FutureBeef

Northern muster

Information for rural business in North Queensland

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Queensland Government

NORTH QUEENSLAND REGISTER

Producers tap online industry research

Data flows freely

A world of beef information at your fingertips

DID you know you can sit in the comfort of your home or office and summon a world of beef information to be delivered electronically to your computer, iPad or smart phone? This is just one of the ways the FutureBeef Program brings the latest research-based information to beef producers.

FutureBeef regularly runs webinars, distributes eBulletins and publishes material on its website and through social media channels, in addition to directly working with producers in training workshops, information days, demonstration sites and field days.

WEBINARS

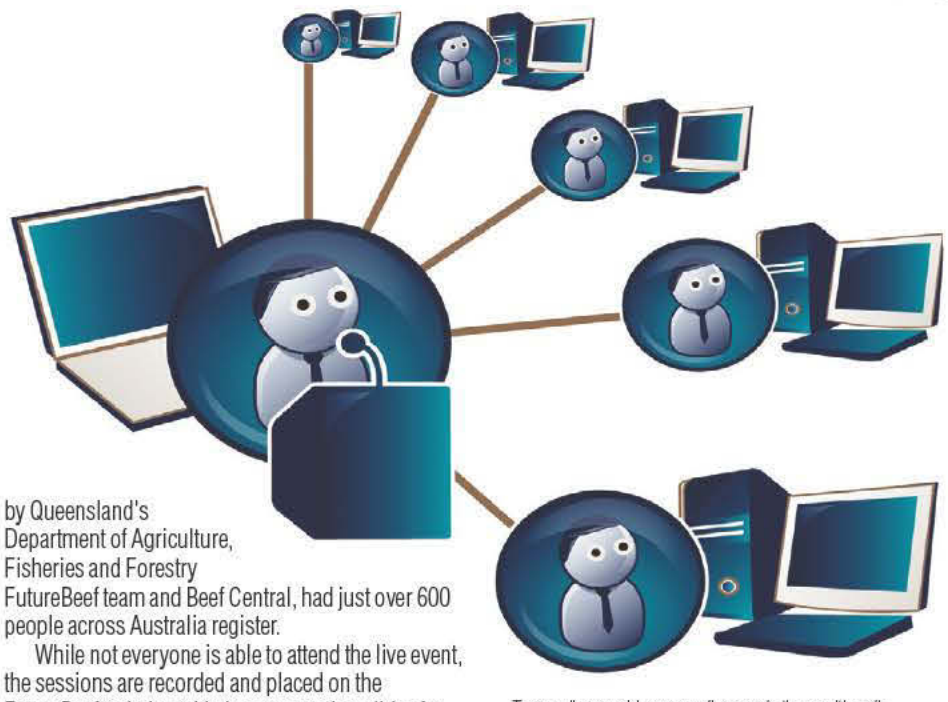
WEBINARS are a great way to hear the latest information from anywhere in the world, plus they allow you to engage with the speakers through online polls and typing questions that can be answered by the presenters. You can participate in the webinar using a computer (Mac or PC), iPad, tablet or smartphone.

To do so, you need to register for the event by going to the event's web page and entering your contact details. A personalised email will then be sent to you; but be aware this may accidentally go into your junk folder. In that message is the link you will need to click on to join the webinar at the specified time.

It is often best to join 10 minutes early in case you need to download some extra files on your device. When the webinar commences, you watch the presentation on the screen and listen either through your device's speakers or on the telephone.

Webinars are usually free for you to attend, with the only real cost being any data usage (usually fairly minimal) or if you need to phone a long-distance number (though toll-free numbers are often provided).

A recent BeefConnect webinar about the Pasturefed Cattle Assurance System, brought to you by Queensland's Department of Agriculture, Fisheries and Forestry FutureBeef team and Beef Central, had just over 600 people across Australia register.



While not everyone is able to attend the live event, the sessions are recorded and placed on the FutureBeef website, with the presentation slides for anyone to view.

To see all our webinar recordings and other multimedia presentations, go to www.futurebeef.com.au/resources/multimedia/

eBULLETINS

THESE email messages keep you up to date on news and events. Just click the sign-up link on any page on the FutureBeef website, enter your contact details and select which eBulletins you would like to receive. The emails include headlines and brief summaries of the stories. Often you will be able to click on a link to read further information related to the story.

FUTUREBEEF WEBSITE

THE FutureBeef website (www.futurebeef.com.au) is also your one-stop shop for beef information across northern Australia. It contains more than 300 pages of information, including many videos and webinar recordings. Check out the upcoming events, information on producer demonstration sites, and contact details for all the FutureBeef staff. Use the search box to find information quickly and easily. Social media is a great way to hear the latest news and views of interest to the northern Australia beef industry. Join the hundreds of people who have already engaged with us through Facebook and Twitter – just search for FutureBeef and you will find us.

John James, extension team leader, FutureBeef, Toowoomba, (07) 4688 1125, john.james@daff.qld.gov.au

Some relief in sight as rain returns to southern Queensland and NSW

Market report

SINCE our last market report we have seen some of the worst cattle prices since the 1970s with the big dry resulting in record cattle numbers hitting the markets.

During May, eastern Australian states were slaughtering close to 157,000 head per week with Queensland abattoirs contributing 84,283 head. Most eastern Australian abattoirs have been booked out for up to 10 weeks ahead as the avalanche of droughted cattle hits saleyards and abattoirs.

But there has been a slight glimmer of hope over the past few weeks, with good rain over large areas of southern Queensland and into NSW, our dollar value falling from 103 to about 92 cents and slaughter rates for best bullocks making a slight upturn.

Younger quality cattle prices are rising in southern markets and good weight for age northern cattle over 350kg are seeing better money as well. But the cattle price situation could dip again with a week or two of severe frosts forcing more cattle onto the market across central and southern areas that have had a reasonable season and still have prime cattle for sale.

Another highlight was the recent release of a pasture-fed cattle assurance system, or PCAS. Already, Teys Australia has announced substantial price premiums over and above grass MSA values.

There has been great interest from producers in endowed pasture areas of the state and there is potential for this product on domestic and overseas markets.

Other good news on pasturefed is its first win in the RNA-branded beef competition this year with product from Wingham Beef Exports. Throughout the past six months of record beef production, our export abattoirs and other Australian international meat-marketing companies have exported 1,013,875 tonnes for the first time during the 2012-13 fiscal year.

Over the past 12 months exporters have been very fortunate with the rapid development of outlets such as China and the Middle East, as traditional partners US, Japan and Korea stagnate in demand. Our heavy reliance on Indonesia for live exports has shown us the pitfalls of relying on any single market.

Domestically, the first half of 2013 has been very competitive in retail with numerous supermarket discount deals. Woolworths led retailing with a 32.8pc market share, followed by Coles 24.5pc, butchers 22.2pc, and IGA 9.5pc.

First quarter 2013 feedlot turnoff was about 615,000 head, with Queensland feedlots still not at full capacity mainly due to poor economics at present.

INDONESIA

Prime Minister Rudd's visit to Indonesia with a $60 million aid package has prompted a further 25,000-head import permit for heavier cattle. This will hopefully help out with demand for beef during their religious festivals in August. Most exporters will need at least a month to source cattle, satisfy export protocols, and get the cattle on to boats and delivered, which will be a bit late for peak demand. Another issue will be sourcing heavier cattle for slaughter when they arrive in Indonesia. Exporters may have to operate out of Queensland ports where these cattle are more readily available. The third quarter live export quota for Indonesia of about 42,000 head should be shipped by end of August, which leaves 46,000 for the fourth.

Japan	298,800
USA	206,600
South Korea	137,700
China	92,300
Middle East	47,800
Taiwan	37,600
Philippines	29,700
Indonesia	28,600
Soviet States	24,400
EU high value	17,400
Malaysia	16,600
Central-Southern America	13,200
Singapore	13,100

Table 1: Export figures for 2012-13 in tonnes. Japan's export figures below 300,000t for first time in 10 years.

Japan	$1,515,004,607
North America	$1,081,309,031
South Korea	$646,259,316
Greater China	$420,903,579
South East Asia	$390,157,253
Middle East	$163,080,405
Russia	$159,805,532
EU	$144,241,999
Indonesia	$119,235,252

Table 2: 2012 Australian dollar value of main export markets.

SOUTH KOREA

In January 2013, US beef importers received their second cut in the beef tariff they pay, which now gives them a 5.6pc price advantage over Australia. The high US dollar and tight beef supplies in the US from drought is helping our exporters remain competitive.

JAPAN

Even though Japan is our leading export destination, volumes have been falling. This year's total is back to 2002-3 levels when the BSE scare from the US hit consumption. Japan's economy is still struggling but with age restrictions being lifted on US beef they are boosting their share of the market.

Bernie English, FutureBeef Team, Mareeba, 0427 146 063, Greg Brown, Meadowbank Stn, Mt Garnett.

Welcome to spring!

PCAS a good news story for beef industry

THE release of the Pasturefed Cattle Assurance System (PCAS) is a welcome 'good news story' for the northern beef industry. There has been much interest in the program from producers across the state, and Teys Australia has thrown its support behind the program, offering price premiums for certified PCAS product.

The PCAS standards also include two optional modules to support claims relating to freedom from antibiotics and hormonal growth promotants. Visit www.certifiedpasturefed.com.au for information.

The industry can thank a core of Queensland producers who had the vision and determination, and were in the right place to push this agenda through to its fruition.

During the opening week of the Ekka, Central Queensland grazier Ian McCamley was recognised for his time and effort as key architect in driving PCAS through to fruition when he was named Queensland's Beef Achiever of the Year for 2013 at the Queensland Red Meat Awards, hosted by AgForce.

With good potential for this product at home and overseas, hopefully producers in the pasture supply chain will reap the benefits.

We hope that you enjoy this issue and please contact the editorial team with any inquiries or feedback. To register to receive the online version,subscribe on the FutureBeef website (www.futurebeef.com.au/resources/news letters/) or by sending us an email to northernmuster@daff.qld.gov.au.

Emma Hegarty and Rebecca Gunther, FutureBeef

Coming events

Grazing BMP Information Forums
Pentland – September 3, 2013
Greenvale – September 5, 2013
Topics include: Reproduction in low-nutrition environments (Geoffrey Fordyce, QAAFI)
Economics of animal reproduction (Tim Moravek, QDAFF)
Animal welfare issues (Steve Banney, beef industry consultant)
Charters Towers – September 4, 2013
Topics include: Business knowledge and skills
Human resources
Workplace health and safety
Chemical use and records
Planning and development
RSVP August 29, 2013, Megan Debney, FutureBeef team, Charters Towers, (07) 4761 5150, megan.debney@daff.qld.gov.au

Next Gen BeefUp Forum
Information and tools for 18 to 35-year-olds with an interest in the beef industry.
Charters Towers – October 18, 2013
Megan Debney, FutureBeef team, Charters Towers, (07) 4761 5150, megan.debney@daff.qld.gov.au

Young Beef Producers Forum
Roma – November 14 to 15, 2013
Thinking outside the square – the Young Beef Producers Forum is a two-day conference focused on providing educational, networking and capacity-building opportunities for under 40-year-olds with an interest in the beef industry. The event is proudly hosted by the Future Farmers Network.
FutureBeef team, Roma: Kiri Broad (07) 4622 9915, kiri.broad@daff.qld.gov.au; Tim Emery (07) 4622 9903, tim.emery@daff.qld.gov.au

BusinessEDGE Workshop
Good beef business isn't just about the herd. Get the business skills to make your beef business bullet proof.
Mount Isa – March 3 to 4, 2013
Charters Towers – March 6 to 7, 2013
Ian McLean, Bush Agribusiness, 0401 118 191, ian@babusiness.com.au

Under the Spyglass

Providing world-class infrastructure

THE Spyglass Beef Research Facility is well positioned as part of the Queensland Government's strategy to provide world-class infrastructure for beef research. Located 135km west of Townsville and holding a carrying capacity of 4000 adult equivalents, the facility's R&D program covers animal genetics, reproduction, growth, welfare/ husbandry, natural resource management and precision grazing technologies.

New developments and infrastructure are being put in place to ensure this program is efficient and provides leading beef research.

The main office building and visitors quarters recently built at the Spyglass Beef Research Facility.

A new shed and water-storage tank built at one of the outstations, with new cattle yards and a house still in development.

FUTURE DIRECTION AND PLANNING

THE property-management plan covers weed control, feral animal control, subdivision of larger paddocks, riparian areas, fauna reserves, and workplace health and safety policy. Future planning is in place to improve mustering efficiencies by establishing an integrated sequence of laneways to link all paddocks to yards. There will also be a focus on improved pasture.

Remote weather stations, tank monitors and walk-over weighing scales will be established. Information will be made available via satellite and sent back to the main office, where a centralised database of all animal information will be kept. In addition to this, the cost efficiencies of these new technologies will be calculated and made available to industry.

YARDS AND MACHINERY

THERE is one main set of operational yards, with two new yards to be built in 2013/14 and 2014/15.

The new yards have been designed to enhance staff and livestock safety and welfare by including a five-way automatic hydraulic draft, a six-way pound draft and covered work areas in a livestock-exclusion zone, and some man gates, concrete floors, hay feeders and water yards. Three on-site staff members will be attending a low-stress stock-handling course to ensure skills are kept up to date.

Three ATV buggies have been purchased to restrict the use of quad bikes. A five-bay shed is being constructed to house heavy machinery, and mezzanine floors will be fitted to two bays to alleviate the need to lift heavy equipment. Construction of 100km of new and replacement fencing over the next year is planned.

PROPERTY IMPROVEMENTS

THE water-holding capacity of the property has been improved by installing four 250,000-litre tanks to act as the main water sources to the yards and accommodation facilities. Pulling and stick raking of 2000 hectares of black wattle regrowth has been completed to provide larger areas for improved grazing.

OFFICE AND QUARTERS

THE main office building is operational and includes the manager's office, an open plan office for six additional staff, a small meeting room and kitchen facilities. High speed internet connection is available.

The visitors quarters, in the form of a four-bedroom house, sleeps eight and is fully self-contained.

Stephen 'Anderson, manager, Spyglass Beef Research Facility, (07) 4787 8361, stephen.anderson@daff.qld.gov.au

Drought aid on offer

Producers eligible in declared areas

DAFF lists relevant information

THE Queensland Government is offering assistance to primary producers affected by drought. The new drought assistance package announced May 30, 2013, includes new and existing measures to help farm families, farm businesses and farm communities affected by drought.

Assistance is available to producers with properties in drought-declared areas or with an individually droughted property (IDP) declaration.

The gulf and north western shires including Carpentaria, Etheridge, Croydon, Burke, Cloncurry, McKinlay, Richmond and Flinders were drought declared on April 1, 2013. The exception is Mt Isa, which was drought declared on May 15, 2013.

A full list of drought declared shires is available on the Queensland Department of Agriculture, Fisheries and Forestry website.

The emergency water infrastructure rebate, announced as part of the new package, is very timely and has created a lot of interest across the region. It applies only to emergency water infrastructure.

To be eligible, a DAFF officer needs to approve a water availability statement completed by the claimant. Once approved the applicant can claim up to 50 percent of costs up to a maximum of $20,000 per property in each financial year.

The $20,000 maximum is inclusive of all drought freight claims under the Drought Relief Assistance Scheme, such as the fodder freight subsidy. Some examples of rebate applications include:

- Piping water to areas where dams have dried up or will dry up before the next expected inflow
- Installing a tank and trough and pumping out of low dams where stock are bogging
- Putting in a bore to supply an area of the property where surface water is at risk of running out.

This is not an exhaustive list by any means but it gives an idea of some of the applications of the rebate. All forms for claiming water and freight rebates are available on the DAFF website www.daff.qld.gov.au/4789_6612.htm or through your local DAFF office.

The new drought assistance package announced May 30, 2013 includes new and existing measures to help farm families, farm businesses and farm communities affected by drought.

Another area that created a lot of interest at the time was the grazing of national parks and reserves. Expressions of interest have now closed and offers of agistment have been made to more than 25 landholders. Following is a summary of the assistance package and government department responsible:

- **Emergency Water Infrastructure Rebate:** The rebate is offered to assist producers in a drought-declared area or on an individually droughted property (IDP) with the establishment of water infrastructure to supply water for emergency animal welfare needs. Further details are available at www.daff.qld.gov.au.
- **Drought Relief Assistance Scheme:** DRAS provides freight subsidies on fodder and water while an area is drought declared and freight subsidies for restocking and returning from agistment after the drought declaration is revoked. See daff.qld.gov.au.
- **Land rent relief:** Rural land rents will be frozen in the 2013/14 financial year for farm businesses in drought-declared areas. For full details visit the Department of Natural Resources and Mines www.nrm.gov.au.
- **Transport concessions and assistance for road trains:** Assistance to drought-affected primary producers may be available for the payment of fees and permit requirements, including vehicle inspection fees, drought road train permits, pilot escorts and vehicle height limits when transporting machined baled hay. Department of Transport and Main Roads www.tmr.qld.gov.au has full details.
- **School transport allowance:** Families that drive their children to school or connect with a school bus run may be eligible for an increase in the school transport allowance. For more information please visit the Department of Transport and Main Roads www.tmr.qld.gov.au.
- **Mental health support workshops:** Queensland Health will be providing mental health and psychological support workshops across drought-affected areas. Workshops aim to enhance mental health and well-being in communities affected by drought and will provide community members and human service workers with the skills to identify, support and protect people who may be not coping during difficult times. More information on this program will soon be available at the Queensland Health website www.health.qld.gov.au.
- **Information and assistance:** The Queensland Government's Long Paddock website provides climate information, including seasonal climate outlooks, rainfall and pasture growth and a drought conditions update. Visit the Long Paddock at www.longpaddock.qld.gov.au. DAFF officers located throughout the region can answer a range of drought inquiries or direct you to the right person. They are there to help. Call them.
- **Loan packages:** Loan packages are available through the Queensland Rural Adjustment Authority (QRAA) www.qraa.qld.gov.au.

MLA guide explains new national transport rules

Queensland takes on livestock standards

ALL states and territories will have implemented new national standards and guidelines for livestock transport by July 2013. MLA's new guide, Is It Fit to Load? can help producers meet the standards.

The new standards have been progressively implemented nationwide starting with the Northern Territory and South Australia in August 2012. Queensland implemented the new standards in July 2013, bringing all states and territories into line.

The standards were developed in consultation with government, peak industry councils, welfare groups and the public, under the Animal Welfare and Product Integrity Taskforce. The national standards apply to all people responsible for the care and management of livestock transported throughout the entire process and cover land transport of livestock by road, rail and vehicles on board a ship.

Livestock transport begins when animals are off feed and water, and concludes when they have access to water at the end of their journey.

It includes mustering and assembly; handling and waiting periods before loading; loading, journey duration, travel conditions, spelling periods and unloading and holding times.

To reflect the new standards and help operators selected animals for transport, MLA's Is It Fit to Load? publication is a practical guide to help meet these standards.

To download the free guide go to: www.mla.com.au/fittoload or www.livestockwelfarestandards.net.au

Qld to benefit from new Farm Finance Package

Relief on the way from $20m fund for debt-burdened farm businesses

QUEENSLAND farm and grazing businesses will be the first to benefit from the Federal Government's Farm Finance Package (FFP) to restructure existing loans currently locked in at a high interest rate, for a five-year period.

The package will provide $20 million for Queensland farm/grazing businesses over two years to support farmers struggling with debt. Producers are able to apply for loans up to a maximum of $650,000 with a variable interest rate starting at 4.5 percent.

The starting concessional interest rate for the loans will be 4.5pc, to be reviewed on a six-monthly basis with potential for variation depending on prevailing economic conditions.

Reducing debt repayments in the short term will help alleviate the pressure on farmers and graziers so they can focus on running their businesses and supporting their families.

There is a potential saving of $81,000 based on the maximum restructure loan amount of $650,000 over the full five years using a realistic commercial finance rate of 7pc.

After negotiations with the Federal Government, and according to the Queensland Minister for Agriculture, Fisheries and Forestry, John McVeigh, the Farm Finance Package concessional loans scheme could now be finalised to roll out to producers, supporting those with debt-servicing difficulties due to Tropical Cyclone Oswald, drought, floods and market issues.

The package should assist 100 to 150 primary producers with temporary debt financing difficulties, where the long-term viability of their business can be demonstrated.

The loans package in Queensland will be managed and administered through the Rural Adjustment Authority, QRAA.

Loans will be made available once administrative arrangements have been finalised by the federal and state governments.

Applications open on August 16 and close on October 31, 2013.

Applicants should initially check the terms and conditions of the Farm Finance Package to determine their eligibility.

As self assessment is not recommended, contact a QRAA representative for assistance.

QRAA: www.qraa.qld.gov.au Freecall: 1800 623 946.

Olivia Pisani, FutureBeef Team, Mareeba, 0467 804 870 olivia.pisani@daff.qld.gov.au

Weaner struggle

Beef businesses under enormous pressure

Tough year for weaners

IN a tough year like the one we are experiencing across most of North Queensland, pulling weaners off the cow down to 100 kilograms or less can be a strategy to save breeder condition and reduce breeder deaths.

It is usually not affordable to fully feed large numbers of weaners until the 'unknown' break of season, so unless there is plenty of dry feed and water, selling cattle or moving to agistment are the best options.

Most family beef businesses in the region are currently under enormous seasonal, debt and cost-price pressure. At times like this, producers who take on complete hand-feeding of cattle and/or weaners with little available paddock roughage add significant costs to overdrafts and long-term debt, often crippling the business.

With at least two weaning rounds each year, a key part of any northern breeder business is having good weaner management and feeding systems in place.

For improved and cost-effective weaner performance, several good-sized paddocks with some improved pastures are essential to properly segregate weaners, reduce bullying and ensure poddies under 120kg get a chance to go ahead.

LEFT: For improved and cost-effective weaner performance, several good-sized paddocks with some improved pastures are essential to properly segregate weaners, reduce bullying and ensure poddies under 120kg get a chance to go ahead.

STOCKING RATE GUIDE

- Without dry feed or roughage, the best option is to sell and/or agist.
- The temptation with cattle prices so low is to hang on to cattle and fully feed. This will only increase debt and degrade weaner paddocks.
- Segregate weaners by weight and size.
- Ensure there is enough trough space.
- Younger weaners require a higher quality feed.

Land types	Stocking rate (ha)	Stocking rate (acres)
Frontage, basalt and black soil	1 weaner: 1.8ha	1 weaner: 4.6 acres
Goldfields	1 weaner: 2.6 ha	1 weaner: 6.5 acres
Grey clays/Bluegrass downs in Gulf	1 weaner: 3 ha	1 weaner: 7.4 acres
Georgetown granites	1 weaner: 3 ha	1 weaner: 7.4 acres
Forest country with red and yellow earths	1 weaner: 4 ha	1 weaner: 10 acres
Mitchell grass downs (average across good and bad years)	1 weaner: 4 ha	1 weaner: 10 acres
Silverleaf Box	1 weaner: 8 ha	1 weaner: 20 acres
Red Spinifex ridges	1 weaner: 9 ha	1 weaner: 22 acres

WEANER NUTRITION MANAGEMENT: CRUCIAL TO THE BUSINESS

- Most properties spend significant amounts of money on weaner feed each year; this makes paddock and pasture development a feasible alternative in the long term.
- Plan and cost out the establishment of sufficient paddocks to handle your annual weaner crop. Weaner performance in a handy paddock will always be better than trough feeding in small flogged out paddocks.
- Establish improved pastures in these paddocks as finances allow.
- Look after your weaner paddocks – spell every year and watch your stocking rates.

SEGREGATION SAVES MONEY AND IMPROVES FEEDING PROGRAMS

ACROSS North Queensland, beef producers use a wide range of tactics to feed their weaners during their first dry season. When feeding in troughs, weaners require about 25-30cm (10-12 inches) of trough space per head.

80kg-120kg – Weaner weights are a reasonable indication of the development of the rumen and its ability to process pastures and supplements such as urea. A small weaner (80kg) has a poorly developed rumen, so in addition to clean water and good hay, it requires a mash or pellet mix with plenty of crude protein (20 percent minimum) and energy (12 MJ/kg).

The bigger weaner (120kg) still has an undeveloped rumen, but will cope with a cheaper pellet containing less crude protein (15pc) and less energy (10-11 MJ/kg) and can also handle urea in the form of M4U.

160kg – Once weaners are over 150kg, they will do well in a fresh paddock with plenty of room.

M8U will keep weaners going forward, or dry weaner lick with urea will minimise weight loss during a long dry season. In a tough year like this where water may limit effective weaner segregation, adjustable creep feeders (height or width) may be worth trying.

This will allow light weaners (under 130kg) to access a palatable, high-protein and high-energy feed. The aim is to push those light weaners along while ensuring larger weaners only access a cheaper dry lick. It is essential to keep drafting up by weight to minimise bullying and save on feeding costs as nutritional requirements drop and weaners can better process pastures.

Check the labels on your feed bags to ensure protein and energy levels are suitable. The table (left) includes weaner weights and crude protein and energy requirements of feeds suitable to feed weaners.

Weaner weights and suitable feeds			
Weaner Weights	Feed Type	Crude Protein Requirements	Energy Requirements
Under 60kg	Milk replacement powder – teat	20 – 27%	12 MJ/kg +
60 to 100kg	Clean water, good hay and weaner pellets or mash	20%	12 MJ/kg
100 to 150kg	Good water, hay and weaner pellets. M4U is a cheaper option for weaners over 120kg	14 – 16%	10 – 11 MJ/kg
More than 150kg	Good paddock at correct stocking rates Weaner dry lick with high protein meal M8U is an option	12 – 14% Urea based – 80% crude protein equivalent M8U – 28% crude protein equivalent	Dry licks – 7MJ/kg M8U – 11MJ/kg

**Add Coccidiostats (Rumensin, Monensin etc) to all feeds to prevent coccidiosis

Supplements such as copra meal, molasses-urea mixtures and weaner feeds do a good job, but at a significant cost every year.

A long-term solution involves setting aside paddocks of a suitable size for the weaner numbers you expect each year and ensuring there is good water distribution.

Weaner paddocks are often too small and heavily grazed, as they are handy to the house and are often used to hold sale cattle.

Get your stocking rates right and wet season spell weaner paddocks every year to favour the better pastures and build up a good body of feed. The table shows a rough stocking rate guide (on native pastures) for weaners on various northern and southern Gulf land types.

FutureBeef team, Mareeba, Joe Rolfe 0427 378 412 , Bernie English, 0427146 063.

Controlling invasive grass species

An aggressive pasture invader

THE invasive giant rat's tail grass (*Sporobolus pyramidalis/natalensis*) and several other Sporobolus species have been a major problem for graziers in coastal regions of Queensland for many years.

Unfortunately, Sporobolus species are now being reported at an increasing number of locations throughout northern Queensland, generally associated with cattle yards and/or hay-feeding areas.

Across the Charters Towers region, giant rat's tail grass, American rat's tail grass (*S. jacquemontii*) and giant Parramatta grass (*S. fertilis*) have all been reported over the past 10 years.

Fortunately, landholders have noticed these plants early on and been able to get them positively identified and controlled before they've had the chance to spread.

It's important to be on the lookout for these aggressive invaders of pastures. Once established, they can quickly outcompete desirable pasture species and will be difficult and expensive to control. All four Sporobolus species are robust, perennial, tussock grasses, with heights varying between the species.

Correct identification of invasive Sporobolus species is the hard part and often requires expert identification from the Queensland Herbarium.

A serious Sporobolus infestation is capable of reducing carrying capacity by up to 80 percent.

Furthermore, livestock grazed on a Sporobolus-dominant pasture can take an extra 12 months to finish.

Using heavy grazing pressure to try and manage invasive Sporobolus grasses will generally exacerbate the problem, as will burning. These strategies result in the removal of ground cover and leave bare areas for these invasive grasses to establish and take over.

The best strategy is to prevent infestations from establishing in the first place. Here are some helpful tips to keep these invasive grasses at bay:

- Take a preventive approach to weed management – ensure property quarantine measures are in place.
- Retain your pasture in healthy condition, so that it is better equipped to compete with invasive species.
- Respond to adverse seasonal conditions and subsequent desirable pasture growth by maintaining a sustainable stocking rate for your property. Overgrazed pasture is more susceptible to weed invasion.
- Select a washdown area on your property and a quarantine paddock you can check for weed incursions.
- Feed any fodder to cattle in designated areas that are checked regularly for weed incursions.
- Quarantine cattle for at least five days after buying or moving them from an infested paddock.
- Be cautious when purchasing hay and seed – always buy from a reputable merchant.
- Use weed-hygiene declarations when purchasing or moving stock, machinery and fodder.
- Don't bale pasture that contains any weedy Sporobolus species.

If you spot an unusual plant on your property, get it identified early.

Lauren O'Bryan, weed and pest officer, Tropical Weeds Research Centre, Charters Towers, (07) 4761 5740, lauren.obryan@daff.qld.gov.au

Hot for the tropics

Researchers find climate-tolerant fodder

New legumes for North Queensland

PASTURES based on native or introduced tropical grasses are the key feed resource for beef growing in North Queensland.

Native and carefully selected introduced grasses are well adapted to high temperatures and seasonally-dry environments encountered in beef breeding and growing systems. However, productivity is often limited by seasonal rainfall and limited supply of certain soil nutrients, particularly nitrogen.

Feed quality rapidly declines as grasses transit from leaf to stem production, usually linked to rainfall. The use of legumes in grass pastures has the capacity to lift livestock production by providing a higher quality diet to grazing animals for extended periods of the year, particularly into the dry season. The benefit comes through providing nutrients, principally proteins, which improve rumen function and increase the amount of digestible nutrients.

Unlike grasses, legumes can trap substantial atmospheric nitrogen and convert this to a usable form for themselves and eventually grasses. This lifts overall pasture productivity. This capacity to trap and use atmospheric nitrogen and produce useful nutrients for grazing animals makes legumes, like hay, attractive as conserved fodder. Legume hays tend to be of higher protein and comparable digestibility to grasses and have the advantage of not needing to use fertiliser nitrogen to grow them.

Chosen plants must produce suitable volumes of hay with minimum inputs (irrigation water, pesticides, fungicides etc) and in most cases, regrow well after cutting. They must also be easy to bale (leaves fall off some legumes once dried) and contain no chemicals which may interfere with animal health or growth. Lucerne is probably the best known legume grown for hay in Queensland. It is well suited to hay production over multiple years and produces a high quality baled product demanded by livestock owners. However, it is well-adapted to areas with neutral to alkaline soils in dry, summer environments and attempts to produce lucerne hay in North Queensland have been of limited success.

Some tropical legumes well adapted to some North Queensland environments (acidic soils and wet summers), show good hay crop potential. Cavalcade centro is a good short-lived example grown in recent years. There are also promising perennial (long-lived) types. The advantage of these is that they do not need to be established each year.

After previous research on legumes, Mareeba Department of Agriculture, Fisheries and Forestry (QDAFF) and Townsville's James Cook University (JCU) pasture researchers teamed up to compare hay production performance of promising forage peanut (arachis, three species) and recently released disease resistant stylos (*Stylosanthes guianensis*), with two varieties of lucerne.

IMAGES: Main – Summer-dominant growth of selected stylo grown in eight-week cutting cycles. Top inset: Summer dominated growth of forage peanut lines grown in eight-week cutting cycles. Bottom inset: Butterfly pea grown in rotation with cereals in seasonally dry areas of eastern Indonesia.

LOOKING AHEAD WITH PASTURE TEAM

THIS year the QDAFF pasture team plans to conduct a two-year experiment to compare the agronomic potential and economic feasibility of a range of legumes grown for hay in the developing Flinders and Gilbert irrigation areas.
It is hoped such production will provide affordable, locally-sourced, high quality hay, particularly useful for dry-season feeding of young livestock and feeding during unusually dry periods. The anticipated long-term benefits are improved young animal growth rates and reproductive performance.

Research was done at QDAFF's research station at Walkamin, central to the seed and hay production area on the Atherton Tablelands. Small, replicated plots were grown for hay over two wet seasons using approximately eight-week production cycles. Irrigation was applied in the dry season.

While initially productive and producing high quality hays, the lucerne varieties succumbed to diseases in summer and all but died out by the end of the experiment. But the forage peanut and stylo lines produced pest and disease-free summer dominant growth and were still growing vigorously by the end of the experiment.

The stylos and some forage peanuts produced more than 25 tonne dry matter/ha equivalent over 18 months, representing excellent yields. Importantly, the quality was high with low lignin contents (5.7-9.7pc) and high crude protein (18-20pc), protein digestibility (67-71pc) and metabolisable energy (8.6-10.9 Megajoules) values. Overall, the stylo was comparable and forage peanut superior to lucerne.

Recent research by Toowoomba CSIRO and Mareeba QDAFF in eastern Indonesia to assess the role of legumes in maize cropping demonstrated the capacity for some legumes to grow well into the dry season in similar environments to parts of northern Australia. The legumes produced high-quality leaf and stem suitable for ruminants. Key species included butterfly pea (*Clitoria*), centros (*Centrosema* spp.) and stylos. This further highlights opportunities for legume hay production in North Queensland.

Kendrick Cox, senior scientist, pastures and seed production, QDAFF, Mareeba, 0438 138 262, kendrick.cox@daff.qld.gov.au

Scholarships worth $10,000

Helping youth enter agri-industries

YOUNG people aspiring to a career in agriculture can apply for a $10,000 scholarship, to be offered through two of Queensland's agricultural training colleges.

Minister for Agriculture, Fisheries and Forestry John McVeigh announced 10 scholarships of $10,000 each would be available under the new program, starting in 2014.

"Our agricultural industries are crying out for graduates," Mr McVeigh said.

"The sector offers a whole range of career opportunities in cropping, livestock, horticulture, conservation and land management.

"This generous scholarship scheme will particularly help students to secure a place in the residential training program at the Emerald Agriculture College and Longreach Pastoral College.

"This $100,000 funding announcement from the Newman Government represents a solid investment in the future of Queensland's agri-industries.

"This is seed money and we will be seeking industry support to continue funding the scholarships in future years."

Executive director Brent Kinnane said applications were now open and would close on Monday, October 28, 2013.

"We want to help those students who are committed to the industry," Mr Kinnane said.

"As part of their application, students will need to provide an explanation of their career plans.

"We're looking for those young people who have the will and the passion to make a real contribution to Queensland agriculture.

"Applications will be assessed by a selection panel made up of the two college directors, an education expert from the college and an industry representative.

"The panel will make recommendations to the college boards for their approval.

"Successful applicants will be notified by mid-November."

To apply for the scholarship, visit www.agriculturalcollege.qld.edu.au (external site), call 1800 888 710 or email enquiries@aacc.edu.au

Minister for Agriculture, Fisheries and Forestry John McVeigh announced 10 scholarships of $10,000 each would be available under the new program, starting in 2014.

How to grow green

Producers flock to hear message in tent

Carbon Farming Initiative explained

THE FNQ Field Days at Mareeba on May 29-30 was a huge event this year with the Carbon Farming Initiative (CFI) Tent among the highlights.

Almost 400 producers sat in on presentations over the two days, hearing how to improve farm productivity through carbon farming, and interacting with Natural Resource Management (NRM) staff at the adjoining tent. Northern Gulf Resource Management Group, Southern Gulf Catchments, Terrain NRM and Cook Shire Council hosted the CFI Tent covering carbon farming theory, CFI methodologies and how land managers can be involved.

The program included keynote speakers Dr Christine Jones, internationally renowned soil ecologist; Ben Keogh, managing director of Australian Carbon Traders, and; Alan Lauder, author of the book *Carbon Grazing – The Missing Link*.

There were also a number of expert speakers from the Department of Agriculture, Fisheries and Forestry, local land managers and carbon businesses.

The CFI Tent provided talks and information on Carbon Farming opportunities in North Queensland.

All presentations were filmed for the NGRMG website www.northerngulf.com.au/carbonfarming.

As well as showing presentations from eminent scientists, the NGRMG carbon farming webpage provides information about the 'nuts and bolts' of the Federal Government's Carbon Farming Initiative, relevant to North Queensland.

Erica Blumson, communications officer, Northern Gulf Resource Management Group, 0488 499 266, communications@northerngulf.com.au

Climate Clever Beef aims for better practices

Researchers seek solutions

OF greenhouse gas emissions produced by agriculture in Australia, beef contributes about 80 percent, mostly in the form of methane from livestock. QDAFF FutureBeef researchers, extension staff, and beef producers across the state are working together on the Climate Clever Beef project (CCB) which aims to identify:

- Profitable and sustainable herd and grazing management practices
- Ways to optimise environmental outcomes through carbon farming
- Realistic magnitudes of methane emissions abatement and carbon sequestration options on a typical breeding operation.

The social and financial wellbeing of many beef producers in north and north-west Queensland is under threat with high debt, a tenuous live export market, low prices and a poor or failed wet season. In light of these industry threats, the CCB project is identifying and promoting:

- Efficient breeder management systems that optimise production costs, improve weaning rates and reduce death rates
- Viable pasture management and spelling systems
- Improved pasture programs to increase weaner liveweight gains and reduce age of turnoff.

The CCBeef project, supported by Federal DAFF, has selected trial beef enterprises throughout Queensland and properties in the Victoria River District (VRD) and Barkly regions of the NT The trial properties in the northern Gulf include Blanncourt (Georgetown), Greenhills (Georgetown), Oakleigh (Kidston) and Karma Waters (Mitchell River).

Breeders	2870
Liveweight sold (tonnes)	411
Greenhouse gas emissions per liveweight (tonnes of CO2e/tonne of LW sold)	13.24

Table 1, above, outlines the Oakleigh herd size and turnoff based on property records and Breedcow modelling. The greenhouse gas emissions, based on FarmGas modelling, are about 13 tonnes of carbon dioxide equivalents (CO_2e) to every tonne of liveweight sold off Oakleigh.

	Year	
	1996	2011
Breeders	2270	1533
Liveweight sold (tonnes)	222.6 t	405.7 t
Greenhouse gas emissions per liveweight (tonnes of CO2e/tonne of LW sold)	25 tonne (CO2e)	11.7 tonne (CO2e)

Greenhouse gas modelling (**Table 2, above**) on Blanncourt indicates the current herd turns off 405.7 tonnes of liveweight with 11.7 tonne CO_2e/tonne of liveweight sold.

This compares to the 1996 production system on Blanncourt turning off 222.6 tonnes of liveweight with emissions of 25 tonne CO_2e/tonne of liveweight sold.

Improved pasture productivity together with wet season phosphorus, targeted dry season M8U and silage feeding to sale cattle has improved productivity and emissions on Blanncourt.

Over five years from 2007 to 2011, Greenhills implemented an infrastructure improvement program including tighter breeder management and wet season spelling on the property. This has had positive impacts on both herd productivity and emission efficiencies.

FarmGas modelling (**Table 3, below**) showed an overall increase in carbon emissions (due to higher numbers of cattle in 2011, compared to 2007).

However, overall emission efficiency (tonnes CO_2e/tonne LW sold) has improved.

	Year	
	2007	2011
Total Adult Equivalents	2400	2750
Liveweight sold (tonnes)	224	308
Greenhouse gas emissions per liveweight (tonnes of CO2e/tonne of LW sold)	17.14 tonnes (CO2e)	14.22 tonnes (CO2e)

UPDATING ON CCB

The CCB project will continue to track the impact (on Oakleigh and Karma Waters) of tighter breeder-heifer management, wet season spelling and pasture improvement on profit, overall greenhouse emissions and emission efficiency.

Soil carbon stores under stylos and native pasture are also under investigation on Karma waters. Updated CCB results will be available in the next Northern muster or you can visit the website for updates: www.futurebeef.com.au/resources/projects/climate-clever-beef/

Joe Rolfe , FutureBeef Team, Mareeba, 0427 378 412, joe.rolfe@daff.qld.gov.au

A box pattern gecko is just one of the fauna found during surveying of local nature refuges.

Why nature refuges are important

Landholder management

NATURE refuges are landholder-managed conservation estates, which occur on many grazing enterprises in northern Queensland.

These areas are considered to have significant conservation values, and are established voluntarily by landholders through the State Government's Nature Refuge Program. Unlike other protected landscapes, they allow compatible and sustainable land use, and nature refuge agreements are tailored to suit the individual needs of the landholder.

Northern Gulf Resource Management Group (NGRMG) and Cape York Natural Resource Management (Cape York NRM) have recently started studies of the flora and fauna on three properties, as part of the Federal Government's Clean Energy Future Biodiversity Fund program: Building Resilient Landscapes – Maintaining and enhancing the biodiversity values in Northern Gulf and Cape York Nature Refuges.

These properties are located in the Einasleigh Uplands, along the Mitchell River, and in Cape York, north of Weipa. NGRMG staff and volunteers conducted extensive botanical recording, soil testing, invertebrate sampling, and trapping and searching for native and pest animals.

Our studies have provided useful information on the conservation values of these areas, the presence of weeds and pests, as well as establishing a benchmark for long-term monitoring to track future environmental change, particularly in response to land management.

While survey data is yet to be analysed, NGRMG staff have identified numerous areas of high conservation value due to the diversity and abundance of some key fauna and flora species in the study areas.

The Einasleigh Uplands is one of the least known areas in Australia in terms of its animal and plant life. Surveys in elevated areas have identified exceptionally high numbers of possums and gliders, not often recorded in other areas in northern Queensland.

The birdlife along the Mitchell River appears to be abundant, with an average of 150 individuals recorded daily during the surveys. Small mammals, including the black-footed tree rat, red-cheeked dunnart, northern-short tailed mouse and the common planigale were captured in Cape York.

The program plans to run until 2016 NGRMG will work with nature refuge landholders to further survey these areas. They will also help landholders implement threat management strategies to protect the rich biodiversity which occurs in our region.

Carly Starr, biodiversity project manager , Northern Gulf Resource Management Group, (07) 4092 1088, bpm@northerngulf.com.au

Forum for graziers talks management

Delegates offered expert insight

Grazier forum

MORE than 17 guest speakers addressed the North West Graziers' Forum in Cloncurry on May 20 and 21. Despite being a very busy time for the industry there was a good turnout with 65 delegates attending on Monday and 70 on Tuesday.

Southern Gulf Catchments sustainable grazing project officer Larissa Lauder was happy with the turnout: "With everything that is going on for producers at the moment we're very happy with the turnout and of course next year we hope to build on these numbers even more," she said.

The topics for the forum were guided by Southern Gulf Catchments Pastoral Industry Advisory Group (PIAG) and focused on core business and management activities that could be directly influenced by managers.

Practical advice on breeder herd management was covered by Geoff Niethe, animal production coordinator for the Northern Beef Program, Meat and Livestock Australia (MLA).

"Management of the breeder herd is vital in breeding regions. If issues occur in the breeding cycle the most important thing to address is where the problems are occurring," he said. Building on the herd management theme, Matthew Bekker from Novus International gave a hands-on presentation, dissecting an animal stomach to explain the path and digestion of a mouthful of grass from ingestion to soil.

Topics included welfare standards in transport of livestock, international market trends, results from calotrope (rubber bush) control trials and a very well received presentation from grazier Lindsay Allan, who explained what practices had been implemented on his properties and the outcomes of these.

PIAG chairman Charlie Hawkins said it was a successful event. "The feedback I got immediately was very positive – positive enough for us to discuss at PIAG that it may become an annual event," he said.

Larissa Lauder, sustainable grazing project officer, Southern Gulf Catchments Ltd, (07) 4743 1888, projectsupport@southerngulf.com.au

ABOVE: Matt Bekker fields questions from the crowd during his dissection of a digestive tract.

THE PLACE FOR PIAG

ALL delegates were invited to attend a PIAG meeting directly after the Cloncurry forum for Charlie Hawkins (pictured) to explain the purpose of the group. The meeting was set up to introduce the next generation of graziers to the industry group responsible for advising Southern Gulf Catchments on local industry priorities and guiding strategy, projects and investment. In the past year, as a direct result of PIAG feedback, the following have been delivered:

- Soils4Grazing carbon and land condition trial and demonstration sites established
- Erosion control workshops
- Business EDGE workshops
- Redland Park Prickly Acacia Field Day
- North West Graziers' Forum.

"PIAG has only been going for two years and provided valuable input into trends and future needs," Charlie said. "We've already created some very interesting projects which are now well under way". Anyone interested in being involved with PIAG should contact Southern Gulf Catchments Ltd.

RIGHT: There was a great showing from local industry for the grazier forum.

LEFT: Geoff Niethe from MLA discusses the importance of management of breeder herds.

BELOW: Introducing new producers to PIAG, which advises Southern Gulf Catchments on local industry priorities and guides strategy, projects and investment.

Bounce for rubber bush

Gulf-Tableland team looks at latest research

Field day focus at Nardoo Station

ABOUT40 people from Queensland's Gulf of Carpentaria and the Barkly Tableland attended a field day at Nardoo Station on July 24 to learn about the latest research and trial developments on calotrope (rubber bush).

Attendees included land managers, shire council representatives, Landcare groups and rural service providers.

Discussions highlighted that while calotrope was a major issue for beef producers, it also had a massive impact on the Gulf of Carpentaria coastline. This has become a key concern for traditional owners due to its impact on biodiversity and cultural practices.

At the field day Charles Darwin University PhD candidate Enock Menge presented research being done on the ecology of calotrope, focusing on the invasive potential of the weed and factors affecting distribution. Understanding the plant's ecology such as seed longevity is essential to develop effective control measures.

Shane Campbell, Department of Agriculture, Fisheries and Forestry principal scientist at the Queensland Tropical Weeds Research Centre, outlined the methods and early results from their trials into various chemical controls. This included a visit to the trial site and a demonstration of some of the specific techniques now available.

Out in the field, attendees were shown the broad-scale chemical control work being undertaken by Peter and Ann Woollett of Nardoo Station in partnership with Dow Agrosciences. Aerial application of Graslan pellets has been trialled with varying application rates over large tracts of the property. Ken Springall from Dow Agrosciences explained: "The Graslan trials demonstrate a commercial option which gives land managers some hope in controlling an expanding pest."

Calvin Price (Mimong Station, McKinlay), Shane Campbell (Tropical Weeds Research Centre, Charters Towers), Enock Menge (Charles Darwin Uni), Peter Woollett (Nardoo Station).

LEFT: Declan Keogh (Rabobank Cloncurry) and John Clarke (Almora Station).

Graham Fossett (Dow) with Ros and Allan Andrews who travelled from Newcastle Waters for the field day.

Billy Jackson, from the Carpentaria Land Council Aboriginal Corporation, provided insight into the impacts of Calotrope on the coastline and small islands within the Southern Gulf of Carpentaria.

"We have witnessed sea turtles during the nesting periods being excluded by a wall of dense calotrope along the high-tide line," Billy said.

"When we are out on the water during sea patrols we have seen seed floating and falling in the water and at times, the seed falls as thick as snow."

Ann Woollett of Nardoo Station said it was "a very productive day". "People out there have a problem that stretches from beaches to beef and it is quite an eye-opener how much of an impact it is having on northern Australia."

The day was described a success by Naomi Wilson from Barkly Landcare. "Rubber bush is one of the greatest threats to our landscape on the Barkly. For years we've been frustrated by the lack of reliable advice on how to tackle such a complex and seemingly unbeatable weed.

"This field day has given us hope that real progress is being made in understanding rubber bush and most encouragingly, that there are now tools under development that we can take back to Barkly pastoralists."

A key outcome of the field day was the formation of a steering committee comprising graziers, natural resource management and Landcare groups, traditional owner representatives and Biosecurity Queensland to guide a regional and multi-disciplinary approach to a common goal: controlling the impact of calotrope across the Gulf of Carpentaria and Barkly Tableland.

Larissa Lauder, sustainable grazing project officer; Southern Gulf Catchments Limited, (07) 4743 1888, or email projectsupport@southerngulf.com.au

ABOVE: MLA's Fire in Northern Grazing Lands RD&E Plan will address fire management issues across all northern pasture zones. – *Source: www.futurebeef.com.au/regions*

LEFT: James and Marjorie Lord, owners of May Downs, a 2340 sq. km grazing property near Mount Isa.

Management key to taking heat out of station fire risks

Lord family tackles burning issue

WHEN Queensland graziers James and Marjorie Lord bought May Downs in 1986, the land was bare and fragile and James was concerned with water movement and run-off. The property needed improvements to make it economically and environmentally sustainable. Fire was seen as overused and his aim was to exclude it as much as possible. But the pasture improvements meant fire management remained an issue.

"We've improved our grazing practices and now need to learn to manage the fuel that we have created. Buffel and blue grass are now well established. We need to manage the fire risk so we don't lose it," James said.

A Property Development Plan (PDP) in place at May Downs since 1997 helped James develop optimum management with rotational grazing and spelling of country for more even grazing. But fire exclusion proved impossible. May Downs is regularly threatened by wildfire at the worst time of year when the grasses have dried off, forage is at its lowest level of supply and wet season rainfall is still months away and not guaranteed.

In October 2001 80pc of May Down's pasture was lost to wildfire. James decided on fire management in his whole-of-property planning. He now works with Firescape Science to continually burn different patches of country over the wet season to reduce fuel loads.

"We do some burning from the ground and some from the air by dropping incendiaries from helicopters. We focus on internal patchy burns so any unwanted fires do not spread across the whole property."

Strategic mild burning early in the year has reduced the risk of extensive pasture loss. "It's all about understanding the risks and benefits," James said. "We're getting better at managing wildfire risks in the Mount Isa area, but there's room for improvement."

Gay Crowley of Firescape Science says some graziers are reluctant to burn because they are unsure how much rain will fall next wet season and how long it will take for the pastures to recover after fire. "Graziers worry about short-term pasture losses and it's difficult to predict conditions six to 12 months down the track."

The need for better forecasting will be addressed in MLA's Fire on Northern Grazing Lands Research, Development and Extension (RD&E) Plan. Gay leads the Firescape Science team engaged by MLA to design this plan and James Lord is keen to participate.

The Fire RD&E Plan will examine all documented uses of fire, including improving pasture condition, managing woody weeds and carbon storage.

Another issue is why fire recommendations based on well-designed research studies are not taken up. Therefore the RD&E Plan will emphasise input from pastoralists and graziers to identity fire management issues and develop solutions with the researchers.

Pastoralists and graziers can help develop this plan in their region through an on-line survey. See www.surveymonkey. com/s/ FireInNorthernGrazing Lands-LandManagers. There is also a staff survey.

A draft of the RD&E Plan should now be available. Opportunities to comment will be organised through extension and Landcare offices.

Gabriel Crowley, Firescape Science, gabriel@firescape.com.au, 0438 531 120.

Taking up challenge

Valuable carcase data collected

McKinlay Shire Beef Challenge

THE McKinlay Shire Beef Challenge cattle were fed for 100 days at the Mort and Co Grassdale Feedlot, outside Dalby. All bar 17 head were processed at the Kilcoy Pastoral Company's abattoir on July 16, 2013.

The remaining animals were too light to meet Kilcoy's weight specifications and were processed through Teys Australia's Dinmore plant on July 18.

Beef challenge secretary Rachael French, from Eddington Station, made the trip south with Department of Agriculture, Fisheries and Forestry FutureBeef officers, Emma Hegarty and Rebecca Gunther, to be on the kill floor at Kilcoy.

Information was collected to enable the carcase feedback data to be analysed to provide producers with some detailed feedback on how their animals graded and performed.

Craig Price, manager of livestock procurement at Kilcoy Pastoral Company, gave the three visitors a comprehensive tour of the plant and was more than happy to answer questions asked.

Early the following morning, Craig was again on hand to show Rachael, Emma and Rebecca through the chillers to inspect the challenge carcases and observe the collection of the carcase data.

The trio then travelled west to Dalby for a guided tour of Mort and Co Grassdale Feedlot. Ben Maher, private client manager, showed the group through the 34,000-head facility, feed mill, automated induction shed and impressive staff horse stable facilities.

The group were able to see the 17 lightest animals that were still awaiting dispatch to Dinmore. They were all in excellent condition and had certainly gained well during their time at Grassdale.

Cameras, pen and paper were at the ready throughout the short trip, which Rachael described as "an absolutely fabulous experience for me and I am so glad I could make it on behalf of the group".

Many of the photos, videos and notes taken over the trip will be reported back to the McKinlay Shire Beef Challenge Group at the September 25 debrief day.

All liveweight, carcase and financial data will be presented to the group at the debrief day as well. A full summary of the debrief day results will be published in the December issue of the *Northern muster*.

● **Richmond Shire Beef Challenge:** It was reported in the previous challenge update that the group had decided at the March 21 weigh day to continue feeding the dry lick recipes to group two (production lick) and group three (30 percent urea) animals, and begin feeding group one (no lick) animals M8U plus rumensin in their new water yard, once constructed. Due to group members' commitments to their own beef businesses, the new water yard and trough were not able to be installed until June. Despite the dry season, the pasture quality remained sufficient for animal production, with positive weight gain across the mob of 0.56kg/head/day recorded at the May 16 weigh day (see table). This result was a pleasant surprise to all.

Keeping the limited forage supply in mind, the group agreed to weigh the animals in another month and make a decision about their future.

At the June 14 weigh day, the mob averaged 465kg and was losing weight at an average of -0.11kg/hd/day. The producers decided to send the animals to Smithfield Feedlot near Proston where the steers will spend 100 days on feed, as they were not yet finished enough for sale straight from the paddock. For the remaining time in the paddock, the group one (no lick) and group two (production lick) animals continued as normal, while the group three (30pc urea) animals received M8U molasses mix plus rumensin immediately.

The producer group also decided to supply group three steers with a seaweed solution in their water trough for one week prior to trucking to try to establish if there were any advantages.

Prior to trucking out the steers on July 30, all animals were manually weighed for the final time to get an exit weight that can be compared with feedlot induction weight. The Richmond steers will be processed in November, and full liveweight and carcase results will be published in the Northern muster in due course.

Rebecca Gunther, Emma Hegarty, FutureBeef team, Cloncurry (07) 4742 1311.

ABOVE: Emma Hegarty, Rachael French and Rebecca Gunther in the Kilcoy chiller.

Marbling in a rib eye of one of the McKinlay Challenge carcases.

Date	Average weight (kg)	Average Daily Gain (kg/hd/d)
5/07/2012	341.13	0.60
8/11/2012	365.56	0.19
21/03/2013	436.63	0.53
16/05/2013	468.15	0.56
14/06/2013	465.80	-0.11
30/07/2013	455.55	-0.21

RIGHT: Some of the lighter animals at Grassdale feedlot before dispatch to Dinmore.

Quality of the cuts

Seaming cuts give more consistent quality

Seaming a whole rump

BUYING your own meat at the local butchers is becoming more expensive and consumers are often looking for ways to get better value.

Quite often, further value from purchasing whole primals (for example rump, cube roll, blade) can be captured by seaming out the muscles and serving them up individually, allowing a more consistent quality in the product being served.

This is due to the variation in eating quality between muscles (sub-primals) within a primal.

Through the Meat Standards Australia (MSA) program and eating quality principles it has been determined that there are variable eating qualities of individual muscles within one primal.

In addition to a more consistent eating quality, many benefits that can be gained from muscle seaming, include:

- Muscles or sub-primals can be sold at their highest eating quality.
- Better value for customers.
- More consistent portion size control.
- More consistent eating quality.

The rump is a good example of a primal with variable eating qualities. Eating quality variation can be reduced by seaming the rump into sub-primals as seen in the diagram.

Seaming a whole rump down in to sub-primals (illustration above) allows for a more consistent eating quality experience.

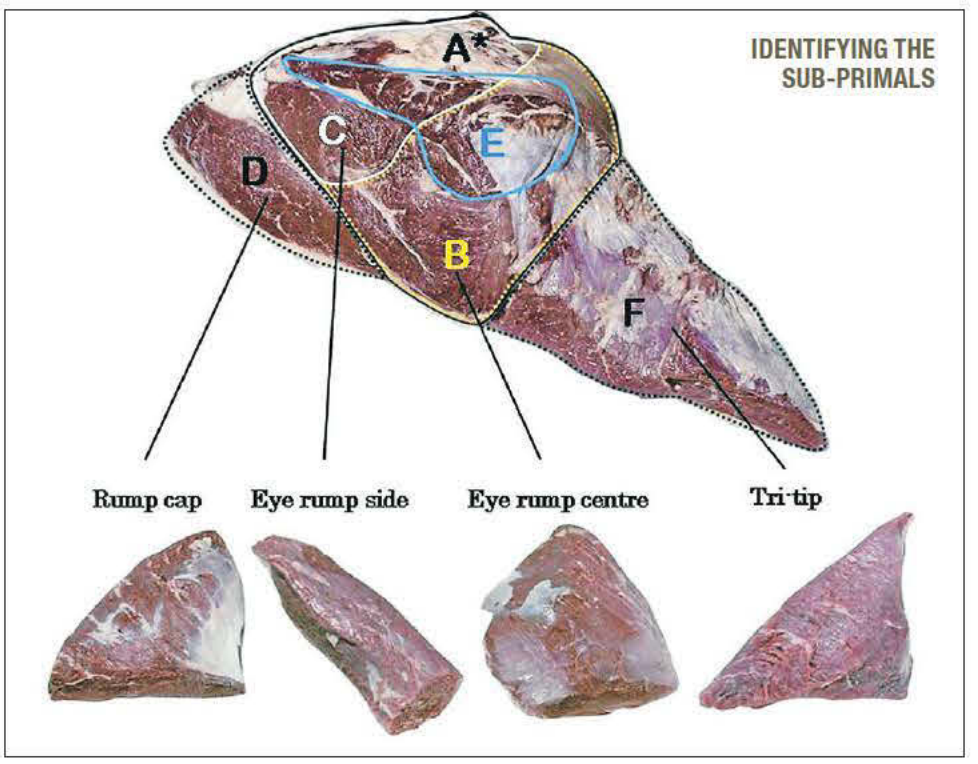
The table lists the recommended cooking methods of the sub-primals in order of what will provide the highest eating quality to the lowest eating quality experience. MSA 5 star is the best eating quality typically served up in restaurants.

This was determined by using the MSA grading system to provide an eating quality score for each muscle (sub-primal) using different cooking methods.

Eating quality scores are out of 100 and reflect the eating experience that will be provided by that particular cut of meat using a particular cooking method.

The score then enables the meat to be placed in to a category: 0-45 = ungrade; 46-64 = MSA 3 star; 65-75 = MSA 4 star; 76-100 = MSA 5 star.

> In addition to a more consistent eating quality, many benefits can be gained from muscle seaming.



The first table displays the eating quality scores for the sub-primals of a rump. These results are an example based on a carcase from a female, 345 kilogram hot standard carcase weight that had been aged for five days (0 percent tropical breed content, ossification 170, MSA marbling 260 and ph 5.5).

The scores coloured in green reflect an MSA 3-star eating quality experience, while the scores coloured in purple reflect a slightly better MSA 4-star eating quality experience.

From this score it can then be determined what is the best way to cook the particular muscle or sub-primal. The table below lists the recommended cooking method of each sub-primal in order from the highest eating quality to the lowest eating quality experience.

This data, ranking eating quality by cooking method, provides an example of just one primal that can be utilised and further valued by providing a more consistent and better eating quality experience for the consumer. The same process can be applied to other major primals of a beef carcase. Further information will be provided in future issues.

For information visit www.mla.com.au/msa

Emma Hegarty, FutureBeef Team, Cloncurry, 0467 808 340. emma.hegarty@daff.qld.gov.au

RECOMMENDED COOKING METHOD

Rump cap	Eye rump side	Eye rump centre	Tri-tip
Stir fry	Roast	Thin slice	Stir fry
Grill	Stir fry	Roast	Thin slide
Roast	Thin Slice	Stir fry	Slow cook
Thin Slice	Grill	Slow cook	Roast
		Grill	

Cut	Cook method				
	Grill	Roast	Stir fry	Thin slice	Slow cook
Rump	52	61	57	63	55
Eye rump centre	52	61	57	63	55
Eye rump side	55	64	62	61	
Rump cap	59		68		
Rump flap			65	69	
Tritip		54	58	56	56

FutureBeef team members Oliva Pisani and Joe Rolfe, Mareeba, Emma Hegarty, Cloncurry, and Charles Sturt University Veterinary Science work experience student, Vanessa Campbell.

Producers get top marks for carcase competition

THE Morganbury Meats Malanda Show Carcase Competition was on again this year with major sponsor, Chris Greenwood, principal of Morganbury Meats, very happy with the quality of most of the 56 entries.

Producers saw their animals on the hook, inspected results and discussed with DAFF FutureBeef staff where they fell out of specifications and what they could do to prevent this.

Carcase competitions were introduced in the 1970s to educate producers on new AUS-MEAT language and help them understand and meet market specifications.

The Morganbury Meats competition has three classes reflecting the type of animal required by their customers across north Queensland.

- **Class 1** – Male or female, 130-170kg dressed weight, milk fed off the cow.
- **Class 2** – Male or female, 210-250kg dressed weight, milk tooth.
- **Class 3** – Male or female, 270-310kg dressed weight, milk tooth.

All entries must be grass fed animals and free from hormonal growth promotants (HGP) and antibiotics. Carcasses are judged on market suitability with major points allocated for correct dressed weight, low ossification scores and eye muscle area (EMA). Minor points are allocated for meat and fat colour, pH, marbling, rib fat and hump height. The highest total score available is 105 points.

Each class attracts $1000 for first and $500 and $250 for placings, plus a very attractive price grid. Top three placings were:

- **Class 1** – John Beattie, Malanda (100 points); Alex Irvine, Malanda (99 points); and Alan and Muriel Booth, Malanda (98 points).
- **Class 2** – Bruce and Elizabeth Carcary, Tarzali (98 points); John Beattie, Malanda (96 points); and Alan and Muriel Booth, Malanda (94 points).
- **Class 3** – Warren and Lyn Hosie, Tarzali (101 points); Alan and Muriel Booth, Malanda (100 points); and Gavin and Peter Marsh, Fiveways Butchery Cairns, (98 points). All animals were flat back types with Euro-crossbreds most common.

FutureBeef Team, Mareeba, Bernie English, 0427 146 063, bernie.english@daff.qld.gov.au; Cloncurry, Emma Hegarty, 0467 808 340, emma.hegarty@daff.qld.gov.au

RIGHT: The top 10 students from the competition to participate in the five-day Meat Standards Australia training program in Brisbane.

Students test skills

'Meating' the challenges

MORE than120 students recently attended the 24th Australian Intercollegiate Meat Judging (ICMJ) competition in Wagga Wagga, representing nine Australian universities and five international teams from the United States, Japan, South Korea, Indonesia and Pakistan.

They were competing for the inaugural Roy McDonald Shield, sponsored by Meat & Livestock Australia, which this year will make its way to Kansas.

The objective of ICMJ is to lay strong foundations for agricultural industries by educating and injecting enthusiastic graduates into a range of diversified careers in the meat and livestock sector.

In the competition, the students judge beef, lamb and pork carcases, beef and pork primals, and identify wholesale beef primals, and beef, lamb and pork retail cuts. The judging of carcases is based on trimness, muscling and quality. Trimness and muscling affect the retail yield of a carcase, which drives profitability, while quality, assessed by traits such as marbling, is important for improving eating quality.

"The annual five-day event is now far more than just a competition," said ICMJ president and Kerwee Lot Feeders general manager Brad Robinson. "We use this week to further the education of university graduates about the end product of a supply chain, as many can get through a whole degree without seeing inside a beef, lamb or pork-processing plant."

Cloncurry-based FutureBeef extension officer Emma Hegarty is one of the committee members who organised the annual event, taking the top 10 students from the competition to a five-day Meat Standards Australia training course in Brisbane, where they will receive a comprehensive introduction to the Australian meat-processing sector. During this program, Emma will select five students to coach as the Australian National Meat Judging Team, to be part of a tour of the US in January 2014 where they will compete in three judging contests.

Coles production general manager Allister Watson told delegates at the Coles Presentation Awards dinner that it is great to see so much enthusiasm and support for an integral part of the industry.

"Graduates of this program are vital to the industry, helping to deliver the high-quality meat that we put on our shelves for our consumers," he said.

Laying strong foundations for industry

LEFT: Students judging the beef rib class for quality and yield, at Teys Australia, Wagga Wagga, processing plant.

RIGHT: Students judging the beef butts class, primarily for yield and also quality, at Teys Australia, Wagga Wagga, processing plant.

Delegates of the five-day event heard from many inspiring and challenging presenters including Troy Setter, the chief operating officer of the Australian Agricultural Company. He said: "The people who can articulate the economic values of decisions they are making can relate production with the economics plus safety and have a holistic view of the whole of the supply chain and are very valuable for our industry."

Kansas State University took out the 2013 ICMJ competition by one point over the home team from Charles Sturt University in Wagga Wagga out of a possible 5020 points. In the largest and closest competition in the history of the event, Adelaide University came a very close third, only 11 points behind CSU Wagga Wagga. Adelaide University coach Sam Walkom was also awarded the Dr Tom Carr Award for coaching excellence.

Also presenting at the event were Grant Garey (general manager of Feedlots for Teys Australia), Tom Bull (Lambpro director), Dr Darryl D'Souza (Australian Pork Ltd), Paul Leonard (livestock general manager for Thomas Foods International) and Andrina and Lachlan Graham (Argyle Prestige Meats).

Mr Robinson said: "The continued financial support of the program by MLA, AMPC, APL and many other companies plus the time and efforts of the presenters who make their own way to Wagga is extremely appreciated by the students and pivotal to the success and longevity of the program."

The 2013 ICMJ competition involved: Murdoch University, University of New England, Tocal Agricultural College, University of Melbourne, University of Adelaide, Charles Sturt University Wagga Wagga, Charles Sturt University Orange, University of Sydney, University of Queensland, Kansas State University (US), Japanese team, South Korean team, Pakistani team and Indonesian industry officials.

Emma Hegarty, Australian National Meat Judging Team coach, FutureBeef team, Cloncurry, 0467 808 340, Emma.hegarty@daff.qld.gov.au, www.icmj.com.au

More producers to cash in on MSA changes

WITH 30,214 producers and 77 brands now signed up to Meat Standards Australia (MSA), the program continues to evolve with new research findings and changing customer requirements.

One recent development is a change to MSA transport protocols. More cattle producers will be able to cash in on MSA premiums following recent changes to the grading system's transport protocols.

Following an MLA-funded study into the effects of transport on eating quality, the MSA Pathways Committee has recommended the former day-after dispatch slaughter protocol be extended to 48 hours (with a maximum of 36 hours in transport) for a trial period of 12 months.

MLA program manager, eating quality R&D, Dr Alex Ball, said the expanded footprint for MSA-eligible stock would have a significant impact on northern cattle producers, as well as giving southern producers more choice of processors.

"Increased opportunity now exists for more producers to target the MSA premiums," he said.

Dr Ball said the outcomes showed management at home had far more impact on an animal's ability to grade MSA and achieve a premium than the distance travelled, time in transit or opportunities to rest, feed and water. "A clear outcome of the transport trial was the importance of pre-trip stock management in being able to realise those markets through MSA compliance."

The study involved three Central Queensland properties that transported 343 steers (18 to 36 months, 489kg to 780kg), off pasture.

The steers were divided into four lots and sent on four different road trips, but staggered to arrive at the abattoir at the same time. The road trips were: 12 hours duration; 12 hours with a 12-hour food/water break, then another 12 hours; 24 hours; 36 hours.

Researchers found that extending the transport time from 12 to 36 hours had no detrimental effect on eating quality and, similarly, there was no perceivable benefit to eating quality or dressing out percentage from the 12-hour rest break.

Alex said all animals were tested for rib fat, ultimate pH and meat colour, with about 60 percent of the carcases meeting MSA specifications. Of those that failed, about 30pc were excluded for high meat colour (greater than three) and the remaining 10 pc for pH and rib fat non-compliance. "This outcome was of concern due to its commercial ramifications; however, the good news is the experiment showed best practice stock-handling techniques and pre-trip preparation can have a huge impact on carcase performance," he said.

Dr Alex Ball, MLA, (02) 6773 2493, aball@mla.com.au, www.mla.com.au/msa

More cattle producers will be able to cash in on MSA premiums following recent changes to the grading system's transport protocols.

BREEDCOW: CALCULATION OF GROSS MARGINS AND HERD VALUE

	$/Herd	$/Beast	$/A.E.
Net cattle sales	$149,697	$130.68	$150.50
Husbandry costs	$36,581	$31.93	$36.78
Net bull replacement*	$7,327	$6.40	$7.37
Gross Margin	$105,789	$92.35	$106.36
GM less interest	$75,330	$65.76	$75.73

Capital Value of Herd (after sales)	$ Total
Value of cows, heifers and new spays	$364,465
Value of carryover spays or unmated females	$0
Value of steers and bulls	$143,196
Total	$507,661
Interest on herd capital 6.00%	$30,460

RIGHT: Example output from a Breedcow analysis which is used to calculate important key performance indicators for extensive grazing systems.

Software for hard facts

DAFF releases new version

Business analysis tools now available

QUEENSLAND'S Department of Agriculture, Fisheries and Forestry (QDAFF) has released the latest version of its beef business analysis tool – the Breedcow & Dynama suite.

Do you ever ask yourself: "What is the financial benefit of feeding phosphorous?", or "Should I sell cows or heifers?", or "Will planting legumes repay the capital outlays associated with establishment?" If so, this could be the tool for you.

These are a number of 'what if' analyses that can be undertaken and forecast by the Breedcow software.

Breedcow & Dynama is a suite of programs including Breedcow, Dynama, Investan, Cowtrade and Bullocks and can be used to:

- Compare the likely profitability of the herd under different management or turnoff systems (Breedcowplus program).
- Make forward projections of stock numbers, sales, cash flow, net income, debt and net worth (Dynamaplus program).
- Decide what to sell when a plan goes sour or what to buy when there is an opportunity (Bullocks and Cowtrade programs).
- Evaluate long-term investments in herd or property improvement to determine the rate of return on extra capital (Investan program).
- The Breedcow & Dynama suite can assist with business planning and estimating future cash flow.

Breedcow can calculate important key performance indicators for extensive grazing systems, including gross margin per adult equivalent (AE), inventory valuations and opportunity costs for a steady state herd. The above chart shows an example of Breedcow output.

> A number of 'what if' analyses can be undertaken and forecast.

Dynama (example below) can calculate the impact of changing management decisions for extensive herds, showing changes to sales, total AEs carried, required purchases, forecast income, debt and net worth over time.

The Cowtrade program is used when seasons and prices are out of line with long-term expectations. It can be used to set sales priorities when drought or financial crisis requires abnormal sales or when deciding how far to sell into the heifers after pregnancy diagnosis.

The Bullocks program focuses on selecting the most profitable turnover cattle. It may be also be used to evaluate forced sales options or whether to keep the lower-performing steers until they finish, or sell them early.

The new Breedcow suite of programs comes in a stand-alone package which can be downloaded from http://www.daff.qld.gov.au/16_6886.htm.

The new Version 6 is compatible with new Windows operating systems and 64-bit systems.

Tim Moravek, agri-economist, FutureBeef Team, Charters Towers, (07) 4761 5150, timothy.moravek@daff.qld.gov.au

HOW DYNAMA SHAPES UP

HERD SUMMARY	2012	2013	2014
Total AE carried	57	49	113
Total sales #	77	66	152
Total purchase #	77	66	152
Total new calves	0	0	0
Total deaths #	0	0	0
Net $ sales	$87,164	$74,712	$172,064
Net $ purchases	$76,076	$65,208	$150,176
OUTCOMES			
Adult equivalents (AE)	57	49	113
Cash flow for debt service	($8,808)	($14,615)	$13,463
Working a/cs net debt end year	$9,248	$25,519	$13,935
Total debt at end of year	$9,248	$25,519	$13,935
Total non-cash assets at end year	$0	$0	$0
Net worth at end of year	($9,248)	($25,519)	($13,935)
Net worth % at end of year	100%	100%	100%

LEFT: Example output from the Dynama program used to calculate the impact of changing management decisions.

Beef CRC fertility project covers 3500 bulls

ABOVE: A MLA-funded Beef CRC project gives producers a cost-effective solution to make genetic and economic gains across their entire herd.

RIGHT: The project evaluated bulls from birth to 24 months of age for 109 traits to assess heritability and correlation to female reproduction traits.

'REPRODUCTION rate' is a key profit driver in northern Australia, but some producers are weaning less than 50 percent while the average is still only at 72pc. A new genetic tool will help make selecting for fertility much easier.

An MLA-funded Beef CRC project has measured the performance of 3500 Brahman and Tropical Composite bulls and identified which male fertility traits correlate to female reproductive performance.

Dr Brian Burns, from the Queensland Alliance for Agriculture and Food Innovation (QAAFI), said the research gave producers a cost-effective solution to make genetic and economic gains across their entire herd. Producers already have access to estimated breeding values (EBVs) for scrotal size and days to calving for making genetic progress in reproductive performance.

These new results will likely lead to an integrated EBV for reproductive performance that combines the existing EBV traits with data on traits such as age at puberty, post-partum anoestrus interval (PPAI) – the period from calving to starting to cycle again – and percentage of normal sperm.

"Identifying these early-in-life predictors of a bull's fertility will help reduce the number of bulls required for breeding by up to 50 pc and increase the number of calves born," Dr Burns said. "Selection for sperm motility alone could achieve a 6 percent increase in lifetime weaning rate over 10 years. PPAI is also heritable, so producers can improve herd fertility – especially in Brahman cattle – by selecting bulls whose daughters will have shorter PPAI." Traditionally, selection for cow fertility in northern herds could be applied only to females after several mating periods, so genetic gains were slow. Tropically adapted beef breeds had little genetic information for male reproductive traits which influence female reproductive performance. This project evaluated bulls from birth to 24 months of age for 109 traits to assess heritability and correlation to female reproduction traits. Researchers found:

- Key components of fertility (age of puberty, post-partum re-conception interval, scrotal circumference and semen quality) are heritable in these two breeds.
- Bull reproductive traits (especially sperm morphology) are genetically linked to female reproduction, so selecting for male fertility will genetically improve their daughters' fertility.
- Selection for fertility doesn't come at the cost of other economically important traits, so multi-trait selection is possible.
- Significant variation exists for key bull traits such as semen quality and scrotal circumference
- Genetic and in-herd economic benefits can accrue if seedstock producers record scrotal circumference and conduct bull breeding soundness evaluations on young bulls.

Dr Burns said this information was critical for northern cattle producers who faced challenges such as extensive management systems, harsher environments, parasite burdens and breed differences.

"Commercial producers should use genetically superior bulls which are sound and tested fertile to increase calving rates and reduce the number of bulls required. Selecting these bulls for the key traits will improve male and female reproductive performance and increase the profit potential of the entire herd."

Where to now? The Next Gen Beef Breeding Strategies Project, funded by the Queensland Government, is now working with key seedstock herds to develop commercially viable recording mechanisms for the traits measured in this Beef CRC project.

Dr Brian Burns, b.burns@uq.edu.au, www.breedplan.une.edu.au, matesel@breedplan.une.edu.au

A TOOL KIT FOR NORTHERN PRODUCERS

- Use EBVs to identify superior bulls.
- Only use bull breeding soundness examination-tested, sound and fertile bulls.
- Select male and female replacements from calves born early in the calving season, from cows that have not missed a calf.
- For faster progress, use superior genetics – select fertility EBVs, scrotal size in males, days-to-calving in females.
- Combine EBVs with selection indexes, structural soundness and temperament assessments to maximise genetic gain and herd functionality.
- Consider using MateSel, a tool which helps to optimise matings to reflect breeding goals and make long-term sustainable genetic gains.

Fertility drives profit

Improving fertility to increase financial gains

SUMMARY

RECENT research has shown female reproduction traits in tropical genotypes are heritable and that genetic progress can be made through selection of sires.

- Use a balance of traits in selection (fertility, growth and carcase).
- Selection for these traits will not compromise tropical adaption.
- Female fertility can be improved through genetics from the sires selected.
- Use bulls with above 70pc normal sperm at 24 months for both genetic improvement in the progeny and for those bulls that are either to be single sire mated and or used for semen collection for processing.
- Scrotal size EBVs (larger, more positive) and days to calving EBVs (some breeds) (shorter, more negative) are available for identifying superior genetics for fertility.
- Phenotypically, bulls should have above average scrotal size at 12 months and again at pre-mating BBSE for the weight of bull within breed.
- Regardless of whether you have sourced bulls out of the paddock or the sale ring, the need for some objectivity in selection remains the same.
- Remember the bull put in the herd today drives the direction of that herd and your profitability well into the future (potentially 14-16 years).

EACH time you make a bull selection or purchasing decision, the bull put in your herd today drives the direction of that herd and the profitability of your beef business well into the future.

The days of purchasing a bull on looks only are outdated and an expensive gamble.

Many of these good-looking bulls are outperformed by bulls supported by documented objective measures.

Over the past 15 years, significant gains have been made in: measuring the current and future ability of a bull to produce calves; and predicting the value of a bull relative to other bulls in the genetic merit of their progeny, in traits of economic importance.

This is particularly true in matters of fertility, which can be expressed as all three of the following:

- Calf output per 100 breeders per year.
- Calf output per breeder per 365 days of breeding life.
- Calf output per bull mated per year.

Your business is driven by the number of animals it can sell, their weight and price as achieved within the same time parameters of interest and tax paid.

Every beef business manager needs to focus on the relative areas that will drive that profit and fertility is a big profit driver, particularly in northern Australia.

Improving the fertility performance of your herd can improve your financial gains.

ABILITY OF A BULL TO PRODUCE CALVES

From 1992 to 2003, there was a major bull-fertility research project called the Bullpower Project conducted across northern Australia. About 1000 bulls, mainly two to four-year-old Santa Gertrudis, 5/8 Brahman, Brahman and Belmont Red bulls were subjected to physical and reproductive examinations prior to mating. Many were followed through multiple sire joinings and mating outcomes established.

The Bullpower Project was a collaborative effort involving Queensland Department of Primary Industries, the University of Queensland, James Cook University, Northern Territory Department of Primary Industry and Fisheries, the Meat Research Corporation and the Santa Gertrudis Breeders Association (Australia).

KEY BULLPOWER FINDINGS

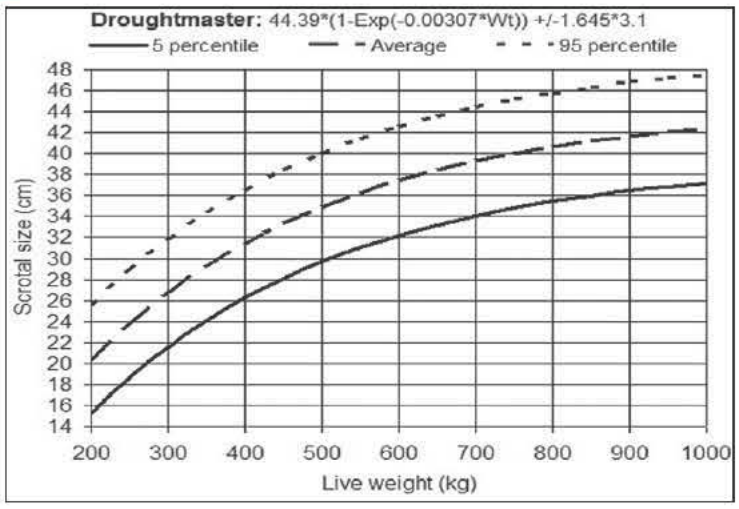
Sperm morphology of bulls has been shown to be an important pre-mating predictor of calf output of bulls in multiple-sire situations in Bos Indicus and Bos Indicus-cross herds in northern Australia.

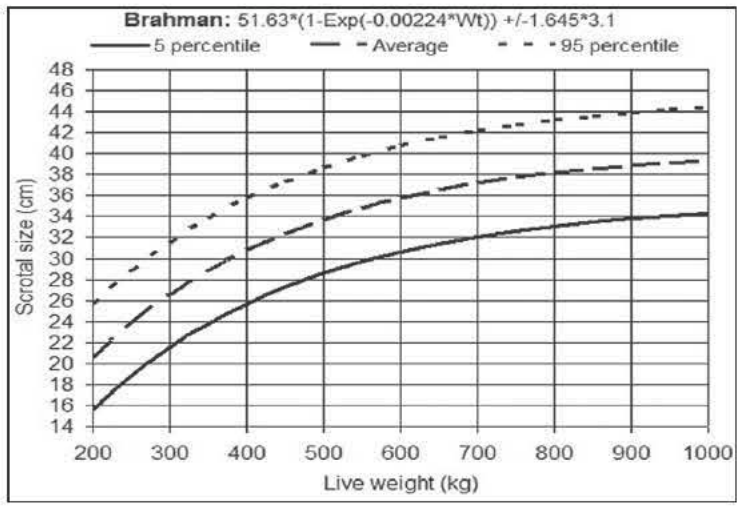
These studies showed that in general, bulls with <50 percent normal sperm sired few calves, while bulls with high calf outputs had >70pc normal sperm.

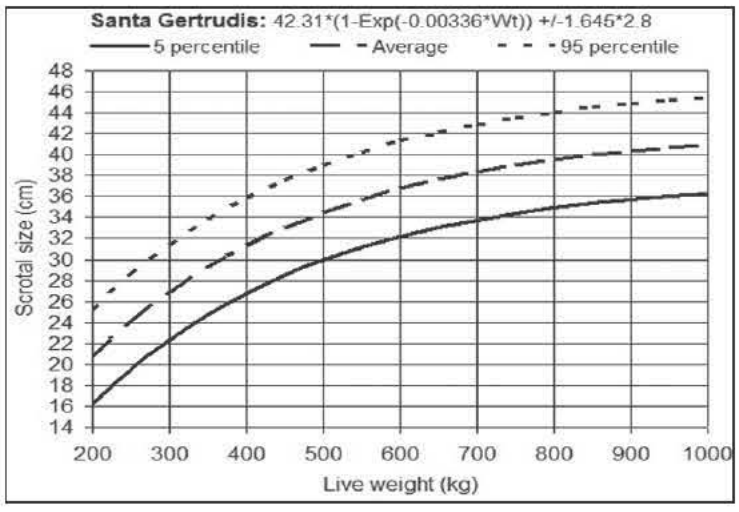
Normal sperm was poorly repeatable in bulls that were still sexually maturing (14 through to 24 months of age). However, the repeatability of normal sperm was high in Brahman and composites once they reached sexually maturity. Sheath depth in Brahman bulls was negatively related to calf output – that is, deeper sheathed bulls sired less calves. These results have been repeatedly demonstrated in practice in herds across northern Australia.

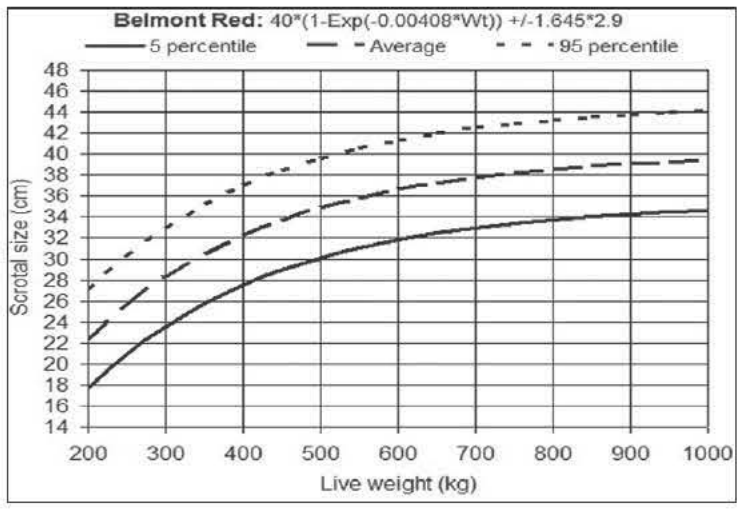
Australian Cattle Veterinarians (ACV) developed the Bull Breeding Soundness Evaluation (BBSE) and Veterinary Bull Breeding Soundness Evaluation (VBBSE) from the outcomes of the Bullpower Project.

This process can be used for both screening bulls prior to sale or paddock bulls prior to use.









The BBSE contains objective information in terms of 'what we see' (phenotype) and what we can see only with a microscope. Morphology in a BBSE is basically the 'structure' of individual sperm cells.

The BBSE is not a genetic evaluation of reproductive traits, but an indication of the animal's present reproductive function. The BBSE was developed by veterinarians to standardise bull-fertility testing and to provide a consistent descriptor of bull fertility.

The evaluation indicates whether a bull has met a set of standards for key fertility components which indicate whether a bull has a high probability of being fertile. The components are:

- Scrotal circumference (cm) and tone or resilience.
- Physical examination for faults in the head, legs, joints, hooves, sheath and penis.
- Semen analysis for motility.
- Morphology (or structure of the individual sperm cells).
- Mating behaviour/mating ability.

The final evaluation of the semen is the percentage of individual spermatozoa that are structurally normal – the morphology. To record the percentage normal sperm, a sample of the semen collection is placed in a small tube with a special diluent and sent off to one of the accredited morphologists.

To facing page

From facing page

The morphologist will examine 100 individual spermatozoa and record all the abnormalities present. The morphologist report will detail the % Normal sperm and the percentages of the various abnormalities. There are internationally accepted maximum percentages of these various abnormalities.

Accredited veterinarians produce a detailed certificate report. It is wise to seek professional interpretation of this report.

BULL COMPARISON

Predicting the value of a bull relative to other bulls in the genetic merit of their progeny, in traits of economic importance

Research into fertility traits has been carried out by the CRC for Beef Genetic Technologies (Beef CRC) over the 12 years up until late 2011. The research involved 1027 Brahman heifers by 54 sires and 1132 tropical composite heifers by 51 sires. The heifers were studied from weaning through to weaning of their sixth calf.

A total of 3648 young bulls of the two tropical genotypes were evaluated for a comprehensive range of production and reproduction traits up to 24 months of age.

Genetic correlations of young bull and heifer puberty traits with measures of early – and lifetime female reproductive performance were estimated in the two tropical beef cattle genotypes.

BEEF CRC OUTCOMES

Soon to be published results showed the following.

Male scrotal size at 12 months was found to be highly heritable in Brahmans and moderately so in Tropical Composites.

Scrotal circumference at 12 months in Brahmans and at 6 months in Tropical Composites were correlated with heifer age at puberty. That is, larger testicle sires, sire daughters that reach puberty earlier.

A critical finding was the large influence of sires on heifer age at puberty. Brahman sires differed by up to 5.6 months in the average age at puberty of their daughters. Younger age at puberty tended to be genetically associated with increased lifetime reproductive performance.

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

In the Beef CRC Brahman sires, this difference was 4.4 months. This can equate to a 40pc difference in calving rate. Percent normal sperm is heritable and was genetically correlated with lactation anoestrus and female lifetime reproductive traits in both genotypes. That is, daughters of high percentage normal sperm sires cycle sooner after calving and have higher lifetime calving rates.

Preputial eversion (pink skin showing at the pizzle) and sheath scores were genetically associated with lifetime calving and weaning rates in both genotypes. That is, lifetime calving of daughters of bulls with deep sheaths or pink prepuce showing were lower.

Improving fertility to increase financial gains

> The bull put in the herd today drives the direction of that herd and your profitability well into the future.

SCROTAL SIZE

There are new ACV standards for minimum scrotal circumference to pass a BBSE or VBBSE. Scrotal circumference is mostly influenced by weight and breed. Normal range for scrotal circumference in 13 common breeds of Australian beef bulls was established using ~260,000 observations of bulls that were mostly within 250-750 kg live weight and 300-750 days of age. The recommended minimum scrotal circumference is the bottom 5pc value, at any weight within breed. Bull breeders and breed societies may impose higher thresholds where breeding objectives require increasing scrotal circumference.

Use bulls with average or above average scrotal size for their weight, to assist earlier age at puberty in females and greater lifetime calf output in progeny. Professional interpretation of scrotal size by weight of bull can be sought.

The graphs provide by weight, the predicted fifth percentile, average and 95th percentile curves for four of the common beef breeds.

PROGRESS WITH GENETIC TOOLS

Making real progress is about making long term genetic gains where the progeny of the bulls we use this season, produce more calves per year than previous generations. This applies to bulls and breeders. As part of genetic gain, these progeny also need to meet market objectives.

Breedplan Estimated Breeding Values (EBVs) are the most accurate genetic tool to make long term gain in growth, fertility and carcase. These being the economic traits of our beef business. The Beef CRC has validated and strengthened Breedplan EBVs.

It is always recommended to use balanced selection across these economically important traits.

Scrotal size EBV is superior to the actual scrotal size measure and a valuable tool for identifying bulls that will produce daughters which reach puberty earlier. Days to Calving EBVs (available for some breeds) are an indicator and selection tool to address quicker re-breeds after calving. Select bulls with negative DTC figures – the more negative the better.

Use growth EBVs to improve weight for age, higher mating weights in heifers and improved market placement. Use carcase EBVs to improve carcase compliance and market achievement.

Set minimum standards. Do not forget to find out breed average for each trait.

Alan Laing, Futurebeef DAFF Ayr, (07) 47205115.

Tick fever threat

Risk increases with bigger cattle movements

DROUGHT over much of Queensland has resulted in large numbers of cattle moving from tick-free areas into tick-infested areas, due to limited feed.

In addition to the many routine logistical issues, this has also provided some challenges in the control of tick fever. Currently, the tick fever vaccine offers the only predictable protection against the disease.

Susceptible cattle will be at risk of 'field infection' if exposed to cattle ticks before solid immunity has developed.

The lag period between vaccination and development of immunity to all tick fever organisms is eight weeks.

If there are routine annual movements into known tick areas then vaccination can be planned well in advance.

However, this is sometimes not possible when feed supply is short. \Cattle are often then vaccinated just prior to leaving the property of origin or on arrival at the destination.

In these circumstances, the main risk comes from babesiosis, which is transmitted by the larval ticks picked up in the paddock. \Although immunity to babesiosis can develop within three to four weeks of vaccination, these cattle should be monitored for at least three to four weeks after arrival at the new property for clinical signs of tick fever, such as fever, anaemia, red urine or general signs of ill health.

The quicker the diagnosis and treatment of tick fever, the better the chance of recovery.

The spread of anaplasmosis is mainly by the male tick moving from infected carrier animals to uninfected cattle. If it is not possible to vaccinate at least eight weeks prior to movement the risk of anaplasmosis may be reduced by keeping introduced cattle isolated from other mobs, at least while immunity is developing.

The risk of tick fever also depends on the age and breed of cattle which should be taken into consideration when deciding the movement and tick fever control strategies for the mob. Young cattle (calvezs up to nine or 10 months of age) are quite resistant to both babesiosis and anaplasmosis.

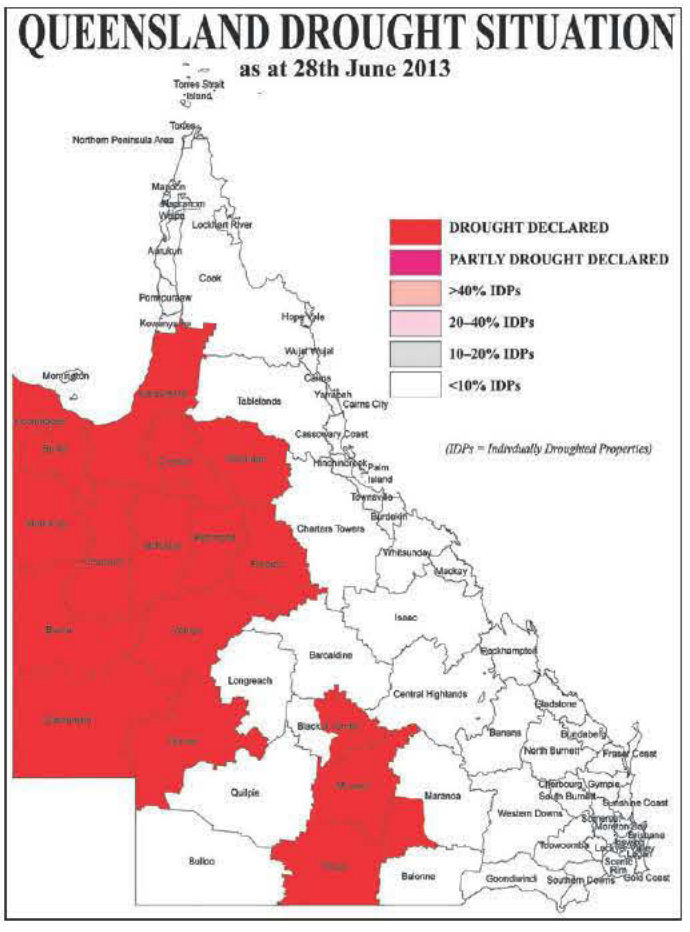
Brahmans (Bos Indicus) are quite resistant to babesiosis, but susceptible to anaplasmosis; Bos Taurus types are the most susceptible to both; Bos Indicus-Bos Taurus crosses sit in the middle.

Regardless, all cattle coming in to the tick areas should be given a tick fever vaccination, ideally eight weeks before movement. If this is not possible, it is still better to vaccinate just three to four weeks ahead of movement than not vaccinate at all. These mobs should then be isolated on arrival for another month for the risk of infection to be substantially reduced.

Seek advice on tick control in these circumstances as cattle can develop substantial burdens when first exposed to cattle tick.

Contact the Tick Fever Centre on (07) 3898 9655 to discuss any queries regarding tick fever vaccine and the risk of tick fever, and your local Biosecurity Inspector with any questions about tick control.

Lara Marwedel, Veterinary Officer, Tick Fever Centre. Queensland Department of Agriculture, Fisheries and Forestry (07) 3898 9653, lara.marwedel@daff.qld.gov.au



LEFT: Large areas of Queensland are affected by drought leading to the movement of cattle on to better pastures, in tick-infested areas, causing an increased risk of tick fever.

Bull selection season looms

Moving herds ahead with genetic improvement

WITH spring bull sales fast approaching, now is the time for producers to assess their production goals, evaluate their herd and identify which genetics will move their business forward.

Christian Duff from the Tropical and Southern Beef Technology Services said bulls bought this year would have a long-term influence on a cattle producer's bottom line.

"If you approach bull buying as an opportunity to take the herd forward through genetic improvement, you will put the business in a stronger position to combat the cost-price squeeze and gain productivity and profitability," Christian said.

"Whether you breed Brahmans in the Northern Territory for the export steer market, or Herefords in Victoria for domestic trade, industry resources such as Breedplan Estimated Breeding Values (EBVs) and selection indexes provide you with powerful information."

Christian compared the genetic variation across money-making traits between 2011-drop bulls in the top and bottom 10 percent of their breed (based on EBV and index percentile bands).

"Bulls from the top 10pc of Herefords for weight traits will have progeny that could weigh significantly more at 200, 400 and 600 days (7.5kg, 12kg and 18kg heavier on average), compared to the progeny of bulls at the bottom 10pc of the breed," he said.

"The top selection indexing bulls could also return more in different production systems, potentially earning an additional $18.50 per cow joined for supermarket production systems, $20 for grassfed steer, $22.50 for grainfed steer and $22 for EU systems.

"Progeny from Brahman bulls in the top 10pc of breed for the weight traits could, on average, be 8kg, 11kg and 20.5kg heavier at 200, 400 and 600 days respectively.

"The top 10pc for fertility traits could potentially produce daughters that have higher conception rates and calve earlier, and the top indexing bulls will return on average $15 more per cow joined for Japan ox production systems and $12.50 more for live export systems."

SELECTING THE RIGHT BULL FOR THE JOB

Christian suggested evaluating all the genetic information available from cattle breed societies and individual seedstock producers (pedigrees, EBVs and selection indexes are available online or on-the-go with the INSolutions app), incorporating your cattle-assessment skills and aligning with a progressive bull breeder.

"If you buy a tractor, you expect the machinery dealer to be knowledgeable about the vehicle's features. Similarly, your seedstock producer should be able to explain the information they provide on their bulls, so you can identify bulls with high genetic merit to suit your production system," he said.

Market information and on-farm production measures can also refine your genetic shopping list.

"Use processor feedback to identify the traits to invest in, such as weight for age or fat cover, so your cattle can better meet market specifications," Christian said.

"Regularly and objectively measure your on-farm production points such as weaning percentages and percentage of unassisted calves. If an area is identified that can be improved to lift profitability, there is a good chance that genetics through selecting the right bulls can help."

> You will put the business in a stronger position to combat the cost-price squeeze and gain productivity and profitability.

REGIONAL FOCUS

Commercial producers can select from a wide menu of traits when buying bulls: weight, calving ease, docility, fertility, and the list goes on.

The combination of traits that will deliver optimum results varies across production systems, with producers in different regions emphasising specific traits.

"Female reproduction is an important profit driver across all regions; however, it is particularly critical in the northern production system," Christian said.

"Northern producers should select bulls that will genetically produce more fertile daughters through shorter days to calving EBVs."

Southern producers tend to put more weighting on calving ease, both direct and in daughters, because heifers across this region are usually expected to calve down as two-year-olds (up to a year younger than in the north).

Temperament is high on genetic shopping lists for all producers as, when combined with the right management, it benefits worker safety, animal welfare, feedlot performance and meat quality.

"Beef breeds favoured in southern Australia, such as Limousins and Angus, are publishing EBVs for docility, which is a heritable genetic trait," Christian said. "In the north, herds tend to use the objective measurement of docility, being flight time."

Different markets also affect regional selections. Some southern production systems might put a higher weighting on the marbling trait (intramuscular fat EBV) in bull selection, whereas it may be a trait of lower importance for tropical breeds.

Looking ahead, Christian said taking advantage of genetic variation for feed efficiency in the grazing herd was still the 'holy grail' for most production systems, as feed intake in the cow herd was a significant enterprise cost.

Breedplan produces trial net feed intake EBVs for several breeds that describe genetic variation in feed efficiency in young cattle and in steers in the feedlot situation. Ongoing research for Breedplan is aiming to produce EBVs that specifically target genetic variation in cow-feed efficiency.

ABOVE: Producers line up to examining semen motility under a microscope as part of a BBSE on a herd bull.

LEFT: Female reproduction is an important profit driver across all regions.

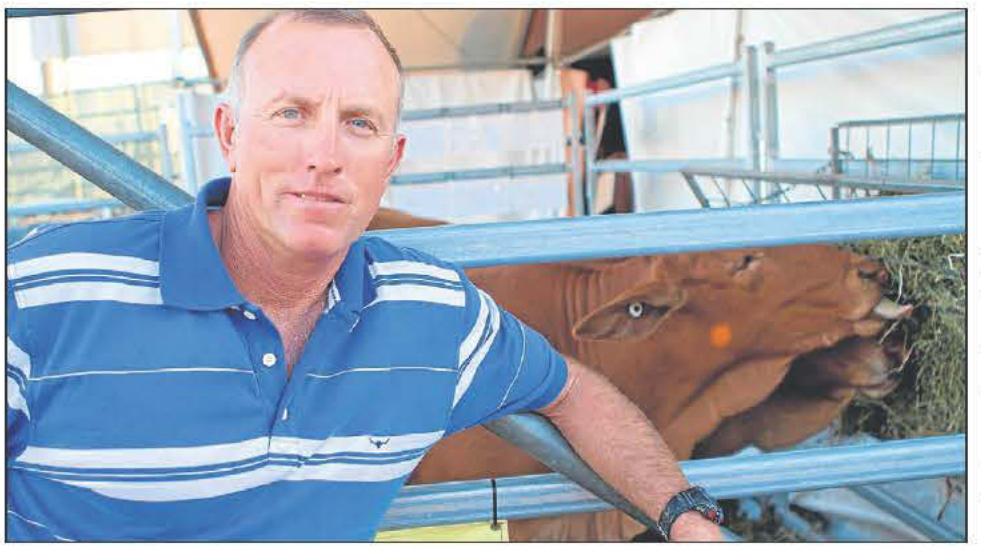
GOING SHOPPING?

A checklist for bull buyers:

- Select the right breed for your enterprise and identify bull breeders whose management systems and objectives align with yours.
- Choose the selection index within your breed of choice that is most relevant to your production system – but still consider EBV traits you want to improve in your herd.
- Use this information to identify and rank bulls. Your budget and bidding competition will influence your purchases, so producing a relatively broad list of bulls is essential.
- While doing your homework, take into account additional information such as pedigree (for genetic diversity), genetic condition/defect status and horn/poll status.
- In conjunction with this information, when at the sale, make visual assessments of your target bulls for general structure and temperament.
- Home in on other objective tools such as bull breeding soundness evaluation (BBSE) results. This may be available before the sale.
- Bought some bulls? Ensure your investments remain functional. Consider conducting a BBSE annually to ensure your sires can perform for the upcoming joining season and pass on their high-merit genetics.
- Reassess your bull team each year and identify sires that need to be replaced. Keeping a bull for longer reduces the cost per calf, but you might miss out on genetic progress from younger bulls of higher genetic merit.

Download MLA's Tips and Tools: Buying better bulls at www.mla.com.au/bulls

Christian Duff, (02) 6773 2472, christian.duff@abri.une.edu.au, www.tbts.une.edu.au



ELITE GENETICS: AN EXCITING PROJECT

IDENTIFYING elite genetics, and propagating them through fixed-time AI, is the key to turning around the profitability of our northern beef enterprises, says Dr Ian Braithwaite (pictured).

"I'm pretty excited about using fixed-time AI to change the fertility genetics in northern Australian beef herds," Dr Braithwaite said.

"I've seen the results from fixed-time AI in large commercial herds in the north. There are good cost benefits in terms of the elite genetics propagated and the rewards that come from putting calves on the ground in a concentrated calving period.

"A calf arriving a month earlier has a 25-kilo weight gain advantage over its cohorts."

He said the ultimate goal of FTAI was to propagate fertile heifers in order to boost herd fertility and profitability.

"Achieving a calving interval of 12 months across a heifer's lifetime, by identifying elite genetics and propagating these genetics through AI, is the key to turning around the profitability of our northern beef enterprises," Dr Braithwaite said.

Fixed-time AI boosts herd fertility

Advances in AI: what, why

ARTIFICIAL insemination has huge potential for improving the fertility and profitability of northern Australian beef herds, delivering better results at a reasonable price.

Respected beef production veterinarian Ian Braithwaite said cattle fertility rates across the north were declining due to a number of factors.

"One reason is that poor genetic selection has caused inherent infertility in these herds," Dr Braithwaite said.

"For cash flow reasons some producers are holding on to sub-fertile cows and heifers that are late to calve or fail to re-breed. Later calving cows raise lighter weight weaners and increase the spread of genetically sub-fertile progeny."

He said this contributed to a downward spiral in fertility within the herd and to declining profitability.

"A second reason for a drop in herd fertility is the use of later maturing breeds over later maturing Brahman females," he said.

Dr Braithwaite said the solution was to identify the top performing females within the herd and mate them to elite bulls.

Rather than selecting bulls purely on phenotype, sires need to have balanced estimated breeding values (EBVs) for growth, reproduction and structural soundness.

"These sires should be selected from proven cows with a history of high fertility and by that I mean 'low days to calving' EBVs and fecundity."

Bulls should also undergo a breeding soundness examination to check structural soundness and evaluate semen, including a semen morphology examination.

"CRC research has shown that bulls with greater than 70 percent normal semen morphology breed fertile daughters with a shorter lactational anoestrus period, which is the period from calving to commencement of cycling," Dr Braithwaite said.

Calving traits link to genetic selection

● **Get first-calf heifers cycling earlier:** "If we can get first-calf heifers cycling a little earlier they have more chance of getting back in calf in the next 12 months and this is exciting in terms of turning herd fertility around."

He said fixed-time artificial insemination (FTAI) was proving to be a viable solution for increasing the spread of elite male and female genetics and improving herd fertility.

The Bayer BoSynch/ FTAI program includes the insertion of a flexible progesterone-releasing device, Cue-Mate, which synchronises ovulation and allows females to be inseminated without oestrus detection.

Recent Bayer studies showed that after ovulation synchronisation, FTAI and exposure to bulls, up to 78 per cent of Bos Indicus heifers and 86.7pc of Bos Taurus heifers could conceive within the first two oestrous cycles of the mating season.

This resulted in heavier calves at weaning and females calving earlier in the season, allowing more time to reconceive and improving the ability of females to achieve an inter-calving interval of 12 months. When deciding which AI program to use, producers needed to weigh up the trade off between labour and drug synchronisation costs, Dr Braithwaite said.

"While the drug costs will be slightly higher with fixed-time AI, less labour is needed. You are able to inseminate 100pc of the heifers in the program and can achieve good results at a fairly reasonable cost," he said.

● **Lower doses of progesterone increase synchronisation success:** Cue-Mate is the only progesterone-releasing device with detachable silicone pods. This means lower progesterone doses can be delivered to Brahman heifers, enhancing the success of the synchronisation.

The Cue-Mate devices are easy to use and very cost effective because the durable wishbone allows for reuse up to three times in heifer AI programs and replacement pods are readily available.

Visit www.farmadvisor.com.au/product/bosynch

Fixed-time AI is hailed for high synchronisation rates and genetically superior calves.

Bayer joins with breeding centre

Maximising genetic potential

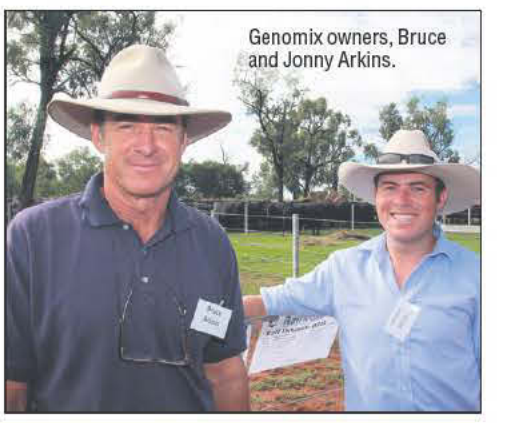
BAYER has teamed up with Darling Downs-based artificial breeding centre Genomix to maximise the performance of Australia's beef herds.

Genomix owners, Bruce and Jonny Arkins, use and promote Bayer products because of exceptional results from Bayer fertility regulators in clients' FTAI programs. The Bayer BoSynch/ FTAI program includes inserting a flexible progesterone-releasing device Cue-Mate, which synchronises ovulation and allows females to be inseminated without oestrus detection.

Studies by Bayer have shown that by employing ovulation synchronisation, FTAI and exposure to bulls, up to 78 percent of Bos Indicus heifers and 86.7pc of Bos Taurus heifers were able to conceive within the first two oestrous cycles of the mating season (more in main story left).

"The beauty of the Bayer BoSynch program is that we can arrive at a property at a designated time, AI every female in the program and leave the same day, without the need for time consuming heat detection," Mr Arkins said. "By using fixed-time AI we're getting exceptionally high synchronisation rates and we are very happy with the results. We're here to support our clients from start to finish and we love hearing success stories and seeing all those new genetically superior calves on the ground."

Visit www.farmadvisor.com.au/product/bosynch



Genomix owners, Bruce and Jonny Arkins.