Hill demonstrates practical erosion control techniques with the grader.

Soils4Grazing project commences in the Southern Gulf region

Opportunities for commercial beef properties in North West Queensland to participate in the Carbon Farming Initiative can be limited. Southern Gulf Catchments have partnered with the Queensland Department of Agriculture, Fisheries and Forestry's FutureBeef team to explore the potential to sequester and store soil carbon through rehabilitating degraded grazing lands.

Funding has been obtained through the Australian Government's Clean Energy Futures 'Action on the Ground' program to deliver the Soils4Grazing project to North West Queensland producers.

Soils4Grazing will trial and demonstrate mechanical restoration techniques to improve land condition and vegetation cover, leading to improved pasture health and increased soil carbon levels.

Overall the project will assess the:

- suitability and cost-effectiveness of rehabilitation techniques across different land types
- capacity of three major land types to sequester and store soil carbon
- relationship between rehabilitation, land condition and soil carbon storage, and
- soil carbon trends for three major land types in the region.

Three study sites will be established on commercial beef properties within the Southern Gulf region. Each 20 ha site is on a productive land type, but is currently in a D land condition.

During November site works were performed on Rosevale via Hughenden, Herbertvale via Camooweal and a third site at Cloncurry is currently underway. Methods to be trialled include shallow water pondage, crocodile seeding and different ripping techniques. Seeding will also occur with species determined by soil type and producer preference.

It is unlikely that changes in soil carbon storage will occur over the three year project as it is a slow process, however the trial sites will be assessed twice yearly with data collected on other factors which are thought to contribute to soil carbon sequestration. A long term monitoring program (10-15 years) will be coordinated by SGC to ensure information is collected and contribute to the potential development of CFI methodologies suitable for beef businesses in northern Australia.

Two fact sheets have already been produced for the Soils4Grazing project. The first outlines the overall project and the second summarises the assessment of land condition which all producers can use. Further fact sheets will be available on the cost effectiveness of treatment options, the results of the trial and other related topics.

Project progress will be shared through field days, fact sheets, videos and other media so keep an eye out for updates on the SGC website www.southerngulf.com.au

Soils4Grazing is funded through the Australian Government Department of Agriculture, Fisheries and Forestry as part of its Carbon Farming Futures – Action on the Ground program.

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Australian Government

clean energy future

Southern Gulf Catchments

Redland Park prickly acacia field day a huge success

Over 100 people attended a Field Day at Redland Park Station south of McKinlay on Thursday 16 August, highlighting the importance of weed management to landholders in the Southern Gulf region.

Through a joint project funded by BHP Billiton and delivered by Southern Gulf Catchments, the Field Day was held to inform landholders about the work being done in the region to prevent the spread and reduce the density of weed infestations including prickly acacia, mesquite and rubber vine.

Presentations by representatives of Biosecurity Queensland, the Tropical Weeds Research Centre and the Queensland Department of Agriculture, Forestry and Fisheries provided an update on the status of biological control, discussed the range of treatments of these weeds and management strategies. The field day also included practical demonstrations of herbicide application and mechanical clearing, as well as pasture management after weed control.

There was plenty of opportunity for open discussions between the guest speakers and the landholders, particularly regarding the herbicide application methods used in treating prickly acacia. Dow Agrosciences representative Ken Springall triggered much discussion with his demonstration on the correct way to treat prickly acacia and the timing of this treatment.

Ian McLean of Bush Agribusiness completed the day with his presentation on the cost benefit analysis of controlling prickly acacia under a variety of situations.

Tony Batt from Malvie Downs Station commented "By the number of people in attendance it is obvious how big the problem is, everyone is very concerned and overwhelmed. The Field Day was very informative and an excellent day."

For further information on weed management strategies contact Southern Gulf Catchments on 4743 1888 or email admin@southerngulf.com.au

Presentations throughout the day informed attendees on a variety of topics relevant to the control of Prickly Acacia.

John and David Ogg demonstrating a mister being trialled for herbicide application.

Ken Springall, from Dow Agrosciences, discussing herbicide application with landholders.

The economics of prickly acacia treatment strategies

A presentation by Ian McLean, Bush AgriBusiness, at the Redland Park Field Day, August 2012 hosted by BHP Billiton and Southern Gulf Catchments.

It is well known that prickly acacia (*Acacia nilotica* subsp. *indica*) is an increasing problem across many productive landtypes and is expensive in terms of treatment costs, lost production, and reduced land values. The question is: What is the most cost effective treatment strategy?

To answer this question an analysis was conducted for Mitchell Grass Downs country with four levels of prickly acacia infestation. The density levels were taken from the Prickle Bush Photo Density Standards Guide which is available from Biosecurity Queensland or Southern Gulf Catchments. The data shown below was used in the analysis and was provided by Southern Gulf Catchments, the Department of Agriculture Fisheries and Forestry Queensland and local producers.

Table 1. Summary of data used in analysis.

	Density levels			
	High	Medium	Low	Clear
Plants/ha	250	100	20	0
Treatment costs*	$218	$191	$97	0
Labour costs	$218	$191	$97	0
Total costs (5 yrs)	$436	$382	$194	0
Land condition	D	C	B	A
Carrying capacity (AE:ha)	1:50	1:22	1:13.5	1:10

**total cost of treatments over 5yrs of treatments in Table 2 below, excluding labour.*

$1 spent addressing an infestation early can save more than $4 over time!

Table 2 details the treatment methods used in the modelling of each infestation level. The years listed on the left are the years of treatment and are not the years used in analysis below. The estimated cost excludes labour, which usually accounts for at least half of the total treatment costs. For the purpose of this analysis, labour has been assumed at 50% of the total cost, as detailed in Table 1.

Table 2. Treatment methods.

Year	Density level		
	High	Medium	Low
1	Mechanical	Basal Bark or Cut Stump	Basal Bark or Cut Stump
2	Foliar Overspray	Foliar Overspray	Foliar Overspray
3	Foliar Overspray	Graslan Pellets	Graslan Pellets
4	Graslan Pellets	Graslan Pellets	Graslan Pellets
5	Graslan Pellets	Graslan Pellets	Graslan Pellets

The analysis was based on 100Ha of Mitchell Grass Downs country that initially has a low density infestation. Three options for treating that infestation, with the aim of eradication or bringing it back to a very sparse infestation are then modelled.

Option 1: Treated immediately, with ongoing treatment for 5 years.

Option 2: Leave untreated until year 4, by which time it is a medium density infestation, and is then treated, with ongoing treatment for 5 years.

Option 3: Leave untreated until year 6, by which time it is a high density infestation, and is then treated, with ongoing treatment for 5 years.

Bare ground around prickly acacia trees - lost grass production .

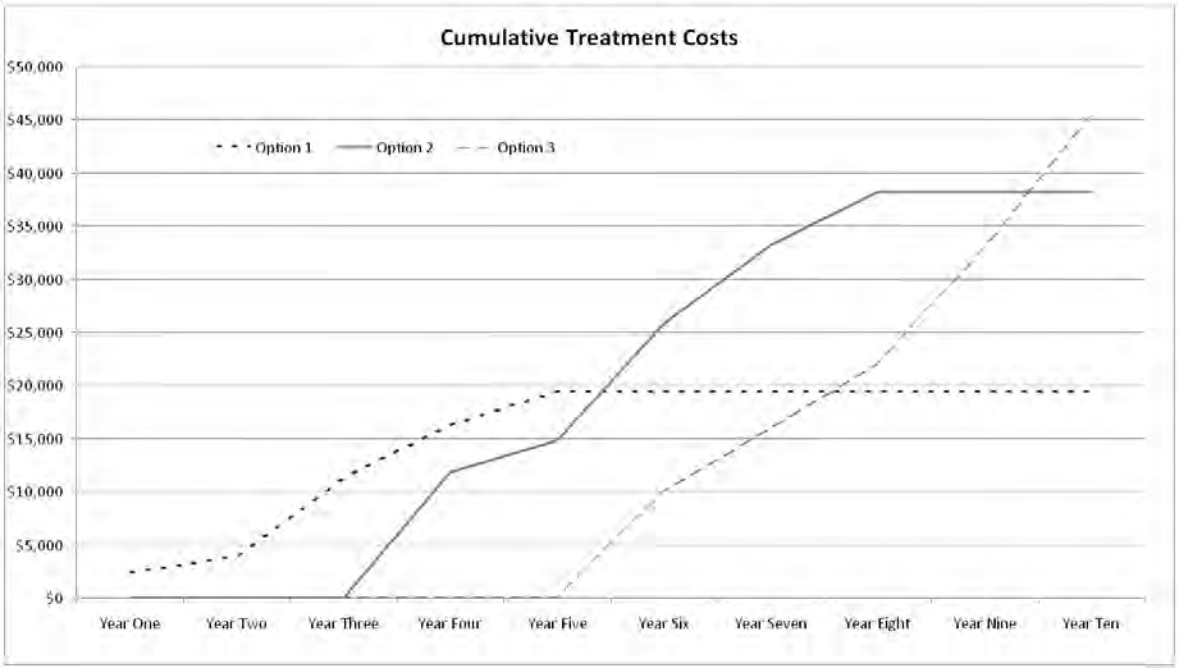

Figure 1. Cumulative treatment costs

The total cumulative costs of these three options are shown in Figure 1. As you can see, the costs for early treatment level out at a much lower cost than if the treatments are delayed.

It is assumed that land condition will decrease if infestations are untreated and will improve if the prickly acacia is reduced. Land condition was assessed using the ABCD framework in MLA's EDGEnetwork Grazing Land Management Manual. Table 3 shows the assumed changes in land condition that the modelling is based on. The years highlighted in bold are the years which treatment occurred. You will note that in year seven under the high density, the area is unstocked to allow for recovery.

Table 3. Changes in land condition

Year	Land contition		
	Option 1: Treat at low density	Option 2: Treat at medium density	Option 3: Treat at high density
1	**B**	B	B
2	B	B	B
3	B	C	C
4	A	**C**	C
5	A	C	C
6	A	C	**D**
7	A	B	No stock
8	A	B	D
9	A	B	C
10	A	A	C

The predicted carrying capacity over the 10 years under each of the three options is calculated using the land conditions in Table 3 and the carrying capacities in Table 1. In summary, over the 10 year period twice as many cattle can be run under option one than option 3.

The profit earned over the ten years from running cattle is determined from the carrying capacity. The profit is calculated based on a profit estimate (before interest & tax) of $25 per AE. From these assumptions the cumulative profit for option one, is twice option 3, as it is for cumulative carrying capacity.

The other key variable to consider when analysing the cost effectiveness of prickly acacia control is the effect of infestations on land values. For the purpose of this analysis, the land value is based on carrying capacity, at $2,000 per AE, with the value of the land changing based on its land condition score and resulting estimated carrying capacity.

The total income and costs for each treatment option are determined using:

- the treatment costs for each option,
- the profits earned from each option over the period analysed and,
- the changes in land value due to the infestation levels.

Table 4 summarises these figures. It should be noted that these are undiscounted figures. In economic analyses such as this, future cashflows should be discounted to account for the time value of money. In this model, discounting has not been done for two reasons. Firstly it is presumed that treatment costs will increase in real terms into the future and therefore should not be discounted and secondly, discounting future cashflows mean differences between upfront treatment and delayed treatment is distorted as future cashflows are highly discounted.

Table 4. Summary of options

	Option 1	Option 2	Option 3
Treatment costs	**-$19,400**	**-$38,200**	**-$45,400**
Total profit	$2,306	$1,630	$1,039
Land value change	$5,185	$5,185	-$5,724
Net cost	**-$11,909**	**-$31,384**	**-$50,085**

Unsurprisingly, all treatment options cost money. It is a matter of which option costs the least. This analysis shows that every $1.00 spent when treated at low density saves spending $4.20 if treated at high density. This is a significant saving and the payoff would be even higher if the sparse plants had been treated to prevent the infestation getting to low density in the first place.

This analysis makes the solution seem obvious for this scenario, but what if infestations are worse or bigger than this? What should be done then? A good first step is to assess what your infestation levels are. This can be done easily with a drive around or more thoroughly with mapping. Once you have assessed what areas of your property are at high, medium, low, sparse or no infestation levels then you will then be in a position to develop a strategy for each and prioritise which to address first. Depending on your situation, you may be better not tackling the thick infestations, but containing them and focussing your efforts on areas with low or sparse infestations. Can you buy yourself time by using stock management and fencing to prevent the spreading of seeds or by killing mother trees first to stop seed production?

Plan and budget ahead for 3-5 years and develop your strategy around available funds. Spending a lot of money on a big area may be wasted if you are not able to follow it up. You may be better off addressing a smaller area that you can follow through and treat regrowth on over the coming years.

In conclusion you should;

- Act early, every $1 spent addressing the problem early saves over $4 later
- Assess your situation, know what level your infestation is at & how it is changing over time
- Have a clear plan and a budget. For your situation and your budget what is the most effective strategy for the next 3-5 years?

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Using a mister to treat thick infestations.

Use of fire in the management of 'Mirtna'

There are several grazing land management issues on Mirtna that are addressed using fire.

Mirtna is 150 km SSW of Charters Towers; it covers an area of 97,100 ha. There are three broad land types that make up one third of the property each:

- Blackwood with smaller areas of gidgee on low sloping plains with massive or cracking clays
- White's ironbark, box, bloodwood & gum with a range of pastures including bluegrasses, black speargrass and kangaroo grass
- Spinifex with ti-tree, desert oak & wattles

Approximately 25% of the property, mainly blackwood and some ironbark country, has been cleared and is over-sown with legumes and buffel grass.

This is a case study of how we use fire to manage a range of grazing land management issues on Mirtna. We believe that fire is an integral part of managing our grazing system.

Planning for fire and post-fire management

A paddock to be burnt will be destocked at the last mustering round of the year and spelled until the paddock is burnt at the end of the following dry season.

This rule of thumb is flexible depending on how good the wet season is, for example if the wet season is poor, spelled paddocks will be grazed if need be. Spelling will recommence for the following year until the paddock is finally burnt. In a run of drought years, it may be several years before the paddock is actually burnt.

Our aim is to burn one third of the property by burning one third of the area of each paddock each year. In reality this doesn't always occur as the size of the wet season determines how much burning is done each year. Burning small areas in paddocks (patch burning) is risky. If the wet season is poor, these areas will be flogged by cattle and can take years to recover.

Only paddocks that have been destocked prior to a burn will remain destocked after the fire. Paddocks that have been grazed and still have sufficient grass to carry a fire will not be spelled if they are burnt. This "graze-burn-graze" is often the case after a big wet season.

Tim Moravek QDAFF economist and Olivia Pisani QDAFF Beef Extension Officer talking with David Kane of Mirtna about the use of fire to manage regrowth on pulled eucalypt country on Mirtna.

Fire and spinifex country

Spinifex pastures are easier to wreck than other pasture types if small patches are burnt. This is made worse if follow-up rains are late and the cattle stay on the country as stock will pull the plants out of the ground. **Our aim with spinifex country is to have the pasture in a range of growth stages by using fire to create a mosaic pattern across the paddock.** We achieve this by burning spinifex country as soon as it will carry a fire after the wet season, i.e. March/April.

Woodland thickening in remnant vegetation

We recognise woodland thickening as a significant threat to the carrying capacity of Mirtna. Fire is the main tool used to keep the country open and manage woodland thickening. A late dry season fire which produces a hot fire is most effective in thinning woody plants. **Fire frequency is determined by the height of the saplings rather than the time since the last fire**.

Controlling regrowth on pulled country

The same approach to managing woodland thickening with fire is used to control regrowth on cleared land. **The aim of burning pulled country is not to turn it into downs, but to retain a low density of suckers**.

Weed management

The watercourses are the main areas with woody weed infestations including rubber vine and parkinsonia. Since adopting a program of riparian

fencing starting in the late 1990s, weed infested areas are now locked up to accumulate large fuel loads to produce high intensity fires.

It is important that the whole of the drainage line/gully is burnt. Before fencing the drainage lines, they were selectively grazed and had no grass by the end of the year. No pasture competition and no fire allowed the weeds to expand.

Pasture species composition & sown pasture establishment

Our main preferred grass is buffel. Short duration crash grazing of buffel followed by a wet season spell encourages it to grow rapidly and set a heavy seed crop. This management style encourages the density of the buffel grass to increase.

Fire can perform the same role as the heavy grazing, but still needs to be followed by a wet season spell. There has been a good establishment of stylo legumes (seca and verano) across most of the property. Fire will thin the density of the stylo if legume dominance becomes an issue. In recent years we have been sowing Wynn cassia on the lighter sandy country. It produces a hot fire which has been useful in thinning some of the ti-tree country that Wynn cassia prefers.

Preferential grazing of land types

Fire was used to change grazing behaviour when we came to Mirtna in 1978. However Mirtna is now reasonably well fenced to land type and well watered. Therefore land type grazing preference by cattle and under-grazed areas due to poor water distribution are not the issues that they were in the early days.

Wildfire management

Fires that are lit by lightening strikes make planning for fire difficult. By aiming to keep up to one-third of each paddock burnt in any one year, these areas have short pastures which act as fire breaks and allow us to manage wildfires.

Burning after rain will reduce the chances of planned burns becoming wild fires. However it is essential that the burning is done within two days of rain as high humidity levels from the high soil moisture will induce dew each night for the first couple of nights only causing the fire to go out.

For information on current fire locations and fire history over previous 12 months visit the North Australian Fire Information website at www.firenorth.org.au

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'Mirtna', Charters Towers

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Different pasture responses from an early dry season burn in May/June (RHS) and late dry season burn in November (LHS).

The economics of fire to control currant bush

Currant bush (*Carissa ovata*), otherwise known as blackberry bush, is a native species which is a threat to grazing land condition in the Burdekin region. The impact is a significant loss of carrying capacity and profitability for graziers. There are a number of chemical and mechanical methods for reducing currant bush. These generally are costly to perform and can be impractical due to landscape, geography and financial constraints. The Wambiana grazing trial near Charters Towers and previous research at Pasha Station, near Mt. Coolon, have shown that fire can also be an effective means in reducing currant bush cover and does not incur a large initial cost to implement.

Currant Bush canopy is quite dense and suppresses pasture growth which restricts stock access to pastures. Trials like Wambiana, Pasha and subsequent modelling have shown the costs of Currant Bush expansion to be quite large. If left uncontrolled, the corresponding fall in carrying capacity is close to 14% (13.96%) after 10 years (Figure 1).

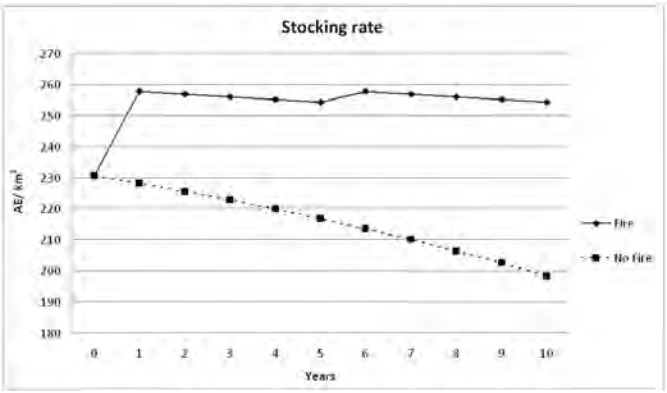


Figure 1. Comparison of stocking rates between the fire treatment and the no control scenario.

At the Wambiana trial, currant bush cover was 15% of the paddock before burning and around 5% after the burn (Figure 2). However, Currant Bush is generally not killed by the fire and canopy cover is quick to rejuvenate. Follow up burns in later years are hence required.

An economic analysis over a 10 year period showed that burning to control Currant Bush, on average every 5 years, generates 11% more profit over the base scenario of uncontrolled Currant Bush. The scenario includes agistment for cattle of 12 weeks following the burn. On a 20,000 ha property which is running approximately 2300 Adult Equivalents (AEs), that is $324,000 extra over 10 years. Profitability increases to 16% when cattle do not need agistment, such as when the paddock is already receiving a wet season spell.

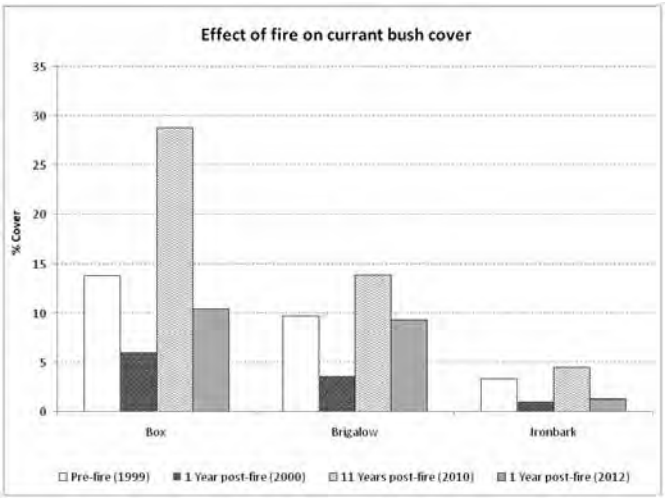


Figure 2. Results from the Wambiana trial.

The scenario was based around an extensive breeding herd on land dominated by Box country. However, the relative reduction in currant bush canopy is similar across the Brigalow and Ironbark land types, which suggests the results would be of similar magnitude to Box Country. A discounted cash-flow analysis was used to compare the two scenarios.

A proposed Producer Demonstration Site (PDS) at Bluerange, north of Charters Towers, will give producers the opportunity to learn from other producers through trialling a range of currant bush control methods. These include mechanical and chemical treatments as well as looking at the timing and frequency of fire to better inform future control strategies. The results of these PDS trials will be presented to industry on completion.

Timothy Moravek
FutureBeef Team, Charters Towers
07 4761 5150

Currant Bush is generally not killed by fire unless follow up burns are used in later years

Tagging cattle correctly

Cattle producers are reminded to ensure that the correct National Livestock Identification System (NLIS) tags are applied prior to cattle being moved.

Biosecurity Queensland Senior Biosecurity Officer Dan Hogarth said NLIS breeder and NLIS post-breeder devices related to the property where the animal was born.

“The colour of the tags indicate the origin of the cattle,” Mr Hogarth said.

“A white breeder device is applied to untagged cattle that have never moved from the property where they were born and are moving for the first time.”

Mr Hogarth said most properties would also have a need for orange post-breeder tags, so it was best to have an adequate supply on hand.

“Orange devices are applied to untagged cattle that are no longer on their property of birth and are moving for the first time,” he said.

“They are also applied to cattle that have been transferred to a different property and need to be re-tagged after losing their original NLIS device.

“Purchased herd bulls and breeding cows selected for re-sale that have lost their original tag, must be tagged with an orange post-breeder tag prior to movement.

“All cattle that have been transferred onto a different property and have lost their original tag must have an orange post-breeder tag applied as the replacement.”

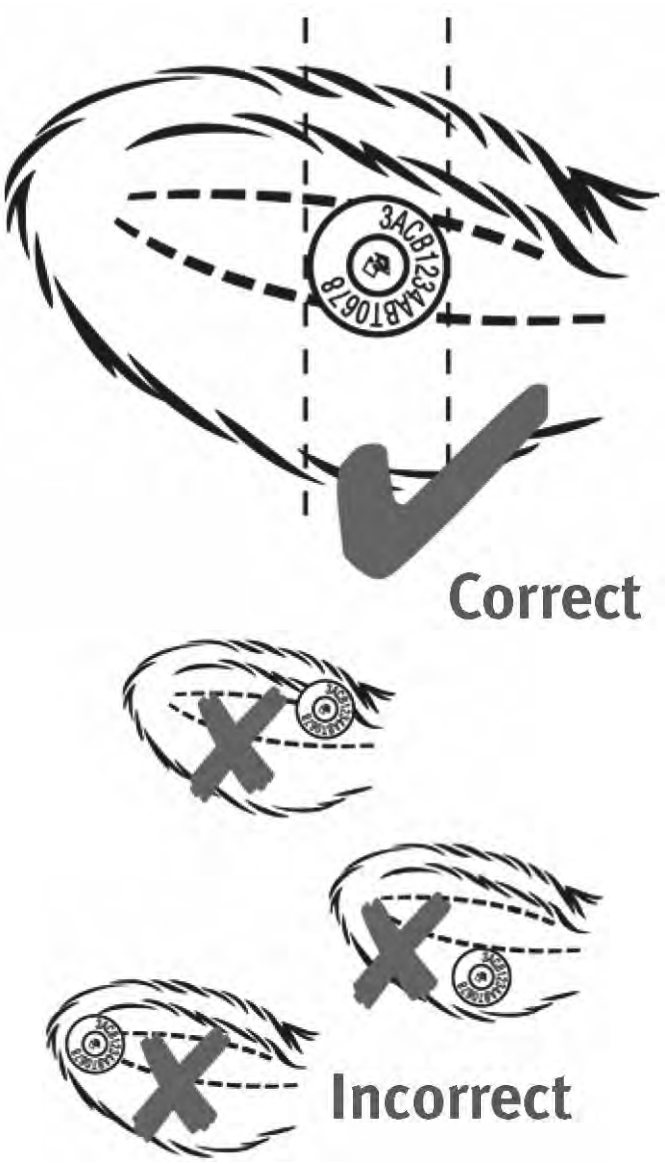
To apply for NLIS devices contact your local Biosecurity Officer or call the Customer Service Centre on 13 25 23. Devices can then be ordered through your preferred agent or rural supplies business.

NLIS allows cattle movements to be traced accurately and efficiently throughout their lifetime.

Tracking movements helps improve food safety, product integrity and market access, particularly for the export market, and is an essential tool in reducing the economic impact of livestock diseases.

For more information on NLIS, visit www.biosecurity.qld.gov.au or call 13 25 23.

Follow Biosecurity Queensland on Facebook and Twitter (@BiosecurityQld).



Please note:

This is the last edition of the Northern Muster that will be printed. Future editions will only be available in electronic format.

Register your email address to receive future issues direct to your inbox.

Visit the newsletters page on the FutureBeef website (futurebeef.com.au/resources/newsletters/) or email northernmuster@daff.qld.gov.au to subscribe.

Rabobank western beef challenges

Welcome to the Beef Challenges page dedicated to updates from the three Shires involved in the Rabobank Beef Challenges in North West Queensland.

Flinders and Richmond Challenges 2011/12

The 2011/12 Flinders and Richmond Shire Beef Challenges finished in July 2012 with all challenge cattle slaughtered at Teys Australia Lakes Creek abattoir. MSA data was used to assess the carcase attributes of individual steers. A summary of the carcase results is included in the 'Meat Matters' section of this edition (page 43).

Twenty-six properties were involved in the Flinders Challenge with nine properties in the inaugural Richmond Challenge. Each property entered five steers between 300 and 400 kg. The Flinders Challenge was hosted by the Lethbridge family at Killarney while the McClymont family hosted the Richmond Challenge at Wilburra Downs.

All animals were inducted into their host paddocks in late June 2011 receiving management tags, vaccinations and HGPs. After one month settling into the paddock, adjusting gut fill and sorting their pecking order, all steers were manually weighed to provide the official start weight for all liveweight calculations (Table 1).

Table 1. Liveweight data summary for Flinders and Richmond Beef Challenges.

	Flinders (130 hd)	Richmond (45 hd)
Start July '11	365.81 kg	382.34 kg
End July '12	586.87 kg	601.16 kg
Avg gain	221.08 kg	218.82 kg
Avg daily gain	0.65 kg/hd/d	0.63 kg/hd/d

Top performing individuals – Avg daily gain and (total gain)		
1	1.02 (349kg)	0.94 (324kg)
2	0.91 (311kg)	0.89 (306kg)
3	0.88 (301kg)	0.79 (271kg)

Manual weigh days were also held (November, March and early July) allowing the group to discuss management and sale options. The weigh days featured guest speakers and were a great social outing.

The Flinders Challenge will kick off again in 2013 and the host property will be the Murray family at Uanda, south of Torrens Creek. The group are keen to compare liveweight gain on pulled Gidgee/Buffel country as opposed to the previous cattle performance recorded on Mitchell Grass Downs.

The Richmond Challenge inducted their 2012/13 intake of 88 steers (11 properties) in June before the bigger animals were sold. Liveweights ranged from 250-350 kg with the official start weight manually recorded on 5 July. The 2012/13 animals gained well before weights started to plateau in late September (Figure 1).

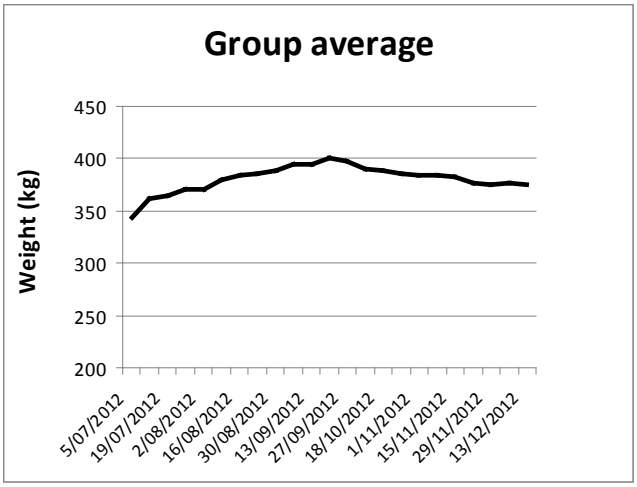


Figure 1. The 2012/13 Richmond Challenge group average weight as recorded by the automated walk over weigh bridge from 5-July to 13-Dec 2012.

Walk over weighing and remote camera technology PDS

The Richmond Beef Challenge group accessed Meat and Livestock Australia's funding to trial automated walk over weighing and remote cameras.

With a spear trap yard set around the water trough each animal's NLIS tag and weight is recorded upon exit. The weight data is transmitted by mobile network to a website, processed and sent to Will and Hollie Harrington to upload to the challenge website. One camera monitors trough levels and a second camera (2 km from water) records changes in pasture condition. All photos and animal weight data can be accessed by visiting the Richmond Challenge link on the website (www.usee.com).

The data from the walk over weigh bridge was used by the group in the 2011 dry season to time feeding of lick. However, because all animals were fed the same lick recipe, it was difficult to decipher the effect of the lick on the animals' performance. Hence, this year the group installed an autodraft unit to draft the steers three ways:

- Group 1 – bush with no lick
- Group 2 – high protein meal production lick
- Group 3 – 30% urea based lick.

Precision Pastoral's Remote Livestock Management System autodraft unit was installed in late September 2012. The lick trials started on October 31 due to the extended time needed to train steers through the device. A statistician randomly allocated steers to the three treatment with an average steer weight of 383 kg across all groups when lick was introduced. After six weeks the results are not significant with only 8 kg difference between all three groups (Figure 2).

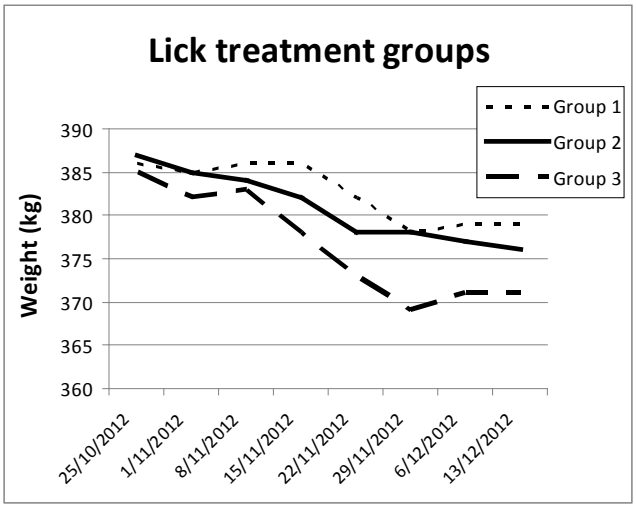


Figure 2. Weight performance of the 3 different lick treatment groups since introduction of lick on 31-Oct to 13-Dec. N.B. Group 1 = no lick, Group 2 = Production lick, Group 3 = 30% urea lick

McKinlay Shire Challenge offered 2 different weight ranges – 200-230 kg and 380-420 kg.

McKinlay Shire Beef Challenge

McKinlay Shire inducted their inaugural Challenge cattle on 5 October at Eddington Station, owned by the Anderson family. The group offered two weight categories to interested participants including 200-230 kg steers to remain in the challenge over two wet seasons or 380-420 kg to remain in the challenge over one wet season

A response from the McKinlay Shire was very positive with 23 properties each entering six head. The official start weight of all animals was recorded at the 7 November weigh day and attendees enjoyed a presentation from Henry Burke of AA Co.

Richmond and McKinlay groups will have a manual weigh day in March and Flinders will induct their new trial cattle in April. Please contact the relevant secretaries below for dates and further information. Everyone is welcome to come along, learn from and enjoy the western beef challenges.

McKinlay Shire Secretary – **Rachael French**, Eddington Station – 4746 7221 or rachael.ando@gmail.com

Richmond Shire Secretary – **Hollie Harrington**, Olga Downs – 4741 8531 or hollie@usee.com.au

Flinders Shire Secretary – **Terressa Ford**, Hughenden Station – 4741 1546 or greg.terressa.ford@bigpond.com.au

Rebecca Gunther
FutureBeef Team, Cloncurry
0417 726 703

Everyone gets in and gives a hand at the McKinlay Challenge weigh day.

Charters Towers!

WANTED: motivated beef producers to start a beef challenge in the Charters Towers area with support from DAFF beef extension staff. Contact Karl McKellar on 47615150 or Karl.McKellar@daff.qld.gov.au

Welcome

This is a new section in the Muster which aims to keep you up-to-date with developments in the meat processing industry, including research and other interesting pieces.

This issue includes a summary of the carcase results from the 2011/2012 Flinders and Richmond Beef Challenge Groups as well as a look at the expected yields of the major primal cuts when sending a carcase to the abattoir. We also discuss the price received on-farm compared to the price we pay for our meat at the butcher shops. There will be more information on this topic in the next issue.

If there is anything in particular that you would like to read about in this section please let us know at northernmuster@daff.qld.gov.au.

US meat judging tour

Emma Hegarty, Beef Extension Officer, DAFF Cloncurry, is heading to the US this January as one of the coaches of the 2013 Australian National Meat Judging Team.

The Australian Intercollegiate Meat Judging Association is supported by Meat and Livestock Australia, Australian Meat Processing Corporation, as well as industry, with a focus to educate and encourage graduates to remain in the meat and livestock industries.

The trip involves fives university students that were selected from the Australian Meat Judging Contest in July. Along with the two coaches, the students will visit and train in abattoirs, feedlots, ranches and research stations, as well as compete in three contests.

A follow up article is to come in the next issue of the *Northern muster*!

Beef challenge carcase results

The Richmond and Flinders beef challenge cattle were sent to the Teys Australia Lakes Creek abattoir at the end of July where MSA data was collected and used to assess the carcase attributes of each individual steer.

A summary of the data is shown in Table 1 for each Beef Challenge Group. The company and MSA specifications that the carcases had to meet were:

- Teys company specs
  - 4 teeth maximum
  - 5 mm fat minimum
  - maximum 340 kg HSCW
- MSA specs:
  - pH < 5.7
  - meat colour – 1B to 3
  - rib fat minimum of 3 mm

Table 1. The number of head and percentage of each Beef Challenge group which met the required company and MSA specifications at the Lakes Creek Abattoir.

	Flinders Group	Richmond Group
Number of head	130	45
Average HSCW (kg)	317	311
Average dressing %	54%	52%
Meet Teys company specs	83%	78%
% of head that meet company specs & also meet MSA specs	90%	83%
Ungrades	10%	17%

The majority of the cattle that did not meet the Teys company specs had a hot standard carcase weight (HSCW) greater then 340 kg. Furthermore, the steers that failed to meet the MSA specs generally had a meat colour darker then 3 and/or had a pH of greater than 5.7.

It took the trucks 16 hours to get to Rockhampton followed by unloading time. Considering the long distance travelled the number of ungrades remained relatively low.

The steers that did meet both company and MSA specs were put in to Boning Groups as outlined in Table 2. On average, depending on their weight, sides in Boning Groups 1 to 8 received a 20 cent premium, while carcases that fell in to Boning Groups 9 to 11 received a 10 cent premium. Any carcases in Boning Groups 12 and above did not receive a premium.

Table 2. The breakdown of which Boning Groups the MSA graded carcses were assigned to.

	Flinders Group	Richmond Group
MSA Boning Group 1-8	9%	24%
MSA Boning Group 9-11	41%	24%
MSA Boning Group 12-18	50%	52%

Other carcase characteristics were looked at including ossification, meat colour, fat colour, marbling and rib fat. No significant differences were found between the challenge groups in meat colour with the majority of the steers meeting specifications of a meat colour 3. The average marbling score for both challenge groups was 238 which displays only traces of marbling throughout the ribeye. The average rib fat measurement for the groups was 7mm and 8mm which met specification.

To learn more about the MSA grading system and for assistance with interpreting MSA feedback data visit http://www.mla.com.au/Marketing-beef-and-lamb/Meat-Standards-Australia/MSA-beef.

Emma Hegarty
FutureBeef Team, Cloncurry
0467 808 340

Carcase yield

The cost of meat at the local butcher or supermarket is a common discussion around the dinner table. There is a large difference in $/kg received by the producer and $/kg paid by the consumer at the retail outlet.

When you take a closer look at the supply chain and start to add the figures up you begin with the producer being paid around $3.10 per kg dressed weight. By the time the animal is slaughtered, boned out, delivered to the butcher shop and prepared for sale with trimming, slicing and packaging, the cost per kg has reached around $12 per kg. Hence the retailer or butcher has to average more than $12 per kg to make a profit.

Table 1 gives a breakdown on the major cuts from a beef carcase and what percentage, or weight, of each primal cut that can be expected.

Please note that not all of these cuts can come out of the one side of a carcase. For example, you will not get a shortloin and a striploin out of the same side.

You can see that there is a much higher percentage of lower value cuts. The higher value cuts, i.e. Rump, Tenderloin, Striploin and Cube Roll, only make up approximately 13% of the carcase. The remainder is made up of lower valued cuts including the Blade and Knuckle, or it goes in to trim. Trim is commonly used to make mince and sausages.

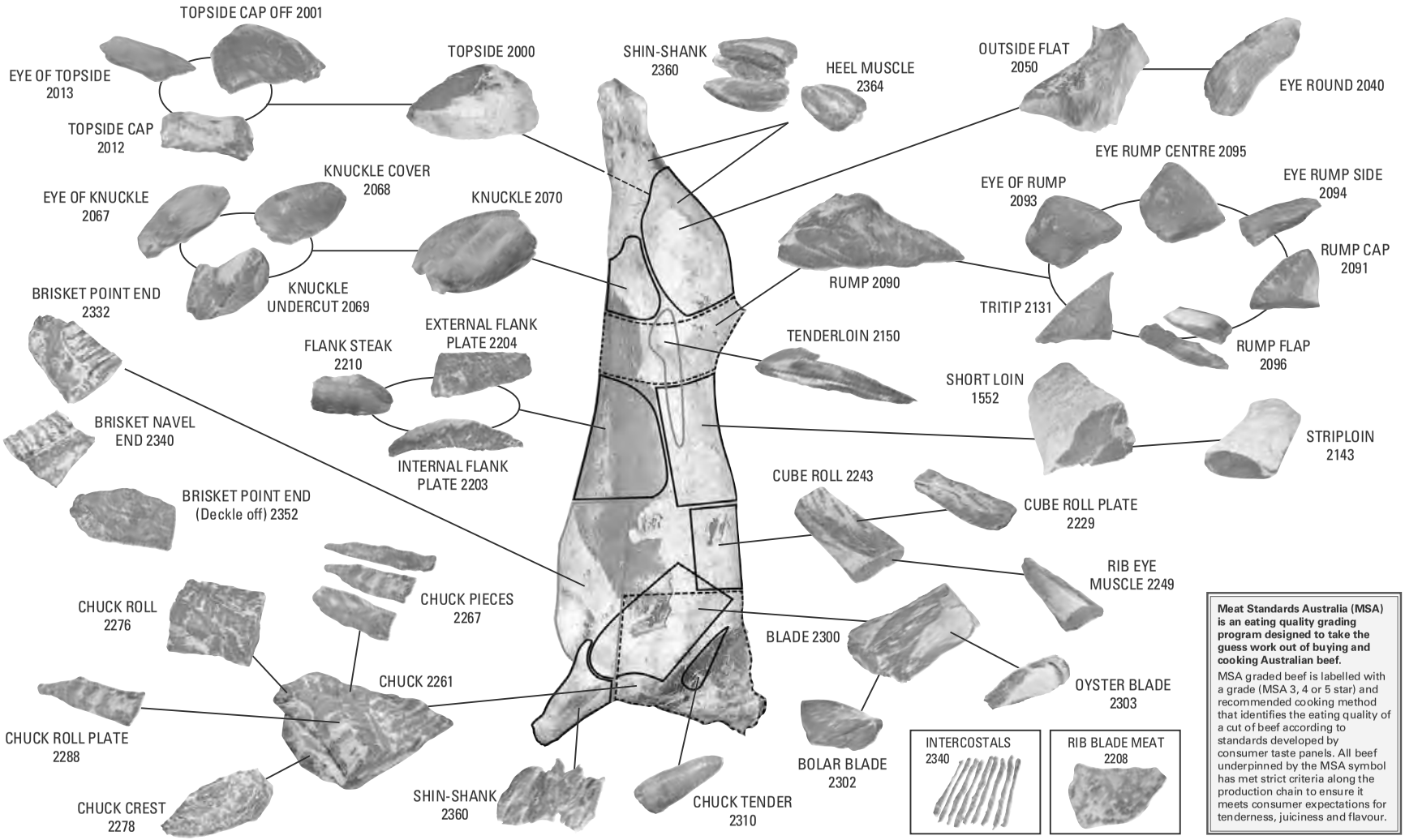
Table 1. The average % of the carcase that each primal makes up and the average weight per primal in a standard 260 kg carcase (data provided by Meat Standards Australia)

Primal	% of dressed carcase	Weight based on 260 kg* carcase (kg)	Weight per individual primal per carcase side (kg)
Rump	5.6	14.56	7.28
Knuckle	3.3	8.58	4.29
Topside	6.2	16.12	8.6
Tenderloin	1.5	3.9	1.95
Striploin 1 rib	3.1	8.06	4.03
Striploin 2 rib	3.5	9.1	4.55
Shortloin 1 rib	5.5	14.3	7.15
Shortloin 2 rib	6.4	16.64	8.32
Outside	5.7	14.82	7.41
Heel muscle	1.3	3.38	1.69
Cube roll 7 rib	2.5	6.5	3.25
Cube roll 8 rib	2.8	7.28	3.64
Blade	5.5	14.3	7.15
Chuck tender	0.8	2.08	1.04
Brisket 11 rib	6.6	17.16	8.58
Flank steak	0.53	1.378	0.689
External flank plate	0.68	1.768	0.884
Internal flank plate	0.65	1.69	0.845
Intercostals	1.3	3.38	1.69
Shin shank	3.6	9.36	4.68

*The average carcase weight of MSA graded cattle in 2011.

MEAT STANDARDS AUSTRALIA

BEEF PRIMAL AND SUB-PRIMAL CUTS



Meat Standards Australia (MSA) is an eating quality grading program designed to take the guess work out of buying and cooking Australian beef.

MSA graded beef is labelled with a grade (MSA 3, 4 or 5 star) and recommended cooking method that identifies the eating quality of a cut of beef according to standards developed by consumer taste panels. All beef underpinned by the MSA symbol has met strict criteria along the production chain to ensure it meets consumer expectations for tenderness, juiciness and flavour.

To learn more about the cuts of meat, go to http://www.mla.com.au/Marketing-beef-and-lamb/Meat-Standards-Australia

Upcoming dates...

Pasture and Poisonous Plants ID field day with Jenny Milson – Hughenden, March 2013

As a result of a high number of reported plant toxicities in the Hughenden area in early 2012, a Pasture and Poisonous Plants ID field day will be held in Hughenden at a location to be confirmed.

Come along to get to know your plants better with Jenny Milson from QDAFF Longreach.

If you would like a Pasture and Poisonous Plants ID day in your area, please contact Melissa Holzwart, DAFF Hughenden – 4741 1155 or Mellissa.Holzwart@daff.qld.gov.au

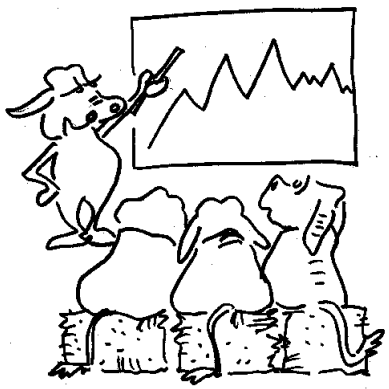
Working Dog School – Grant Parker

Due to growing interest, a working dog school is being planned for March 2013. If you are interested in attending, and having one in a location near you, please contact Grant Parker, Biosecurity QLD, Cloncurry – 07 4742 1311.

Breeder management day – Julia Creek March 2013

To build on the Caiwarra and Kilterry Bull days held in July 2012, a Breeder Management Day will be held in Julia Creek, March 2013.

Please register your interest with Emma Hegarty, QDAFF Cloncurry – 0467 808 340 or Emma.Hegarty@daff.qld.gov.au



Shire Beef Challenge weigh days – March and April 2013

McKinlay and Richmond Shire Beef Challenges will be weighing their cattle in late March 2013 – weather permitting. All are welcome to come along and see how the cattle have performed over the wet season and check out the remote cameras and auto-drafter equipment at the Richmond Challenge site. Attendees will also enjoy the guest speaker and a steak burger with mates. Great day for the whole family

Flinders Shire Challenge will be inducting their next lot of challenge cattle at Uanda Station in April. If you are interested in being involved, please contact secretary, Terressa Ford.

Please contact respective secretaries for further information.

- McKinlay Shire Secretary – Rachael French, Eddington Station – 4746 7221 or rachael.ando@gmail.com
- Richmond Shire Secretary – Hollie Harrington, Olga Downs – 4741 8531 or hollie@usee.com.au
- Flinders Shire Secretary – Terressa Ford, Hughenden Station – 4741 1546 or greg.terressa.ford@bigpond.com.au

Nutrition EDGE – Hughenden April 2013

A 3-day workshop that will enable you to:

- Understand the nutritional requirements of your cattle
- Estimate the feed value of your pasture
- Feed the right supplements and save money
- Make better nutritional management decisions
- Understand and interpret lick bag analysis labels

Date and venue to be confirmed early 2013. Keep an eye out in your mailbox.

Please register your interest with Rebecca Gunther, QDAFF Cloncurry – 0417 726 703 or Rebecca.Gunther@daff.qld.gov.au

Grazing Best Management Practice

Grazing Best Management Practice (BMP) is an industry-led, proactive, voluntary approach to facilitate and promote the adoption of good farm management practices, environmental stewardship and animal health and welfare. Enterprises benchmark their practices with confidentiality, compare their performance with others across their region or state, and identify any opportunities for continuous improvement.

Behind Grazing BMP is a powerful industry reporting tool that collates aggregated data from enterprises whilst maintaining their confidentiality (Figure 1). This aggregated information on land stewardship, industry practices, animal welfare and occupational health is essential for demonstrating industry performance to the supply chain, government and the wider community.

The North Australia Beef Research Council (NABRC) listed 'Community expectations of land use and animal welfare' as one of the twelve areas of domestic influence on the north Australian grazing sector. Grazing BMP benchmarking is a farm performance monitoring program that can validate where industry is at and demonstrate continuous improvement to identified issues.

Grazing BMP (www.bmpgrazing.com.au) was developed by producers for producers. It uses the same framework as the successful myBMP Cotton (www.mybmp.com.au) and Grains BMP (www.grainsbmp.com.au).

The BMP concept was developed through an ongoing, effective partnership between Fitzroy Basin Association (FBA), Queensland Department of Agriculture Fisheries and Forestry (QDAFF) and AgForce.

Web-database design was provided through Morgan Rural Tech, who also developed Grains BMP and myBMP cotton.

Initially funded through the Reef Rescue component of the Australian Government's Caring for our Country initiative, three modules of Grazing BMP were piloted in the Fitzroy Catchment in 2011/2012.

This Fitzroy pilot provides an excellent platform for moving forward. The challenge for the grazing industry and BMP partners now is to roll out Grazing BMP into new areas as part of a statewide self- assessment tool. Roll out needs to coincide with developing more market drivers for voluntary adoption such as beef marketing opportunities and acceptance as a business benchmarking tool in the rural financial sector.

Module delivery options include facilitated workshops with trained delivery agents, producer discussion groups using internet technology (Skype, webinar or similar), one-on-one delivery, or linking to a training event / field day.

Matt Brown
FutureBeef Team, Rockhampton
07 4936 0324

Marie Vitelli
AgForce
0429 062 852

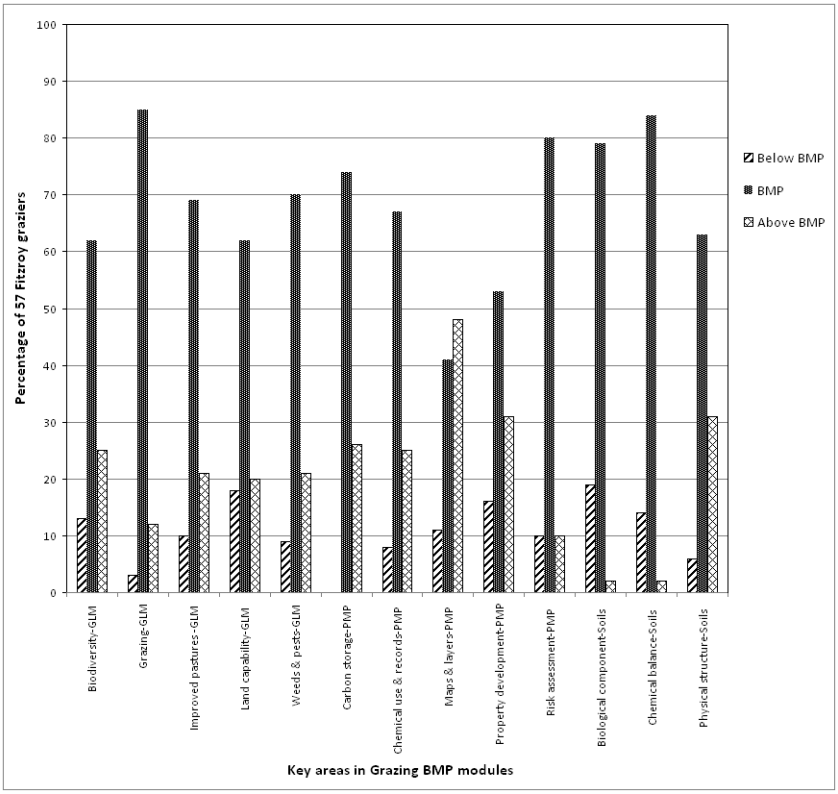


Figure 1. Ninety percent of Fitzroy grazing enterprises (N=57) are using practices at or above industry practice standard. Aggregated industry reports can be generated for each key action in the BMP modules and across catchments or state-wide.
(Source Matt Brown, QDAFF)

Applying science to cattle production at Lisgar

Droughtmaster breeders at Lisgar are demonstrating the benefits of objective selection for fertility by calving in a very tight pattern (69% of heifers having calved in 34 days) which will further assist management of the herd by easier supplementation, more effective selection of replacement heifers and a reduced tail in the turn-off animals.

Rob and Donna Rea have reduced the mating period at Lisgar from 6 months some four years ago by implementing Beef CRC research outcomes and those of the BullPower project focussing on bull fertility. These include:

- Scrotal size of bulls influence puberty in daughters (larger scrotal size sires produce daughters that reach puberty earlier)
- There is a large difference between sires in how long their daughters take to return to cycling after calving.

Sperm morphology or % normal sperm in bulls is highly correlated with the time daughters take to return to cycling after calving. Bulls with higher % normal sperm (above 70% normal) sire daughters that return to cycling sooner.

Lisgar has been selecting sires with scrotal size at the larger end and high % normal sperm for a few years.

The No. o heifers calving now at Lisgar show the results of these traits being included in a balanced selection package. It is important to realise selection should include a balance of traits and that these results come from the selection package, not just one selection parameter.

After 34 days from the start of calving, 69% of heifers naturally mated at 1 bull to 40 females have calved (52% calved after 19 days). The heifers achieved a 94% pregnancy level from 84 days of mating with a very high % falling pregnant early.

There are two tools that can be used to evaluate scrotal size in bulls. The first and most accurate is Scrotal Size (SS) EBVs. This is a proven tool for genetic responses in progeny.

In addition to SS EBVs, and as a component of Bull Breeding Soundness Examinations of bulls, scrotal size by weight can be utilised to identify bulls that have suboptimal testicular development and are therefore not used in Lisgar matings.

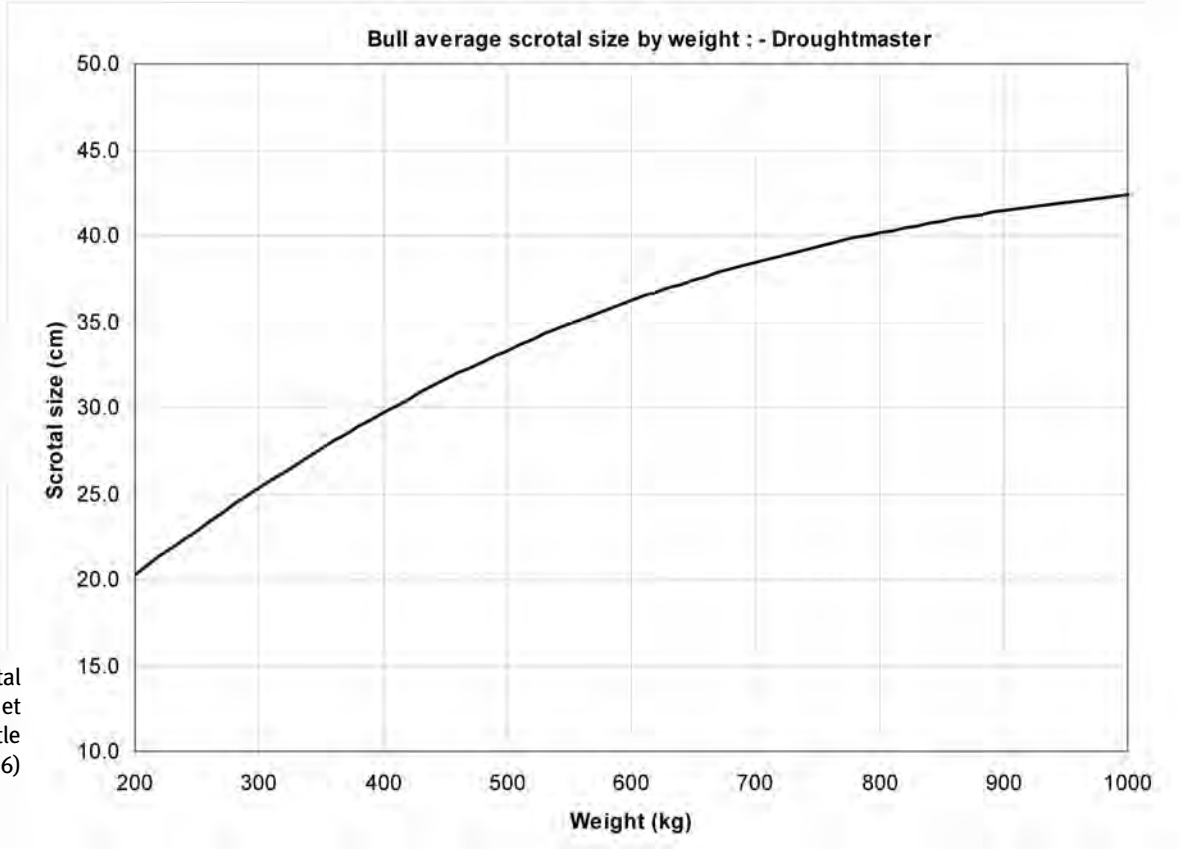


Figure 1. Droughtmaster Scrotal Size by weight (from Muller et al 2010, The Australian Cattle Veterinarian 54:26)

The following data is extracted from research that collated data from several large projects in Northern Australia.

Whilst the average % normal sperm of all Lisgar bulls tested in 2012 was 63% Normal, (including all bulls failing the test), the average %Normal of those bulls used in the heifer matings in January -March 2012 was 84 %N. This trait likewise is linked in 2-yr-old bulls with both the age of puberty of the daughters and the shorter post-partum anoestrus interval.

In conjunction with these fertility measures, selection for increased growth for the Jap Ox target market has further enhanced the potential for heifers to achieve heavier weights at a younger age and thereby cycle younger. This selection for growth has also been done with a recognition of genetic differences for 12/13th rib and P8 fat EBVs and Eye Muscle Area EBVs.

Overall, the selection of sires based on a balance of traits with a major emphasis on fertility has resulted in a big improvement in the fertility of the herd, easier management and less bulls, allowing more money to be available to buy and select better bulls.

The other notable advancement achieved at Lisgar, has been the younger turn-off of the steers into the Jap Ox market. The selection of sires with "fast" growth EBV's has seen the Lisgar steers reach Jap Ox weights 6 to 12 months younger. This significant financial benefit to their operation has been achieved over a 6 year period through the use of bulls with "fast" growth EBVs balanced along with fertility and carcase EBVs and finetuning nutrition.

Alan Laing
FutureBeef Team, Ayr
07 4720 5115

Latest bio control research – prickly acacia dieback

Dieback is a disease which naturally occurs among various woody weeds and tree species world-wide. In Australia, it has been recorded causing significant plant deaths in weeds such as Parkinsonia, prickly acacia, athel pine and Mimosa pigra. Dieback in prickly acacia has been noted to occur sporadically, and in some cases, cause widespread death of this weed. Dieback can also be triggered by other stress events such as drought, frosts, damage by insects or fire.

Preliminary research

In 2010, MLA funded a project to investigate the presence of dieback in prickly acacia across North Queensland. A survey was conducted from Julia Creek to Richmond searching for signs of dieback among natural infestations. As a result of this work, a collection of fungi was made from dieback affected plants. These were tested in the laboratory and the glasshouse to identify any with potential as pathogens of this weed.

This work showed that among the many fungi associated with sick and damaged prickly acacia trees, some had the potential to cause disease in healthy juveniles.

Current research

A PhD student is currently conducting more detailed research into the range of fungi associated with prickly acacia dieback. This work includes expanded laboratory and glasshouse studies to better understand how these fungi infect and kill prickly acacia plants.

Trials being conducted at two sites near Rockhampton and at Silver Hills station (Richmond) are investigating the effect of these fungi when used to treat prickly acacia in the field.

The interaction between fungi and herbicides is also being examined in these trials.

Initial (6 months) results from the trial sites near Rockhampton show that inoculated trees are showing signs of severe stress with significant damage being caused to the treated trunks. This damage can take the form of large stem lesions and secondary invasion by stem boring insects.

Although this field research is at an early stage, indications are that we should see the first tree deaths by 12 months after treatment.

How do we infect trees?

Trees are treated by inserting a capsule containing fungi into a drill hole made in the trunk which is sealed with silicone sealant. This process has recently been mechanised through the development of a prototype inoculating machine. The new device has removed the need to use silicone sealant making the process quicker and cleaner. Future models of this machine will be more lightweight and allow operators to treat trees at a rate similar to, or quicker than knapsack spraying.

Prototype stem inoculating machine being field tested on parkinsonia.

The next steps

Further field trials will be established at sites across north Queensland to further establish the ability of these fungi to kill trees in rangeland situations.

Development of a bioherbicide by the company BioHerbicides Australia Pty Ltd will bring this technology to the industry.

We kindly acknowledge the support of MLA, QDAFF, SGC and BioHerbicides Australia Pty Ltd.

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Dieback treated trees (at 6 months) .

Asbestos grass survey 2012 - Gulf of Carpentaria

Southern Gulf Catchments and FutureBeef have recently been approached by a number of landholders about asbestos grass. These landholders are very concerned about the spread of the grass and its impacts on production. We are trying to get a better picture of the extent of the issue - where asbestos grass is found at the moment, how many producers are concerned about it and its impacts on production and land management so that we can potentially get some funding to tackle the problem.

Name of person completing the survey: _____

Property/Business name: _____

Position/role: _____

Preferred contact details: _____

It is hard looking grass which hays off very early and has large seed heads with multiple spiny seeds attached. From a distance it looks quite fluffy but it is actually very hard.

1. **Are you familiar with asbestos grass?**

   Also known as bastard grass. Its current scientific name is *Cenchrus basedowii* but was previously known as *Pennisetum basedowii*.

   a. Yes

   b. No

   c. Unsure

2. **Are you aware of any asbestos grass on your property or areas that you work/visit?**

   a. Yes_____

   b. No *(skip to Q8)*

3. **What are the main areas where the grass is found?**

   a. Black soil

   b. Flooded country

   c. Bottom of the watershed

   d. Other - _____

   _____

4. **What area in total does this cover?**

   Estimates are fine _____

   _____

5. **Have you noticed any change in where the grass is found or if it is getting thicker?**

   a. Yes_____

   b. No

6. **What do you think has caused the change?**

   a. Flood

   b. Fire

   c. Grazing

   d. Unsure

   e. Other - _____

7. **Do you think asbestos grass has or will affect carrying capacity/stocking rates?** By how much?

_____

_____

_____

8. **Do you think it is having any other effects on production and production costs?**

_____

_____

_____

9. **Have you noticed any direct impacts on animal health?**

(some producers have noted the eyes of young cattle can be susceptible to seed infection)

_____

_____

_____

10. **Aside from livestock do you think it is affecting other species?**

_____

_____

_____

11. **Are you interested in potentially being involved in a trial to learn more about asbestos grass and control options?**

   a. Yes

   b. No

Please return to:

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