

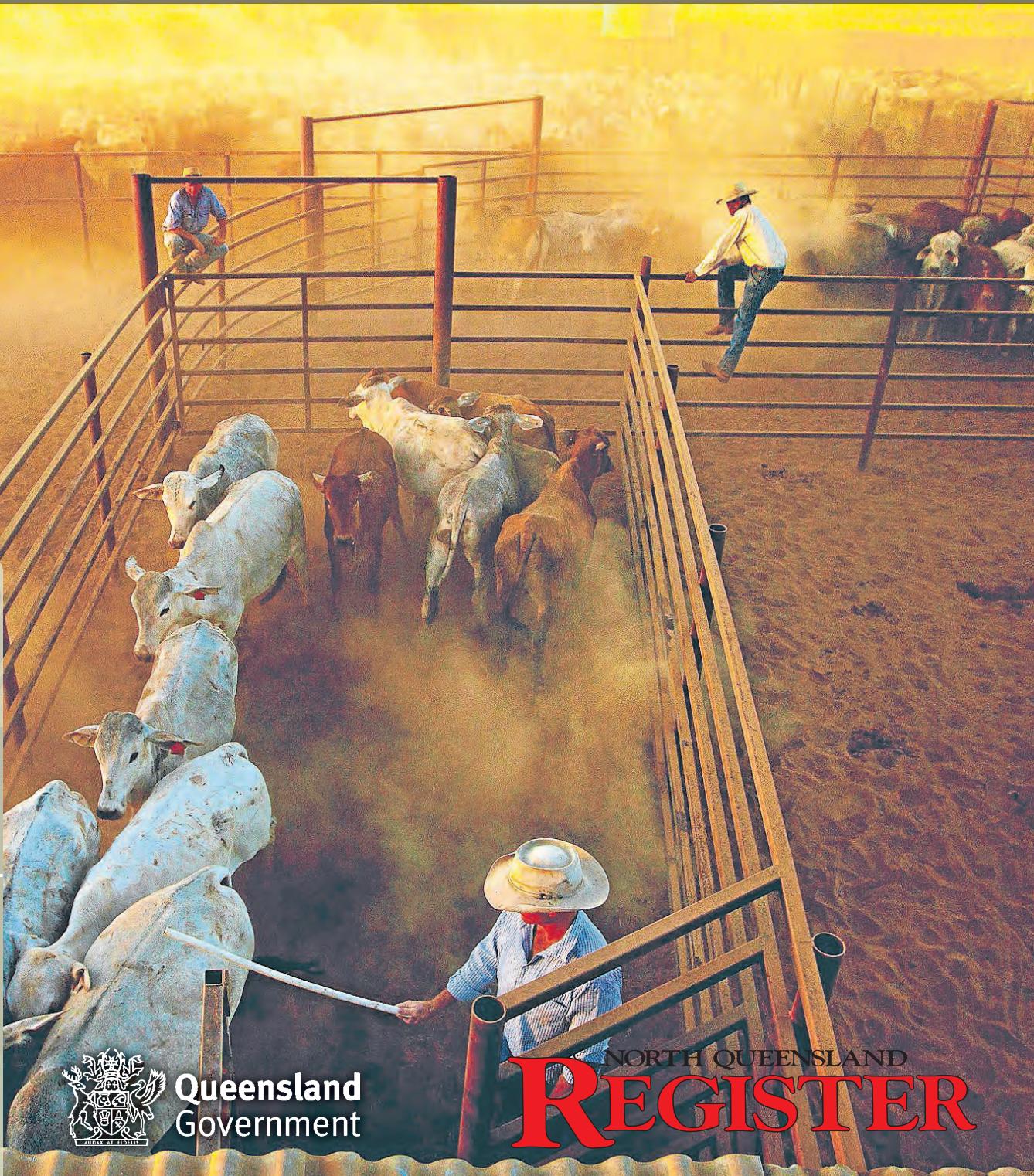
Northern muster

Information for rural business in North Queensland

In this edition

Market report	16
Digital soil mapping	17
Reproductive performance	18
Weighing cattle	19
Estimating pasture yield	20
Climate clever beef	21
Cash Cow info days	22
MSA Optimisation	23
Clermont Challenge	24
Drilling for water	25
Rehabilitating land	26

Issue 37 April 2015



more give, less take

agribusiness

For our farmers, it's more than a business, it's a way of life.

We see the value in long-term relationships, and we're committed to agribusiness today and into the future. With more local Agribusiness Managers on the ground, living in our farming communities, there's always someone to help you navigate the daily business challenges and realise the opportunities.

Talk to Geoff Howard on 0429 001 911 or Darren Kuhl on 0477 726 492 today.

nab.com.au/agribusiness



Market report

OUR Christmas 2014 market report quoted rising cattle prices and the new year has seen further price improvements. The best bullocks at our North Queensland export abattoir reached \$4.55/kg dressed weight and live export money was up to \$2.45/kg live delivered to Townsville or Charters Towers.

The good prices peaked in early February and the rush of cattle into our saleyards, AuctionsPlus and direct consignment has since caused prices to ease back. Best bullock prices at southern works have gone well over the \$5/kg mark, with organic, PCAS and MSA-graded cattle leading the way.

The wet season, as of late February, has again been disappointing across a lot of North Queensland, with a late start to any storms and patchy rain only across many districts. The northern dry tropics during the early part of the year had very little pasture bulk with the poor rainfall totals. The lack of widespread rain has meant this growing season is going to be the third failure in a row for a lot of properties. The fundamentals of our beef market are still strong – the value of the Australian dollar, and demand from domestic and export end users. However, another poor summer growing season will see an oversupply of cattle putting downwards pressure on prices going into autumn and winter.

AUSTRALIAN BEEF PRODUCTION

There has been record beef production in Australia throughout 2014, with an estimated 2.55 million tonnes of beef produced from 9.23m head processed.

Figure 1 shows the breakdown of how the states performed, with Queensland leading the way. The total value of our export meat sales in 2014 reached a record \$7.79 billion, with 1.287 million tonnes exported. Leading the way was the US, which took 397,889t, valued at \$2.43b. Figure 2 shows the other major players in the Australian export meat sales in 2014.

Live export numbers for 2014 were also at record highs with 1,294,000 head exported. Indonesia was by far our most important destination, taking 730,000 head, followed by Vietnam (181,000 head), Malaysia (54,000 head) and Philippines (28,800 head). Darwin again was the busiest live export port, shipping 541,000 head, followed by Townsville (247,000 head). Again, Australia is heavily reliant on its northern neighbours, as Asia accounted for 87 per cent of live export sales.

FEEDLOT SECTOR

In the December 2014 quarter, Australia had record numbers of cattle (about 965,000 head) in feedlots. This was no doubt due to the ongoing drought conditions experienced across eastern Australia. Feedlot turnover numbers for 2014 were up to a total of 2.7m head.

Queensland led the way, turning off 1,580,000 head, NSW 783,000 head and Victoria 60,000 head. Our 2014 feedlot beef exports totalled 230,600t, with the leading market, Japan, buying 130,600t, followed by Korea (32,600t) and the EU (16,400t).

There has been a lot of comment from Australian market analysts on cattle numbers available for slaughter and live export over the coming year. There is no doubt, with about 10m head sold per year over the past two drought years, there have been some serious inroads into cattle numbers. Dry conditions will also impact on branding rates across the northern dry tropics for some time yet. Add to this the large number of productive breeders slaughtered over this time period

Qld leads way with record beef production

Cattle prices keep heading upwards

Australian beef production 2014	
Queensland	1.21 million tonnes
New South Wales	552,000 tonnes
Victoria	494,000 tonnes
South Australia	126,000 tonnes
Western Australia	108,000 tonnes
Tasmania	66,000 tonnes

Figure 1.

and potentially there may not be the numbers to meet expected domestic and export markets.

On the other side of the fence, we have a northern beef industry in crisis, with the ongoing cost-price squeeze eliminating any profitable production for many years, leaving many beef businesses with large debt and low equity levels. Lower cattle numbers across the north will lift individual animal productivity. If a reasonable growing season or two are experienced, with better management and continued decent prices, profitability may sneak back into northern beef properties.

The domestic beef retail marketplace over the past year has seen the usual figures for sales share.

Woolworths claimed about 32pc of beef sales, followed by Coles (about 25pc), independent butchers (22pc), IGA (8.5pc) and the big improver Aldi (8.2pc). Aldi now has 350 stores across Australia and an estimated 10pc share of national grocery sales.

Approximate average retail prices per kilogram in 2014 for Australian domestic protein sales were pork \$11.29, lamb \$11.25, beef \$10.36 and chicken \$8.26.

Online retail sales continue to grow in Australia, with an estimated \$16.2b in sales last year. Department stores receive 34pc of sales, followed by homewares and appliances 17pc, and groceries and liquor 15pc.

AUS-MEAT LANGUAGE

A review is being conducted into the Aus-Meat language that has been used in the beef industry since the 1970s. Carcase descriptors such as dentition and butt shape are in the firing line, as there is now excellent MSA technology to determine eating quality. It is hoped the white paper being prepared will get processor and producer support. This should allow new technology to



Australian Export Meat Sales 2014		
Country	Total tonnes exported	Value (\$AUD)
USA	397,889	\$2.43 billion
Japan	293,778	\$1.65 billion
Korea	150,918	\$945 million
China	124,585	\$660 million
Middle East	59,717	\$374 million
Indonesia	53,140	\$280 million
European Union	24,524	\$279 million
Philippines	34,400	-
Canada	33,000	-

Figure 2.

be introduced to improve our supply chain overall by better meeting consumer requirements. It would also provide meaningful feedback and payment systems to producers that reflect the product's usefulness.

CHINA

An interesting trend in China meat sales is that 29pc of Australian sales into this market have been bone in beef or carcase form. This, no doubt, was to take advantage of the lower Chinese labour costs.

US

The good news from the most important 2014 customer is that projected US domestic beef production is forecasted to fall 3.2pc in 2015 to about 10.77mt.

It is hoped this will equate to continued good demand and prices for Australian beef into 2015.

Although market analysts early in 2015 reported in the US there had been quite a big downwards trend in beef prices, especially for imported 90CL manufacturing beef. A positive trend is the increased demand for pasture-fed or beef produced off grass in restaurants and the fast-food segment. This can only be positive for Australian beef-export sales, with our PCAS production gaining momentum and JBS also running with a pasture-fed product from its southern Australian

works. For the past 20 years, chicken production in the US (17.8mt last year) has led beef-production totals, and in 2014 pork production also overtook beef with 10.9mt produced.

Australia's single biggest beef customer, McDonald's, has just reported a poor trading year worldwide with sales and profits down for their estimated 36,000 stores. No doubt as the world's leading food service provider, they will adapt products and marketing to turn this decline about.

INDONESIA

With a new government in place, there is again a big push for livestock self-sufficiency. This has immediately seen restrictions on some boxed beef lines and offal, except tongue and tail. Australia's first-quarter live export quota of 98,000 head is also down 30pc on the numbers allowed for the same period in 2014. Boxed beef and offal sales into Indonesia totalled 74,900t last year. Australia's most important offal market is Japan, then Korea, Hong Kong and Indonesia.

Bernie English
DAF FutureBeef Team, Mareeba
0427 146 063

Greg Brown
Atherton



SOCIAL MEDIA REVOLUTION

DID you know that in Australia there are 13.8 million Facebook users and 2.8 million Twitter users? YouTube receives 13.5 million unique Australian visitors per month, and worldwide 300 hours of video are uploaded to YouTube every minute. FutureBeef has joined the Facebook, Twitter and YouTube phenomenon because social media provides great opportunities to reach a very wide audience.

So come on and connect with our 1000-plus Facebook likers, our 2000-plus Twitter followers and the 18,500 people who have viewed one of our FutureBeefAU YouTube channel videos.

Let's help our industry grow through sharing information and creating awareness. Pop over to the home page of our FutureBeef website (www.FutureBeef.com.au) and click the relevant icons to join the conversation today.

Specialising in custom yards and working areas which optimise operator safety, animal welfare and stock flow



We're coming to 8 See us at site S129

BEEF AUSTRALIA 2015

ROCKHAMPTON

1300 655 383

www.proway.com.au

ProWay Livestock Equipment

"The choice of livestock professionals"



Expo kicks off busy beef industry calendar for 2015

WELCOME to the first issue of the *Northern muster* for 2015. This year is shaping up to be another big one for the northern beef industry with a number of great events planned. This year's events kicked off with the inaugural Northern Beef Producer Expo in Charters Towers on March 6.

The event attracted more than 300 people with its focus on innovation and technology for northern beef producers. Beef Australia 2015, in Rockhampton in May, is set to be a premier event showcasing all facets of the Australian beef industry. Also from May 27-28, the Rotary FNQ Field Days will be held on the Atherton Tableland.

Other events to look out for in 2015 include:

- Richmond Field Days, June 12-13.
- Developing Northern Australia Conference in Townsville, July 20-22 (www.northaustralia.org.au).

- Digital Rural Futures Conference in Rockhampton, August 18-21 (www.ran.edu.au/conference).
- Tropical Agriculture Conference 2015 in Brisbane, November 16-18 (www.tropagconference.com.au).

The Australian livestock export industry continues to wait for a breakthrough in the live cattle deal with China. Details are still to be finalised around a health protocol and import arrangements.

It is hoped that an announcement may occur in the not too distant future with the size of the trade unknown until final details and requirements are confirmed.

A reminder for those in drought-declared regions that all fodder freight and emergency water infrastructure rebate claim forms must be submitted within six months of the date of purchase. Assistance for drought-hit producers is still available under the Drought Relief Assistance Scheme.

The \$13 million provided by the federal government as the top up for the emergency water infrastructure rebate has now been fully allocated. Applications will continue to be eligible to receive the Queensland government rebate of up to 50 per cent. Contact your local DAF officer or 13 25 23 for further information.

To register to receive the online version of the *Northern muster*, subscribe on the FutureBeef website (www.futurebeef.com.au/resources/newsletters/) or by sending us an email northernmuster@daf.qld.gov.au.

We hope you enjoy this issue and please contact the editorial team with any inquiries or feedback.

Jo Robertson, Melissa Holzwart and Melissa Frazer
FutureBeef team
Northern muster editors



Sampling and describing soils at Spyglass research facility.



Spyglass eyes key to managing soils

Digital soil mapping

THE Spyglass Beef Research Facility was purchased to conduct world-class research, development and extension for tropical and subtropical beef production. It had been 40 years since the Queensland government last transformed a grazing property into a beef cattle research facility. Spyglass spans 38,221 hectares of typical beef producing country, with a carrying capacity of about 4000 adult equivalents.

The facility has aimed to generate good quality soil and land resource information, including soil maps. A land resource assessment on Spyglass will enable researchers and facility staff to optimise the layout of fencing, laneways, water points and paddocks. This information is also critical for experimental designs of future research trials and data obtained will provide valuable knowledge for surrounding properties.

There are two components to this survey work – traditional soil mapping and innovative digital soil mapping, which will supplement the traditional mapping. The traditional survey involves mapping soil types and creating a soil map for the entire property.

For grazing activities, mapping soils at a scale of 1:50,000 is considered appropriate. At this scale the minimum soil unit that can be defined is 5 hectares, with a minimum mapping feature width of 150m.

Digital soil mapping can be used to predict soil attributes from soil measurements and other spatial information such as digital elevation models, geophysical data and satellite imagery. This field of soil science has moved from being merely theoretical in the 1990s to now being an operational and functional branch of soil survey. The soil attributes relevant to grazing and animal research that are being mapped include soil wetness, depth, rockiness, pH and nutrients (e.g. phosphorus, potassium, nitrogen and organic carbon) and surface characteristics (e.g. texture, structure and surface condition). These attributes are modelled on a 100m × 100m grid size and produced at fixed depths down to 2m across the entire property.

There are 142 soil sites described and/or sampled on Spyglass to date. The major soils of each land type will be fully characterised for extension materials. This project links with pasture work at Spyglass where soil moisture, rainfall and pasture yield are being measured on different land types. These research projects will allow for the development of more accurate carrying capacity and land capability maps across the property.

Contact Ben Harms, senior land resources officer, Department of Science, Information Technology and Innovation ben.harms@dsitiia.qld.gov.au



DISCLAIMER

THE Queensland Government shall not be liable for technical or other errors or omissions contained herein. To the extent permitted by law, the reader/user accepts all risks and responsibility for losses, damages, costs and other consequences resulting directly or indirectly from using the information contained herein.

Advertisements included in this edition were accepted on the understanding that they complied with the relevant provisions of the Competition and Consumer Act and with the Australian Association of National Advertisers Code of Practice. No endorsement by the Department of Agriculture, Fisheries and Forestry is intended or implied by the advertisement of any product in the *Northern muster*.

Species compete

Growth of 3P grasses impacted where couch dominates

Indian couch

GRAZIERS and extension staff have been reporting a large expansion of Indian couch across the basalt land types for some time. However, up until recently there was no quantitative data to confirm this. That is no longer the case.

A survey of 16 QGraze sites on basalt soils was conducted in April and May 2014. The QGraze rangeland monitoring program was initiated in Queensland in 1991 to track soil and vegetation condition on grazed landscapes and 445 sites were established across the state; 70 are in the Dalrymple region. The historical data from this program has been invaluable to test the veracity of grazier and extension staff reports.

Frequency (presence or absence of a species within the quadrat), ground cover and plant counts were the key measurements recorded. One hundred quadrats were assessed at each QGraze site. This data has been compared with the 1995 data and the results are quite startling.

While Indian couch had been reported as being present in areas of the basalt in 1995, none was recorded at any of the 16 QGraze sites. In 2014 Indian couch was present at all 16 sites with an average frequency of 74 per cent.

There was more than 80pc frequency at seven sites. Over one third of the ground cover was Indian couch at the time of survey. This is a large amount of stoloniferous grass (runner), to have in what had been a tussock dominated pasture.

There appears to be an important threshold of 60-80pc Indian couch frequency. When Indian couch reaches this level there is a marked decline in the presence and density of the 3P (perennial, palatable, productive) species.

This could indicate that management changes need



While Indian couch had been reported as present in areas of the basalt in 1995, none was recorded at any of the 16 QGraze sites. In 2014 Indian couch was present at all 16 sites with an average frequency of 74 per cent.

to be implemented before this level is reached so that pastures do not become Indian couch dominated.

Graziers reported numerous factors that appear important in the expansion of Indian couch. They noted that it first established in the more disturbed areas such as roadsides and around troughs and lick tubs, and then progressed into the more heavily grazed patches.

There were numerous references to the fact that Indian couch appeared in country that had been burnt but not rested from grazing and that it appeared following drought.

All of these observations suggest that weakened 3P plants leave holes in the pasture and these patches are vulnerable to invasion by Indian couch. Graziers are now reporting Indian couch recruiting in areas that are only very lightly grazed but are bare in the inter-tussock areas. Indian couch has competitive advantages over native 3Ps.

These include the production of large quantities of seed, the ability to spread via stolons (runners), very effective use of nutrients and light falls of rain, and

extremely good adaptation to heavy grazing.

It was interesting to note that, of the 16 sites, the site with both the highest cover of Indian couch and the site with the lowest cover of Indian couch were both on small black soil plains that were within larger red and brown basalt paddocks.

Both these areas are subjected to heavy preferential grazing. The difference between the two appears to be time. Indian couch was first recorded at the high cover site in 1997 while 2014 is the first recording at the low Indian couch cover site.

There appear to be several factors important to the expansion of Indian couch: presence of a seed source, disturbed ground for initial recruitment, drought, and grazing-weakened 3P plants that are then unable to compete for space with the aggressive invader. This can then become a cycle of decreasing 3Ps and a continuing increase in Indian couch.

Raymond Stacey
Co-ordinator, Dalrymple Landcare Committee Inc
Charters Towers
(07) 4761 5150



A fresh new way to do YOUR RURAL BUSINESS

SERVICE WITH A SMILE FOR THE NORTH WEST!

Contact our friendly team in Hughenden

Steve will be happy to help you!

TOWNSVILLE

Phone (07) 4779 8799 | 83-385 Woolcock St
(Next To Zoo Health & Fitness)

HUGHENDEN

Phone (07) 4741 1974
23-27 Stansfield St



STEVE HEFFERNAN
Branch Manager

NORTHERN RURAL GROUP
A RURALCO BUSINESS

Pregnancy performance

Tips on improving reproductive outcomes in northern beef herds

Reproductive performance 101'

WHAT IS THE BEST WAY TO IMPROVE A HERD'S PREGNANCY RATE?

There are a lot of reasons why females don't conceive. However, the most influential factor is body condition score at calving. Cows should score three or better to ensure they cycle again six to eight weeks after calving.

WHY THE EMPHASIS ON THE PERFORMANCE OF YOUNG BREEDERS?

Irrespective of where you operate in Australia, the biggest challenge is to get good conception rates in first lactation cows. These breeders are trying to lactate and raise a calf while cutting teeth and growing. The more you look after them and lift their productivity the more you will improve your herd's performance.

WHAT MIGHT CAUSE LOWER THAN EXPECTED WEANING RATES?

Lots of things, but the most important step is to pregnancy test (with foetal ageing) to determine when losses occur. After determining 'when', you can focus on 'why'. If you don't pregnancy



MLA's animal production research co-ordinator Geoff Niethe says 'irrespective of where you operate in Australia, the biggest challenge is to get good conception rates in first lactation cows'.

test then you don't know if the problem is a failure to conceive, early abortion or losses after pregnancy diagnosis:

Losses after pregnancy diagnosis can be due to abortion and, if this is the case, these dry cows (not lactating) will usually be in better condition than those that lost a calf after calving. Collect blood samples to test for leptospirosis,

pestivirus, vibrio, neospora, etc. If the losses occur after calving (most losses normally occur within the first few days) then try stripping some milk (take care) from the teats. Cows that have started to milk will usually still have thin, watery secretions. The more it looks like milk the more recent the loss.

If foetal ageing was done and individual records kept, work backwards to determine when the losses may have occurred. Floods, heatwaves, out-of-season calving, mustering events, or cold, wet snaps may have coincided with losses. Dog bites and injuries will indicate that wild dogs were an issue.

If the losses occurred after branding then a simple count of calves and check of castration and dehorning details may point to problems with husbandry techniques and a lack of 5-in-1 vaccinations.

WHY FOETAL AGE?

Foetal ageing doesn't just determine if a female is pregnant, it also determines how long for. Enterprises that can't implement short joining periods because of seasonal variation or lack of bull control, can lift productivity and profitability by segregating their breeders according to when they will calve.

It reduces supplementation costs, mustering costs and calf losses, as no breeders are mustered around calving time.

It is a great tool to put selection pressure for fertility on maiden heifers and it provides additional valuable information as to the

causes of poor reproductive performance.

WHEN IS THE BEST TIME TO CALVE?

It depends on property location and the target market for weaners. For the best reproductive results calving should occur six to eight weeks before the 'green date' – generally defined as the number of days after October 1 to achieve a 70 per cent chance of receiving 50mm of rain over a week.

If your 'green date' is December 31 then your first calves should drop in the first week of November. Ideally, mating should start three months later (i.e. February 1). However, maximum reproductive performance does not always equate to maximum profitability. Many producers opt for earlier joining dates to synchronise with their target markets.

WHEN ARE HEIFERS READY TO JOIN?

Heifers need to have reached their critical mating weight (weight at which 84pc of them will conceive in six weeks). Unfortunately, it varies between and within breeds and has not been determined for Brahmans in northern Australia. However, it will be higher than the 334kg average weight at puberty (calculated from Beef CRC data).

Age and weight at puberty is highly heritable and rapid genetic improvement can be made in this area. If reproductive performance is an issue over-mate your heifers and select those (with consideration to temperament) that became pregnant in the first two cycles of joining. The results may surprise you as some of the younger, smaller heifers may be in the chosen replacements.

WHY IS IDENTIFYING EARLY CONCEIVERS IMPORTANT?

Heifers that conceive at the 'right' time first up have the best chance of getting back in calf the following year. If you simply put no pressure on your heifers and join for four months without foetal ageing then, on the surface, a pregnancy rate of 90pc may appear to be a good result.

But what chance do those heifers have of getting back in calf if they only conceived at the end of the joining period?

Animals that conceive early are valuable because the age of puberty is highly heritable and is linked to lifetime reproductive performance. If you are breeding your own bulls, and fertility is of the utmost importance, then you only want to keep potential sires out of cows that re-conceived early and have produced a calf every year.

What can be done to ensure heifers are ready to join at the start of the wet season?

Plan ahead. Just don't put them back in

the paddock and forget about them – they are future performers in your team.

If you are in an acutely phosphorous-deficient region give P supplementation during the wet season the year before as this will lift growth rates by 40-60kg. Growth rates can also be boosted by reducing stocking rates and/or supplementing with protein meal prior to joining.

Is there any advantage to mating heifers earlier than the main herd?

Rather than mating them with the main herd you could put the bulls with them a month earlier. This group is under the most nutritional stress because they are still growing and this practice gives them more of a chance to get back in calf the following year. However, it also means that you have to achieve your target weights an extra month earlier than the green date, and this may not be feasible or cost effective in many environments.

HOW DO YOU DECIDE IF YEARLING MATING IS AN OPTION?

While yearling mating is usually the single biggest management practice a producer can use to lift profitability it is not an option for everyone.

Firstly, your country needs to be able to achieve growth rates of more than 150kg/year regularly and weaning weights of more than 240kg, otherwise the feed inputs are too expensive and re-conception rates are often low if supplemental feed is not continued.

The risk of dystocia (calving difficulties) also increases, the younger the heifer is.

HOW CAN MANAGEMENT OR SELECTION OF BULLS IMPROVE A HERD'S PERFORMANCE?

Bulls have the biggest genetic impact on a herd and it is through bull selection you can fast track your herd's genetic improvement.

To improve herd fertility buy bulls with above breed average estimated breeding values for reproduction (days-to-calving and scrotal circumference) and make sure they come with a bull breeding soundness examination (BBSE) certificate. Before putting bulls out, conduct a BBSE.

Reproductive efficiency: www.futurebeef.com.au
Weaner management in northern beef herds: www.mla.com.au/weanermanual
Heifer management in northern beef herds: www.mla.com.au/heifermanual

Geoff Niethe
Veterinarian, consultant and Meat & Livestock Australia's animal production research co-ordinator
g.niethe@bigpond.com



WATER TROUGH



HEAVY STEEL CONSTRUCTION FULLY HOT DIPPED GALVANIZED

Designed by cattlemen

- Standard troughs are flat bottom or half round
- Lengths from 3 meters to 9 meters
- Standard sizes 600mm wide x 300mm deep
1200mm wide x 400mm deep
- Special sizes can be discussed
- Without doubt the best available
- Over 6,000 in service

Doug: (07) 3489 1578 - Email: dougedden@optusnet.com.au
BEND-WORX PTY LTD WACOL BRISBANE

A FRESH NEW WAY TO DO YOUR RURAL BUSINESS



GEORGE WATKIN
Mobile : 0419 728 814
Email : georgewatkin@ruralco.com.au



JODIE STOCKHAM
Mobile : 0428 398 020
Email : jstockham@ruralco.com.au



TOWNSVILLE

Phone (07) 4779 8799
383-385 Woolcock St
(Next To Zoo Health & Fitness)

HUGHENDEN

Phone (07) 4741 1974
23-27 Stansfield St

Weighing cattle

HOW much attention do you pay to how you weigh your cattle? We know how important liveweight gain is to profit in the beef business.

When monitoring liveweight gain, we need to be aware that how cattle are weighed can affect the reliability and accuracy of records produced.

As seen in the graph, if a 500kg steer is mustered in from the paddock and kept on dry curfew (i.e. locked off feed and water) he will start to lose weight in the form of water, mainly through urination, defecation and breathing. Past research has shown that on a dry curfew, under comfortable conditions, cattle lose 0.3 per cent of their live weight per hour. Therefore, if this steer is kept under a dry curfew for 10 hours, losing weight at a rate of 0.3pc/hour, the steer will lose a total of 15kg. After being yarded and held under a dry curfew for 20 hours, the steer will lose 30kg.

Though often used interchangeably, the words accuracy and precision have different meanings. The graph emphasises that we can be as precise as we want, for example by using highly precise scales to record liveweights to the closest 100 grams. However, in reality there is no point having precise liveweight measurement without accurate liveweight measurement. Accurate liveweight measurement means having scales set up and zeroed correctly and knowing that the cattle being weighed are representative of their actual weight (e.g. not having lost a great quantity of weight through water as described above). As the saying goes, "it is better to be roughly right than exactly wrong". But how is this relevant to your business? Let us use an example on monitoring the liveweight gain of steers:

On the first muster, 100 steers were weighed with little delay after mustering, with our example steer weighing 300kg. At this weighing, the 100 steers had a relatively full digestive tract (most of this being water), given that they had not long been off feed and water.

A month later, the same mob of steers was mustered in by 5pm on the day prior to weighing day. When our same example steer was weighed at 7am the following day, he was 314kg. However, the steer had lost around 13kg in gut fill overnight by that time. That is a loss of 0.3pc of his liveweight per hour as the steer was locked off feed and water (i.e. dry curfew).

If the overnight weight loss was not taken into consideration, the steer's weight gain between muster one and muster two would be calculated as 314 - 300 = 14kg. However, this is not a fair representation of the actual growth of the steer over that time due to the variation in the weighing protocols between musters, and the loss in live weight at the second muster due to the overnight dry curfew.

For a more accurate representation of how much weight the steer had actually gained (e.g. in muscle mass, fat and other tissues), the second weight may be adjusted up to what the steer would weigh if it were full (as it was at the time of the first muster) using the rate of 0.3pc weight loss per hour for 14 hours:

$$314 \text{ kg} \times 0.3/100 \text{ per hour} \times 14 \text{ hours} = 13\text{kg loss}$$

The adjusted weight would be $314 + 13\text{kg} = 327\text{kg}$.

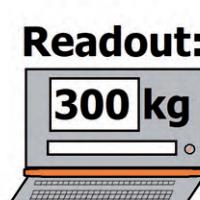
So a more accurate representation of the steer's liveweight gain is $327\text{kg} - 300\text{kg} = 27\text{kg}$

This is 13kg more than the previous calculation. Over 100 steers this equates to 1300kg of liveweight gain that we were unaware of due to not taking

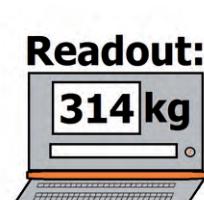
Weighing up issues around liveweights

Multiple factors at play in arriving at accurate readings

Muster 1.



Muster 2.



Past research has shown that on a dry curfew under comfortable conditions, cattle lose 0.3 per cent of their live weight per hour. Therefore, after being yarded and held under a dry curfew for 20 hours, this steer will lose 30kg.

Situation	Adjustment factor	Adjustment factor details and exceptions
Cattle mustered in and weighed after feeding and drinking	0	Weight correct for full gut
Cattle mustered in and weighed in the morning, before drinking (as cattle routinely move to water after sunrise)	Add 1.5%	In situations where it is known that cattle haven't drunk for 24 hours, adjustment factor can be up to 10%
Dry curfew	Add 0.3% per hour of fasting (as per steer example)	In cool weather, this rate is around 0.15%
Wet curfew	Add 0.06% per hour	If water intake is noticeably low (as may happen if cattle not accustomed to new or unfavourable water source), this rate needs to be increased up to 0.25% per hour

Guidelines adapted from weighing protocol research by Fordyce et al. 2008.

weighing protocol into account. It is easy to see that across large mobs, accuracy of live weight records are important, given how the information may be used when making management and financial decisions in the business.

If the mustering and weighing schedule was consistent (for example, if steers were mustered in the morning and weighed soon after for each muster) the information generated from a sound set of zeroed scales would be both precise and accurate.

Mustering in and leaving cattle on water overnight (i.e. wet curfew) may be a more suitable way to keep a consistent weighing protocol for some businesses.

Weighing cattle and having a consistent weighing protocol is not only important in monitoring overall herd progress and identifying the low and high performing animals. It is also important when it

comes to sale time, to gain a more accurate idea of what cattle will weigh after a night on curfew in the saleyards or when calculating what the next cheque from the meatworks may be.

The following example demonstrates how adjustments may be used if consistent weighing protocols between musters are not possible.

If consistent weighing protocol is not possible then the adjustment factors provided in the table may be used.

It is recommended that if cattle are not mustered in directly after feeding and watering that their weights should be adjusted upwards by a factor depending on the circumstances described in the table.

When planning to keep a weighing protocol consistent between musters, if possible, cattle should be mustered in and weighed at around the same time of the day.

This is to account for the fact that cattle, being creatures of routine, have similar feeding and watering patterns from day to day and, therefore, will have a similar amount of gut fill at a certain time of day.

A high stress level in cattle will lead to a greater loss in liveweight. Good practices to reduce stress include avoiding over or under-crowding (making it difficult for animals to balance) during trucking and avoiding mixing animals with strangers, which disturbs their social dynamics.

Not surprisingly, working cattle in cooler weather means less weight loss (i.e. reduced water loss from animals) as described in the table.

Jarud Muller
DAF scientist (animal production)
Charters Towers, Spyglass Research Facility
(07) 4761 5110, (07) 4091 8184
jarud.muller@daf.qld.gov.au



Anipro...for Animal Production



For further information please Freecall Performance Feeds: 1800 300 593 or www.performancefeeds.com.au

Your Local Anipro Distributor:

George Booth

Booth Pastoral Services

Far North Queensland

07 4725 3111

Mob: 0427 790 965

Or your Territory Manager:

For Central & North QLD

Doug Pollock: 0488 677 883



Anipro
Liquid Supplements

 **PERFORMANCE FEEDS**

Forage budget: It's simple with Stocktake



Estimating pasture yield

A KEY grazing management recommendation is for graziers to adjust cattle numbers in line with available grass at the end of the wet season to carry their stock through the long dry. This also allows graziers to plan to end the dry season with sufficient pasture cover to promote infiltration of rainfall over the next wet season.

Other aims are to ensure animals do not run out of feed and to avoid both overgrazing paddocks and spending money on supplements that would not otherwise have been needed. In good seasons there may be more than enough forage – in this case extra stock may be purchased or agisted to use the additional pasture. So what's the best way to do this? By undertaking a forage budget.

Undertaking a forage budget is simple:

- **Step 1** involves visually estimating pasture yield using photo standards.
- **Step 2** involves calculating available pasture and feed demands per hectare to work out how many stock can be carried and for how long. This can be done easily using the Stocktake program, which is now also available as an app for smart devices.
- **Step 3** involves making a management decision on whether stock numbers need to be adjusted and how this will be done.

With a little training and the use of pasture yield photo standards, visual assessments can be straightforward. But how accurate are they? Are they affected by land type? And how much do operators vary in their yield assessment of the same site?

These are not just research questions – they have a major impact on the stocking rate calculated by a forage budget so have an impact on animal production, profitability and land condition. To answer these questions an experiment was conducted in October 2014 at Wambiana Grazing Trial, near Charters Towers.

Twenty-seven sites were chosen, covering a wide range of pasture yields (75 to 5300kg DM/ha) and three land types.

Ten operators with experience in visually estimating pasture yield, individually estimated pasture yield at each site with the aid of photo standards.

Visual estimates were compared to actual yields determined at each site by cutting, drying and weighing.

The study revealed insights into the process of visual yield assessments.

ABOVE: Operators visually estimating pasture yield using pasture yield photo standards.

As expected, yield estimates varied between operators, with some large variations at some sites.

This is a concern but the variability could be reduced a lot through training and an improved set of pasture photo standards.

Land type did not play a role or influence the accuracy of visually estimating pasture yield. There was a tendency for operators to overestimate the amount of forage present when actual yields were low (< 1000kg DM/ha) but beyond this amount operators tended to underestimate yield as actual yield increased.

As examples, one low site with actual yield of 550kg DM/ha was visually assessed by operators on average as 1100kg DM/ha and one high site with actual yield of 3600kg DM/ha was visually assessed on average as 2600kg DM/ha.

The implications of these findings include the risk of overstocking when forage budgets are made for paddocks with lower yielding pastures and under-utilising feed when available forage is plentiful.

The bottom line is that while some error can be associated with visual estimates of pasture yield, forage budgeting is the only practical way at present to estimate the short-term (dry season) stocking rate in large paddocks. However, stocking rates calculated from these estimates are only 'ballpark' figures, not highly accurate estimates of the exact number of stock a paddock can carry. Continuous monitoring of grazing during the budgeted period is required by graziers, and adjustments made accordingly.

The next stages of this research will involve a number of activities including: Improving the available pasture yield photo standards; developing guidelines to improve yield estimates in large, variable paddocks; and conducting a number of graze-out trials to 'road test' Stocktake forage budget estimates.

These will collectively contribute towards further development of the FutureBeef Stocktake Plus App technology (www.stocktakeplus.com.au). We welcome graziers to share their experiences in estimating pasture yields to make adjustments to stocking rates.

Nicole Spiegel
DAF scientist (grazing land management)
Charters Towers
(07) 4761 5150
nicole.spiegel@daf.qld.gov.au



SENEPOL BULLS FOR SALE



- No Horns,
No Hump No Hair
- Bred Locally
- Adapted for the
Northern Tropics
- 100% Docile

Bos Taurus

3 | 2 NOW FOR SALE

www.bulls4u.com.au Ph: 0428 829 666

AW1645905

Methane and the N factor

Nitrate under study as alternative to urea

Feed supplement research

RUMINANT methane emissions account for about 10 per cent of Australia's total greenhouse gas emissions. In 2012, Meat & Livestock Australia implemented the National Livestock Methane Program to develop a strategy to reduce methane emissions from livestock while boosting productivity.

One aspect of this program assesses the suitability of replacing urea supplements with nitrate to reduce emissions.

Projects led by the University of New England and Ridley AgriProducts are investigating this issue. This article summarises the information from these projects to date.

Nitrogen is often the primary limiting nutrient in the low quality tropical forages of northern Australia. Sufficient dietary nitrogen is required to promote rumen microbe growth, microbial protein synthesis and rumen fermentation.

Consequently, it is common for graziers to supplement cattle with urea during the dry season to provide non-protein nitrogen in the diet. This increases pasture intake and therefore liveweight performance.

Although urea supplementation results in only small gains in cattle liveweight, it is a practical strategy that reduces productivity losses in the dry season.

Cattle grazing on low quality tropical pastures produce high amounts of methane as a result of digestion. Direct supplementation with starch or lipids, managing stock to encourage grazing on younger pastures and introducing legumes into the pasture are all good ways to improve diet quality – and productivity – while reducing methane production.

Adopting these strategies in intensive systems is feasible. However, implementing them in extensive north Australian systems requires significant capital investment and a fundamental change in current management practices.

Alternatively, is it practically and economically feasible to reduce methane emissions from ruminants by replacing supplementary urea with nitrate salts?

Several studies indicate that introducing nitrate into the rumen can:

- a) Take the place of urea by providing ammonia for microbial growth, and
- b) Reduce methane production by cattle by about 20-30 per cent.

Previous trials have largely studied the application of nitrate in sheep and dairy cattle. Until now there has been minimal investigation into using nitrate supplements in low digestibility diets of beef cattle.

Nitrate can be toxic to cattle. After it is eaten, nitrate is converted to nitrite which is then converted to ammonia. Rumen microbes use ammonia to make protein. In situations where excess nitrate is fed, accumulation of nitrite compounds exceeds the conversion rate of nitrite to ammonia.

This can lead to nitrite toxicity where excess nitrite is absorbed across the rumen wall into the blood where it reduces oxygen transport around the body. It is generally accepted that toxicity occurs when nitrate concentrations in the diet exceed 9g/kg of dry matter. The situation is more complex than this, however, as the following variables also influence the extent of toxicity:

- Rate of nitrate intake.
- Rate of feed digestion and the subsequent release of nitrates.
- Rate of conversion of nitrite to ammonia in the rumen.
- Rate at which nitrite passes through the rumen.
- Feed type and dietary composition.



Cattle licking nitrate blocks late 2014 dry season during a UNE supplement trial in NQ. – Source: Joseph Miller, UNE.

As well as the direct effects on cattle health, by reducing oxygen transport in the animal, excess dietary nitrate could affect the ability of cattle to walk long distances, affecting mustering, grazing and watering.

Sheep are more efficient than cattle at converting nitrite to ammonia and so are less likely to be susceptible to nitrite poisoning.

Studies show feeding a given dose of nitrate over two or more feeding events is less likely to have ill-effects than if the same dose of nitrate is fed in a single dose.

Further, feeding nitrate as part of a total mixed ration or pelleted grain diet or with oaten hay results in significantly lower concentrations of methaemoglobin than if single doses of nitrate are administered in isolation.

Incorporating grain concentrates into a diet supplemented with nitrate reduces the incidence of nitrate toxicity.

Higher digestibility diets have an increased conversion rate of nitrate and nitrite to ammonia so toxicity is less likely to occur. More research is needed to fully understand the effects of diet digestibility.

As molasses mixes and low-intake loose licks and blocks are the most commonly used delivery system for non-protein nitrogen supplements in northern Australia, it would be appropriate to feed nitrate the same way.

It is important to consider there is little control over the rate of nitrate intake in these free-choice situations and therefore a higher chance that some cattle may experience toxicity.

In feedlot situations, it is possible to more intensively manage nitrate intake, so tighter control can be exercised over the negative effects associated with higher levels of dietary nitrate.

The current research is likely to give a better indication as to whether nitrate is a safe and productive alternative to urea and if so, at what dosage.

Financial considerations ultimately drive many business decisions and in this case, nitrate salts are lower in nitrogen content than urea. Thus the daily feeding cost is likely to be significantly greater (about 2.5 times) than the current practice of feeding urea-based supplements without any expected improvement in animal productivity.

The return of feeding nitrate supplements needs to consider the price received for methane abatement under any approved feeding methodology that results from this research.

Further information: www.mla.com.au/research-and-development/environment-research/national-livestock-methane-program

Tom Callaghan
DAF, Toowoomba
Phone: (07) 4688 1231
thomas.callaghan@daf.qld.gov.au





Crunching the numbers

Northern Gulf project offers help from broad base of industry specialists

SavannaPlan-BeefSense

WITH a wet season that has so far been patchy at best, it is a good time for Northern Gulf producers to start assessing their options for the year ahead.

For many families the constant seasonal, debt and cost/price pressures can feel overwhelming. Trying to make cost-effective improvements when things are tough is not easy.

But, at the risk of messing up an old saying, 'if you want a different outcome, you have to first do something different to achieve that different outcome'. One way to start that change process is to take a good hard look at your books and broader financial situation to identify your options for change.

The next step is to then implement the selected options to really 'do something different' and achieve change.

Under \$avannaPlan-BeefSense the FutureBeef Team, Northern Gulf Resource Management Group, Southern Gulf Catchments and Agribusiness consultants Alison Larard and Ian MacLean have all joined forces to assist producers through this process.

As explained in previous editions of the Northern Muster, the teams approach to delivering \$avannaPlan-BeefSense ensures a thorough analysis of your operation. While many consultants can often



Ian Braithwaite runs a breeder management and preg testing forum at Alehvale (Croydon) in partnership with NGRMG and DAF. As with Ian's philosophy of balancing grass, calves and cash flow, \$avannaPlan-BeefSense is about improving pasture management, herd productivity and profitability.

only offer advice within their narrow field of expertise, \$avannaPlan-BeefSense has the luxury of accessing the knowledge of beef industry professionals experienced in the areas of financial, herd and grazing management components of northern cattle businesses.

A free service delivered on-property using an appropriate confidentiality agreement, \$avannaPlan-BeefSense includes all aspects of running a profitable

beef business ranging from breeder productivity and stocking rates through to cash flow budgeting, debt management and marketing.

With 18 months now under our belts, \$avannaPlan-BeefSense in the Northern Gulf has worked with 20 clients working 34 properties across 882,000 hectares and running 76,000 head of cattle.

This equates to about \$190 million in assets. Approximately \$77 million in debt is secured against these assets.

With equity levels for this group averaging around 60 per cent, it is little wonder that a considerable part of our time working with clients is involved in looking at options and strategies for dealing with debt.

With the interest bill generally being the biggest annual expense, clients have to do everything they can to save interest. We have also come across many families caught on high fixed interest rates.

Even if you think your interest rate is reasonably good, it is always worth checking by getting quotes from other lenders.

Also, relatively few people have secured a QRAA-administered concessional loan.

If you have not done so, it is worth checking your eligibility.

Take a look at the QRAA website (www.qraa.qld.gov.au) or call 1800 623 946.

There are many things we can assist you with under \$avannaPlan-BeefSense, so do not be shy to make contact and ask to be involved.

Recently, one client told us of his mother's response to the figures we had worked up. She said "this is what we have always needed; this is what has been missing".

Business analysis does not have to be daunting or involve dozens of hours spent crunching meaningless numbers. It is about trying to get a better understanding of your financial position and what this means for your future. Business analysis is even more valuable when fully integrated with practical herd and grazing management knowledge.

Our team has a genuine interest in the industry and the well-being and financial success of the people in it. If you are interested in being involved in \$avannaPlan-BeefSense please contact any member of the delivery team.

In the Northern Gulf you can call Alison Larard (0458 007 999), Bernie English (0427 146 063), Tim McGrath (0427 405 011), Joe Rolfe (0427 378412) or Andrew Taylor (0499 059 907). In the Southern Gulf you can contact Emma Hegarty (0467 808 340).

Joe Rolfe
FutureBeef team, Mareeba
0427 378 412
joe.rolfe@daf.qld.gov.au

Soil carbon content study reveals no significant differences between sites

Climate clever beef

OF THE greenhouse gas emissions produced by agricultural practices in Australia the beef industry contributes approximately 80 per cent, mostly in the form of methane from livestock.

The Climate Clever Beef (CCB) project, sponsored by the Federal Government's Carbon Farming Futures Program, set out 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 Climate Clever Beef project included trial beef enterprises throughout Queensland, as well as properties in the Victoria River District (VRD) and Barkly regions of the Northern Territory.

The trial properties in the Queensland Gulf included Blancourt (Georgetown), Greenhills (Georgetown), Oakleigh (Kidston), Karma Waters (Mitchell River) and Carrum (Julia Creek). The key messages from this project for the extensive beef industry include: Grazing land condition is likely to have an impact on soil carbon stocks in extensive grazing land. However,

Darcy Cowan and his family run Oakleigh Station near Kidston. The Cowans participated in the CCB project to identify the key factors impacting on both greenhouse gas emissions and profitability. Cross breeding, heifer management, stocking rates and wet season spelling are a priority on Oakleigh to lift breeder performance and annual liveweight gains.



preliminary studies indicate variable and sometimes counter-intuitive results.

A paddock assessment of soil carbon content was conducted in 2009 comparing land in 'good' versus 'poor' land condition on five important grazing land/soil types in the Northern Gulf and northern Burdekin regions. The study on each land type included 'paired' sites to examine the soil carbon relationship to good and poor land condition. Data across the five sites indicated no significant difference in soil carbon (0-5cm, 0-10cm and 0-30cm) between good and poor land condition, with the good land condition containing 24.8 t C/ha and the poor land containing

23.9 t C/ha (0-30cm).

2. A study on Karma Waters compared soil carbon accumulation under native pastures with soil carbon stocks under native pastures with stylos. Soil carbon was examined at depths of 0-10cm and 10-20cm. There was no significant differences in stored carbon (t/ha) between the two sites at either depth.

3. A study on Carrum compared carbon stocks under open Mitchell grass down to down country with prickly acacia. The prickly acacia was pulled in 2011. Soil carbon was examined at depths of 0-10cm and 10-20cm. There was no significant differences in stored carbon (t/ha) between the two sites at either depth.

4. It appears to be very difficult to influence soil carbon accumulation rates across our extensive grazing lands. Claiming soil carbon sequestration and subsequent income is subject to a detailed 'integrity' test and must:

- Go beyond normal practice
- Be measurable
- Be conservative
- Be based on peer review
- Be internationally consistent
- Avoid carbon leakage.

5. Based on herd and FarmGas modelling, the greenhouse gas emissions from a typical Gulf breeding enterprise range from 11.7t to 23t of carbon dioxide equivalents (CO₂e) to every tonne of liveweight sold off the property. Branding, growth and death rates are not only the key profit drivers of any breeding business but also directly influence greenhouse emission intensity.

The final CCB project report will be submitted to the federal government in April and will be made available on the FutureBeef website by June 2015 (www.futurebeef.com.au/resources/projects/climate-clever-beef/).

Joe Rolfe, Emma Hegarty and Bernie English
Far North and North-West FutureBeef team
Department of Agriculture and Fisheries
0427 378412, 0467 808 340, 0427 146 063

A FRESH NEW WAY TO DO YOUR RURAL BUSINESS



BRENT PEACOCK
Merchandise Sales Manager

TALK TO BRENT PEACOCK

- In-Paddock advice on Economical Livestock Health Programs
- Proven products with Reliable Supply
- NQ wide Reliable Freight Network
- Custom livestock nutrition programs

BRENT 0400 934 156



GEOFF BEAUMONT
Branch Manager

TALK TO GEOFF BEAUMONT

For reliable advice on all farm inputs backed up by excellent after sales service.

GEOFF 0400 870 611

Cash Cow info days

RECENT FutureBeef breeder production information days held at Narrien Station, Clermont, and the Emerald Agricultural College provided beef producers in central Queensland with an introduction to a process to better understand their breeder operation.

Leaders of MLA's Cash Cow project presented key findings from the research, which collected information on 78,000 cows across 72 properties in northern Australia over four years.

Cash Cow project team Dr Geoffry Fordyce (Queensland Alliance for Agriculture and Food Innovation, University of Queensland), Professor Michael McGowan (School of Veterinary Science, UQ) and David Smith (Department of Agriculture and Fisheries) discussed key factors influencing performance and production, and showed producers simple ways to assess the productivity and performance of their herd, and how to identify areas for improvement.

Michael started the day by providing an overview of the Cash Cow project. He explained that at the beginning, the Cash Cow project sought to answer two fundamental questions:

1. WHY DO SOME COWS BECOME PREGNANT QUICKLY AFTER CALVING WHILE OTHERS TAKE SIGNIFICANTLY LONGER, OR FAIL TO BECOME PREGNANT?

Michael explained that a practical measure of reproductive efficiency was the percentage of cows likely to wean a calf in consecutive years. He said this was often quoted as a 12-month inter-calving interval.

However, for a Bos Indicus cow to achieve a 12-month inter-calving interval with an approximate gestation length of 9.5 months, the cow must become pregnant within 2.5 months of calving.

Michael said that large beef-breeding studies conducted in the past showed that despite best management practices, only a very low percentage of cows in the northern Australian environment could achieve and maintain a 12 month inter-calving interval throughout the duration of their breeding life.

New measures of performance were developed through the Cash Cow project to determine the percentage of lactating cows that become pregnant within four months of calving. Michael said this was a measure of the proportion of cows likely to wean a calf in consecutive years.

Michael said the Cash Cow project found that one of the major factors affecting the percentage of lactating cows that became pregnant within four months of calving was effect of time of calving. Cows that calved from July to September had a 49 per cent lower chance of being pregnant within four months of calving than those calving from December to January.

The study also demonstrated the effect of body condition score at the time of pregnancy diagnosis.

Cows in body condition score 3+ (using a 1= very thin to 5 = very fat) at the pregnancy diagnosis muster (typically mid-dry season) achieved a much higher percentage pregnant within four months of calving compared to cows in score 3 or less.

Michael said the study also showed that wet-season phosphorus status and overall grazing management affected the ability of cows to become pregnant within four months of calving.

However, after all factors were considered, country

Speakers delve into reproduction issues

Project presents key research findings

type had the biggest impact. The percentage of cows pregnant within four months in the northern forest region within the study was estimated to be 36pc, 47pc and 59pc lower than that of the northern downs, central forest and southern forest regions respectively.

2. WHY DO SOME PREGNANT COWS SUCCESSFULLY WEAN THEIR CALF WHILE OTHERS FAIL TO DO SO?

Michael went on to explain that the Cash Cow project also aimed to better understand the factors affecting the percentage of foetal and calf losses occurring between confirmed pregnancy and weaning.

The results from the study showed that again country type influenced the level of foetal and calf loss, with the percentage loss in the central forest, northern downs and northern forest being respectively 4pc, 2pc and 7pc higher than in the southern forest.

He said the study also showed that the reproductive history of the cow affected the risk of foetal and calf loss, with percentage loss 4pc higher in those that did not lactate the previous year. Michael said when all other factors were taken into account, percentage loss in heifers was 2pc higher than in mature cows. The study therefore confirmed the need to manage pregnant heifers and first-lactation females separately.

Throughout the study, Michael said it was also found that foetal and calf loss was 9pc higher where mustering efficiency was less than 90pc. Mustering around the time of calving was found to increase foetal and calf loss by 9pc, and heat stress during the month of calving also contributed to losses.

As with the ability of cows to become pregnant within four months of calving, overall nutrition and grazing management also impacted foetal calf loss.

Michael said that inadequate pasture protein during the dry season prior to calving resulted in a 4pc higher foetal calf loss throughout the study. The project also found that the wet-season phosphorus status and cow body condition score at the pregnancy diagnosis muster influenced foetal and calf loss.

Michael discussed that during the course of the project, a holistic approach was developed that focused on answering the question: 'How is a herd performing in relation to what is practically achievable in a specific environment?'

Geoffry and David challenged producers to ask the



More than 100 people attended the information days held at Narrien Station, Clermont, and the Emerald Ag College to hear about factors influencing performance and production, and steps to improve reproductive efficiency.

right questions: 'Is my beef-breeding herd producing and as profitable as it could be in this situation? If not, what performance is below par and why?'

David showed producers simple ways to measure how a herd is performing. He explained that in order to complete herd and business analysis, beef businesses must start accurately counting cattle and recording the information in a basic annual livestock inventory.

"It doesn't need to be complicated. All producers need is an opening and closing inventory that is a count of all cattle by class, by weight, by value. This basic information can provide some powerful answers to the right questions being asked," he said.

David said the project developed regional benchmarks that allowed a direct comparison to be made between individual herd production benchmarks and aggregated regional 'achievable' benchmarks.

These production benchmarks provide an indication of where inefficiencies may be occurring within the breeder operation, and allow for specific diagnosis of potential problem areas. Basic mob-level information is needed for herd and business analysis.

David said the fundamental data to record was:

- The end of the cattle year – this varies across regions and situations. However, it is usually after the final weaning for the year and is critical to identify as it is used for the closing/opening date.
- Closing and/or opening account of numbers and average weight x class (gender x age).
- Branding numbers x gender as it is done.
- Weaning numbers by gender and weight as it is done.
- Details of all transactions (sales, purchases) and spaying/culls.

SUMMARY OF FINANCIAL ACCOUNTING

Geoffry then explained to the producers that in order to change performance and thus production, there were steps and actions to follow.

He said step one was to manage the feed base, "You cannot make something from nothing."

Geoffry spoke of the importance of matching stock numbers to available feed, and controlling and managing the situation accordingly. Another critical action was to manage lactation. "Manage weaning using cow condition, not calf growth."

Finally, Geoffry spoke of the need to manage breeding. "Use bulls that pass a bull-breeding soundness evaluation on Australian Cattle Vet standards; mate no more than 2.5pc sound bulls; select bulls with at least an average scrotal circumference for the breed type and live weight, and a high per cent normal sperm."

He said it was important to select bulls from dams that had weaned a calf from their first two mating opportunities, as these were all highly heritable traits.

At the Narrien Station breeder-production information day, producers received an update from local veterinarian Dr Alan Guilfoyle.

Alan discussed cases of ketosis he had treated. He said ketosis was associated with an inadequate supply of nutrients necessary for normal carbohydrate and fat metabolism – often seen in times of high milk production during early lactation.

It leads to excessive amounts of ketone bodies in the bloodstream that come from the breakdown of fat when the animal is forced to draw on its bodily reserves for energy. He said ketosis occurred when the grass was drying off and green feed was scarce. It is a condition often unnoticed in its mild form. The disease is usually seen in early lactation and can cause significant production losses. Alan reiterated the importance of managing the nutrition of lactating breeders.

DAF is co-ordinating a project that aims to work with producers to develop a standardised record-keeping system for beef businesses that addresses inefficiencies in current systems, and provides data for herd and business assessment. The information days sought initial interest from producers.

Melissa Holzwart
FutureBeef Team Charters Towers
(07) 4761 5150
melissa.holzwart@daf.qld.gov.au



OLSSON'S
NT URAPHOS
A protein supplement with phosphorus to maximise the utilisation of day pasture.

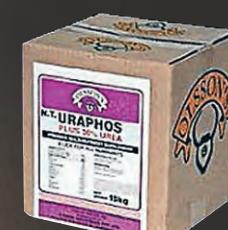
High protein 86.25% Hard Block

Ideal For Dry Feed

Safer feeding with infused Zeolite & Phosphorus

Station Ready Packaging Available

FREE CALL 1800 804 096



GUARANTEED ANALYSIS MACRO INGREDIENTS

Total Protein	86.25%
Crude Protein (form urea)	86.25%
Salt (NaCl)	40%
Urea	30%
Molasses	2%
Phosphorus	2%-2.4%
Min Iron	0.20%
Min Magnesium	0.56%
Activated Zeolite	5.00%



LEFT: The MSA grading standards and the underpinning science of the MSA model have not changed for MSA Optimisation.

Enhancing MSA's value in supply chain

Providing more meaningful feedback on eating quality

MSA Optimisation

NOW that all processors in north Queensland have implemented the MSA Optimisation system, producers may notice the inclusion of an MSA Index on feedback sheets, which can also be accessed through a new MSA feedback portal. MLA is using these three initiatives to enhance the value of MSA across the supply chain.

1. MSA INDEX

The MSA Index is a single value from 30 to 80 applied to a carcase to represent the potential eating quality of that carcase. Higher index values indicate higher eating quality. In 2014 the average MSA index nationally was 57.28, 0.52 index points over the preceding 12 months. This is a significant increase in the average eating quality of beef in Australia.

The MSA Index is intended to provide more meaningful feedback so that producers can see how their management decisions affect the potential eating quality of their herd and may be implemented within processor specifications. This is a standard national measurement, consistent across all processors and geographic regions, and is calculated independent of any processing influences.

"The MSA Index is the first of its kind in providing producers with a true standardised indicator of the potential eating quality of their cattle. The attributes that are used to calculate this are directly impacted by the producer, so they have complete influence on the result," MSA operations manager Terry Farrell said.

2. myMSA

Coinciding with the release of the index is a new MSA member feedback tool, myMSA.

MSA Index:		54.62	CALCULATE
MFV	<input type="button" value="N"/>		
Saleyard	<input type="button" value="N"/>		
HGP	<input type="button" value="N"/>		
Sex	<input type="button" value="M"/>		
HSCW	<input type="button" value="300"/>		
TBC	<input type="button" value="50"/>		
Hump Height	<input type="button" value="150"/>		
Ossification	<input type="button" value="150"/>		
MSA Marble	<input type="button" value="300"/>		

myMSA provides MSA producers with:

- Access to MSA Index values for their cattle.
- Instant access to feedback after carcase grading.
- The ability to do more advanced customised analysis, including tracking trends over time.

"I would encourage producers to use the MSA Index calculator in myMSA or on their smart devices and get a feel for the impact some of their on-farm decisions can make on eating quality," Terry said.

3. OPTIMISATION

The other change producers may notice is the

removal of the national MSA boning groups (1-18) to allow for the more flexible and efficient MSA Optimisation system.

The boning group system required the eating quality calculation of all 136 cut × cook method combinations predicted by the MSA model.

These can be considered as hurdles that a carcase must jump over to achieve an MSA boning group.

This is regardless of whether the processor packs and markets all of these products.

"MSA Optimisation allows the processors and brand owners to focus on the cuts that are most important to their markets or customers, and determine the cut × cook 'hurdles' they want to use in a carcase-sorting system," Terry said.

The MSA grading standards and the underpinning science of the MSA model have not changed for MSA Optimisation.

MSA Optimisation also does not require any additional requirements for livestock consignment and the current MSA minimum requirements remain the same, in that carcases must have:

- Minimum 3mm rib fat and adequate fat distribution over all major primals.
- Meat pH lower than 5.71.
- Meat colour 1B-3.

More information about the MSA Index can be found in a new 'tip & tool' available to download at www.mla.com.au/msa.

The new MSA member feedback tool, myMSA, is available at www.mymsa.com.au.

The MSA index calculator can be used on your smart device at <http://mymsa.com.au/msamobile>.

Scan this symbol to use the MSA Index calculator:



Tackling weed issues across the state

Queensland Weed Symposium

THE latest ideas for practical weed management and research will be discussed and demonstrated at the 13th Queensland Weed Symposium in Longreach during September 2015.

This is an excellent opportunity for producers, government weed officers, contractors, weed-company staff and others to share recent successes and challenges in tackling weeds across Queensland.

The symposium theme of 'A Climate for Weeds' reflects the influence of Queensland's unpredictable and variable climate on weed management.

Additional weed symposium sub-themes are weeds and weather, finances, people, research, opportunities, and legislation.

Participants can share their weed-management experiences through oral, poster or video presentations, or practical demonstrations.

Innovative management techniques will also be on display at the field demonstration site.

Important dates to remember are abstracts close on March 30, early bird registrations close on June 30 and the symposium runs from September 14-17, 2015.

The host of the symposium is the Weed Society of Queensland, which is a diverse group of passionate weed managers ranging from pest-management officers to policy makers and landholders to scientists.

It is more than 10 years since the biennial Weed Symposium has been held in western Queensland.

This is a great chance to highlight the magnitude of woody weed and pest cacti problems faced by western weed managers.

Coastal weed issues will also be on the radar.

For more information about the 13th Queensland Weed Symposium, demonstrations, sponsor opportunities or to subscribe to updates, visit the website at www.QWS2015.com or phone (07) 3876 4988.



Accredited to Pregnancy test Feeder or Slaughter Cattle for Export #APT-0000203

Northern Territory Cattle Producers now have the future in pregnancy testing available via a small team of well experienced & highly skilled Ultrasound Technicians, Trimester & month aging, 800 to 1200 head per day, extremely low animal stress level, accredited for Live Export, complimentary manure nutrient test. Now taking bookings for 2015 season.

Wayne Daley 0412 255 589
wayne@lpsc.com.au

HAVE YOU HERD?

There's a new home online for all your beef news

www.northqueenslandregister.com.au/beef

NORTH QUEENSLAND
REGISTER

Cattlemen's Challenge

Clermont event showcases local industry

	Liveweights (kg)					Weight Gains (kg)					Average Daily Gains (kg/head/day)				
	Show Weight	Tay-Glen Weight 1	Tay-Glen Weight 2	Tay-Glen Weight 3	Tay-Glen Weight 4	27/05/14 to 23/06/14	23/06/14 to 03/10/14	03/10/14 to 24/11/14	24/11/14 to 06/02/15	Total	27/05/14 to 23/06/14	23/06/14 to 03/10/14	03/10/14 to 24/11/14	24/11/14 to 06/02/15	Total
	27/05/14	23/06/14	03/10/14	24/11/14	06/02/15	27 days	102 days	52 days	74 days	255 days	27 days	102 days	52 days	74 days	255 days
Mob average	292	323	370	408	435	31	47	38	27	143	1.16	0.46	0.74	0.36	0.56
Highest pen average	331	375	425	466	501	54	60	49	46	177	1.99	0.59	0.94	0.62	0.70
Lowest pen average	238	250	289	326	337	12	31	27	11	99	0.44	0.31	0.52	0.14	0.39
Range between pen averages	93	125	136	140	165	42	28	22	35	79	1.55	0.28	0.42	0.48	0.31
Highest individual	355	393	450	514	528	75	68	64	83	211	2.78	0.67	1.23	1.12	0.83
Lowest individual	235	239	283	312	326	4	-19	7	-17	88	0.15	-0.19	0.13	-0.23	0.35
Range between individuals	120	154	167	202	202	71	87	57	100	123	2.63	0.85	1.10	1.35	0.48

Table 1. Stocking rate summary of the grass phase of the Clermont Cattlemen's Challenge 2014/15.

Activities and performance update

THE Clermont Cattlemen's Challenge is again proving to be of great interest to the district's cattle producers. It is an integral part of the Clermont Show, as it runs over 12 months from show to show. The challenge has seven components over the 12-month period: weaner judging, grass grow-out phase (nine months), feedlot phase (100 days), carcass competition, grainfed steer judging, overall weight gain and a taste test.

Here is an update on activities and cattle performance up to feedlot entry on February 6, 2015.

CATTLEMEN'S CHALLENGE ACTIVITIES

This year's challenge has 15 local exhibitors, with each entering a pen of five weaner steers. The steers were delivered to the Clermont Showgrounds on May 25, 2014. The steers were fed hay and kept on water before weighing on the morning of May 27 without a curfew. Average weight across the 75 steers was 292kg (target 290 to 320kg). The heaviest pen of steers averaged 331kg and the lightest 238kg.

WEANER JUDGING

The steers were judged as stores most suitable for growing out for the 100-day grainfed market. Greg and Alicia Magee of St Omer gained the maximum points in the weaner judging (5 points), followed by Cantaur Park (4 points), Wyena (3 points), Trelawney (2 points) and Merrigang (1 point).

GRASS PHASE

On May 27, 2014, the steers were transported to Ted and Jenny Murphy's property Tay-Glen, Dysart. They received health treatments (botulism, 5-in-1 and Dectomax) and a Compudose 400 implant. The cattle grazed as one mob in a 303-hectare (750-acre) pulled brigalow paddock for 255 days (to February 6, 2015).

Buffel grass was the predominant pasture, with some native grasses and legumes. The paddock had been grazed up to the arrival of the steers, but the pasture was dense and in excellent condition.

STOCKING RATE

The stocking rate in the challenge paddock ranged from 6.2ha/adult equivalent at the start of the grass phase to 4.2/AE at its conclusion (see Table 1).

The light stocking rate allowed animals to select a high-quality diet that contributed to their liveweight performance during the grass phase.

RAINFALL

Rainfall over the 2013/14 wet season (October–March) was 378mm. Rainfall leading up to the steers' arrival consisted of 37mm in April and 3mm in May.

Rainfall during the grass phase was 52mm in August, 64.5mm in September, 21.5mm in November, 195mm in December and 187.5mm in January.

LIVEWEIGHT GAIN

The steers were weighed four times during the grass phase, with the first weighing 27 days after arrival at Tay-Glen (June 23, 2014) and the last on February 6, 2015, immediately prior to being transported to the feedlot (see Table 2).

The steers were mustered from the paddock and



Steers on February 6, 2015, immediately before transportation to the feedlot.

Weight Date	27/05/14	23/06/14	03/10/14	24/11/14	06/02/15
Days in paddock	0	27	129	181	255
No. of steers	75	75	75	75	74
Average liveweight (kg)	292	323	370	408	435
Adult equivalents (AE)/head	0.65	0.72	0.82	0.91	0.97
Total AE in paddock	49	54	62	68	72
Hectares/head	4.0	4.0	4.0	4.0	4.1
Hectares/AE	6.2	5.6	4.9	4.5	4.2

Table 2. Liveweight summary of the grass phase of the Clermont Cattlemen's Challenge 2014/15.

weighed after 30 minutes in the yards.

The average weight of the steers at the end of the grass phase (February 6, 2015) was 436kg, with an average weight gain of 0.56kg/head/day. The heaviest pen of steers averaged 501kg and the lightest 337kg.

Wilma and Donald Burnett's Mt Douglas steers achieved the highest weight gain of 177kg (0.7kg/head/day). Hot on their tail were steers from Tay-Glen and Parnu, which averaged 176kg weight gain.

Highest individual steer gain was 211kg (0.83kg/day) and the lowest 88kg (0.35kg/day). No points are allocated for weight gain over the grass phase.

DIET QUALITY

Faecal NIRS was used to monitor diet quality during the grass phase. The quality of the diet remained high during the grass phase (see graph).

Dietary crude protein averaged 6.8 per cent during the dry season (range 6.4 to 7.9pc) and increased to 8.5pc in February.

Maintenance levels for Bos-Indicus derived cattle are 4.5 to 5pc for dry cattle and 7pc for wet cows.

The range can be from 4pc or less for dry, mature pasture to 12pc for fresh, young pasture.

Dietary dry matter digestibility, an indication of the energy value of the diet, averaged 53pc during the dry season (range 52 to 54pc) and increased to 60pc in February. Wet cows require about 55pc digestibility to maintain condition and dry cattle closer to 50pc.

The range can be from less than 50pc for dry, mature pasture to 70pc for fresh, young pasture.

FEEDLOT PHASE

The steers were transported to Paringa Feedlot,



Dietary crude protein, dry matter digestibility and rainfall of the grass phase of the Clermont Cattlemen's Challenge 2014/15.

Capella, on February 6, 2015. They were fed hay and a grain ration in a holding yard for five days before induction on February 11.

Average weight at induction was 437kg (+2kg from average weight at the end of the grass phase). The heaviest pen of steers averaged 488kg and the lightest 345kg. The steers will be grain fed for 100 days.

FIELD DAYS: TAY-GLEN

A field day and barbecue was held at Tay-Glen on November 24, 2014, to inspect and weigh the growing steers. Guest speakers included DAF's Paul Jones and Jim Fletcher, who respectively discussed 'Wet-season spelling – latest research and recommendations' and 'Weaning strategies for production'.

To better understand the growth performance and diet quality of the steers, Ted Murphy guided the group on a tour through the agistment paddock.

Discussions among the group included the history of the property and paddock; current condition of the paddock and pasture; and local issues and land-management strategies.

SAVE THE DATE: PARINGA

A field day will be held at Paringa Feedlot, Capella, on Friday, May 15, 2015. Activities will include selection of steers for show classes, selection of steers for carcass judging, guess the winning carcass steer competition, guest speakers and a barbecue lunch.

RSVP to Clermont Cattlemen's Challenge president David Conaghan, Clydevale, Clermont, on (07) 4983 5389 or email clydevale@skymesh.com.au; or secretary Lauren Williams, DAF, Mackay, on (07) 4967 0732 or email lauren.williams@daf.qld.gov.au

UU caterpillar the latest weapon against parkinsonia



Biological control agent

A LEAF-FEEDING looper caterpillar – *Eueupithecia cisplatensis* or UU for short – is the latest biological control agent being used to fight the thorny weed parkinsonia (*Parkinsonia aculeata*) and is looking like it will make its mark in Queensland.

UU is from Argentina and feeds on the leaves and leaflets of this weed of national significance, defoliating the plant. This reduces the plant's vigour and growth, making it susceptible to disease and reducing seed production, helping to reduce its invasiveness in watercourses, floodplains and grasslands in northern Australia.

Releases of UU began in early 2013 in northern Queensland – from the rearing colony based at the Department of Agriculture and Fisheries' Tropical Weeds Research Centre, Charters Towers – and they haven't looked back. More than 400,000 UUs have been released since. Release sites in north Queensland include the Burdekin, Townsville, Fletcher and Cape regions. Central Queensland sites include Emerald, Clermont, Middlemount and the Fitzroy areas.

Pupa is the main life stage of releases, with the UU housed in a 'trap' hanging within a patch of parkinsonia. Adults emerge as moths and mate, with the female averaging 60 to 100 eggs in her short life.

The larvae feed voraciously throughout their three-week life stage, before pupating on a stem or leaf midrib. The larvae are hard to see due to their amazing camouflage technique of blending into the leaf structure. Their bright green body lies flat along the leaf midrib or stands to attention to look like a thorn.

UU releases have recently been complemented with the introduction of their cousin, UU2. CSIRO sourced UU2 from a drier, hotter region of Argentina, with the hope that these insects will be more climatically suited to western Queensland, west of the Great Dividing Range. Releases began west of Hughenden in 2015 and will continue over the next few years.

UU has persisted throughout the heat of summer, cool of winter and lack of food at times, but is yet to make a huge impact on the parkinsonia population.

Monitoring of the agent has shown positive results, with larvae found 3 to 5km from an initial release site.

Be informed when drilling for water

Important points when considering bore construction

Drilling checklist

DRILLING for water involves substantial financial outlay. It is important you make informed decisions when developing a reliable groundwater supply, whether for stock, domestic or irrigation purposes.

GETTING STARTED

Before you contact a driller, consider the following questions:

- How much and what water quality do I need?
- What supply and water quality can be expected?
- What depth will the bore need to go to?
- How much will it cost?
- What type of drilling rig will be needed?
- Where is the best bore site on my property?
- Do I need a permit to drill a bore?
- Do I need a licence to take water?
- How should the bore be designed?

INFORMATION SOURCES

The Department of Natural Resources and Mines (DNRM) may hold information on previous drilling in your area. Contact your local DNRM office to determine if drilling or water bore records are available, or alternatively, you may access Queensland Globe for this information. Drilling contractors can be a good source of information, especially if they have a good working knowledge of a particular district.

You can also seek advice from a private hydrogeological consultant who can provide a groundwater assessment on your behalf.

Assessment of potential groundwater supplies will include likely maximum depth, expected water quantity and quality, and preferred drilling sites.

BORE LOCATION

In addition to hydrogeological aspects, the following should be considered when siting a bore:

- Possible sources of pollution (e.g. septic installation).
- Property boundaries and their proximity to where the water is required.

Source of power to drive the pump:

- Neighbouring bores, to avoid potential pumping interference.
- Service facilities including power, telephone lines and gas.
- Drilling contractor.

Before engaging a drilling contractor, you should come to an agreement on:

- Whether the drilling rig is capable of doing the job.
- Approximate depth to be drilled.
- The charge for a 'dry' hole.
- The charge for a completed bore.
- Tests to be carried out on completion (to determine water quality and quantity).

DNRM strongly recommends that a written agreement be entered into between the landholder and drilling contractor prior to commencement of drilling and that this document be signed by both parties.

This written agreement can then be used to sort out any issues that may arise.

A sample agreement is shown on pages 122-134 of Minimum Construction Requirements for Water Bores in Australia (web link provided at end of article). This document also sets out client responsibilities, driller responsibilities and shared responsibilities (p10-11).

We would advise you to read this so you are aware of what is required of you and your drilling contractor before entering into any agreement.

FINDING A LICENSED WATER BORE DRILLER

DNRM maintain a Queensland list of registered water bore drillers. This list includes drillers who have



elected to have their details made publicly available and is updated annually at a minimum.

BORE CONSTRUCTION

All water bores must be constructed in accordance with the minimum construction requirements for water bores in Australia. Bores in artesian basins must also comply with the minimum standards for the construction and reconditioning of water bores that intersect the sediments of artesian basins in Queensland (web link provided at end of article). You should be guided by your contractor about the best means of constructing the bore. However, important details should be considered before drilling begins:

- Bore casing should be of suitable material and strength to prevent collapse of the hole.
- Sufficient casing should be inserted so that when the pump is operating, no part of the pump is exposed to open-hole conditions.
- The bore does not pump fine particles or sand; entry via open-hole conditions should be considered only when the stratum is known to be very stable.
- The casing is large enough to accommodate the pump proposed.

On completion, the driller should provide you with a copy of the drill log form showing the details of depths, material penetrated, construction details and the supply obtained. It is recommended you keep a copy of drilling records so bore details can be retrieved to diagnose any problems that may arise. In all cases the driller must forward a copy of the drill log form to DNRM.

Up to 800EC	800–2,300EC	2,300–5,500EC
Lettuce	Cabbage	Spinach
Carrot	Cauliflower	Asparagus
Sweet corn	Broccoli	
Potatoes	Tomato	
Celery		
Onion		

ABOVE: Salt tolerance of vegetable varieties to applied irrigation water.

RIGHT: Salt tolerance of stock to drinking water.



ABOVE: DNRM maintains a Queensland list of registered water bore drillers. This list includes those drillers who have elected to have their details made publicly available, and is updated annually at a minimum.

LEFT: Assessment of potential groundwater supplies will include likely maximum depth, expected water quantity and quality, and preferred drilling sites.

WATER QUALITY

Before you equip the bore, it is wise to have a complete water analysis carried out. These can be carried out by a private analyst.

Conductivity tests or 'taste tests' give an indication only and do not provide sufficient data to determine the overall suitability of the water for your needs.

Below are tables setting out water-salinity tolerances of different livestock and crops.

This is a general guide to one aspect of water quality. It is possible for situations to occur that lead to higher or lower salt-tolerance levels in plants and animals. Note that other elements in water can become toxic as salt levels increase.

This also plays a part in limiting water use. It is a good idea to have your water routinely tested.

If you have any queries regarding drilling contact:

Bruce Keogh
DNRM principal technical officer (drilling)
(07) 4048 4875, bruce.keogh@dnrm.qld.gov.au

Follow the links below for access to: 'Minimum Construction Requirements for Water Bores in Australia' and 'Minimum standards for the construction and reconditioning of water bores that intersect the sediments of artesian basins in Queensland': www.business.qld.gov.au/industry/water/managing-accessing/accessing-water/bores/construction-standards-troubleshooting
Public Register of Water Bore Drillers: www.business.qld.gov.au/industry/water/managing-accessing/accessing-water/

Beef cattle	Production decline begins	6,250EC
	Maximum	15,600EC
Dairy cattle (lactating)	Production decline begins	4,700EC
	Maximum	9,300EC
Sheep, dry feed	Production decline begins	9,300EC
	Maximum	21,800EC
Lactating ewes, weaners	Production decline begins	6,000EC
	Maximum	10,000EC
Horses	Production decline begins	6,250EC
	Maximum	10,900EC
Pigs	Production decline begins	3,100EC
	Maximum	6,250EC
Poultry	Production decline begins	3,100EC
	Maximum	6,205EC

Managing risks on your property

Property biosecurity plan

HAVING a property biosecurity plan is a useful tool for any primary production enterprise, regardless of how large or small.

Effective management of biosecurity risks (i.e. weeds, pests and diseases) on your property will require some preparation, and a property biosecurity plan will help you to identify, manage and prevent these risks.

Property owners and managers also need to seriously consider not only controlling the weeds, pests and diseases present, but preventing the entry of new ones.

Weed hygiene and implementing good biosecurity practices are essential components of biosecurity risk management, and prevention is cheaper than a cure.

Your property biosecurity plan can be as simple or as complex as you want, but developing a plan will help you to achieve your management goals.

Your property boundary effectively becomes your line of defence – you are in control.

Contractors and utility companies will comply with reasonable standards of weed and disease hygiene, and help you with protecting your livelihood – your land.

Use our simple checklist to get started on developing your own property biosecurity plan.

WHAT YOU NEED TO DO

- Create a map of your property: Include infrastructure and land types (paddocks, roads, buildings, dams and yards) and natural resources (watercourses). All these things will impact how you manage biosecurity risk on your property.

- Identify entry pathways: Entry points for pests onto the property such as roads/driveway, watercourses, fodder feed-out locations and yards. Animals and items contaminated from other properties are common entry pathways for weeds, pests and disease.
- Identify pests and diseases present: What have you got and where is it? Don't know what it is? Talk to your local pest-management officer for help with weed identification, and contact your private veterinary practitioner for animal disease identification and management.

- Assign priorities for control: You can't do it all. Prioritise and set realistic management goals for each weed, pest and disease. Remember to work from the smallest to the largest part of an infestation or, for animal diseases, ensure control measures are comprehensive.
- Create a work plan: Make a realistic work plan that allows you to achieve your goals. What time of year will you carry out control? How will you control it? What suite of methods do you need to combine? Who will control it? Do you need to organise staff rosters accordingly?

- Identify your annual budget.
- Identify potential pests: Know what you don't have. What biosecurity risks are in the region that you don't yet have? Know what they look like, make sure your staff know what they look like – and keep a look-out.
- Make a weed and disease hygiene policy: Ensure visitors arrive at a central point. Have central clean-down options. Use farm vehicles to drive around the property where possible – try not to bring on vehicles and equipment used on other properties. Keep records of the movements and origins of important weeds, pests and animal disease vectors such as fodder, machinery, personnel and animals.
- Monitor and review: Not getting the results you wanted? Keep notes on the results of prevention and control activities, arising issues and seek advice when required. Review and update your plan where necessary.

Set realistic goals, start small, and catch weeds, pests and diseases early.

For information or advice, contact your local council pest-management officer, private veterinary practitioner or Biosecurity Queensland on 13 25 23.

Lauren O'Bryan
Weed and pest officer
Biosecurity Queensland
(07) 4761 5740
lauren.o'bryan@daf.qld.gov.au

For further information on biosecurity plans and for templates visit Livestock Biosecurity Network: www.lbn.org.au/wp-content/uploads/2015/02/Farm-Biosecurity-Plan-Checklist.pdf, and Farm Biosecurity: www.farmbiosecurity.com.au

Demonstration project

ALTHOUGH the timing is not quite right to perform such work, reclaiming and regenerating land in poor condition is a long-standing production and environmental issue for graziers, particularly those in catchments adjacent to the Great Barrier Reef.

In light of this, a demonstration project funded under the Reef Rescue research program has evaluated three mechanical disturbance treatments to quantify their effectiveness in rehabilitating degraded lands.

In 2011 at DAF's Spyglass Beef Research Facility, an area of D-condition on a predominantly loamy alluvial land type was subdivided and separately treated. One treatment was deep ripped at 50cm, another was chisel ploughed to 20cm, and the last one was crocodile seeded to 10cm.

The treatments were then monitored over the following three years to quantify pasture and legume responses to the different treatments. This article reports potential economic outcomes of the treatments.

The initial treatments, including seeding, were undertaken in October 2011. A seeding mixture of grasses (including buffel grass, Rhodes, bluegrass, urochloa, Indian couch and Angleton) and legumes (including butterfly pea, seca, verano and caatinga) was seeded at a rate of 6kg/ha. With immediate follow-up rain, establishment was good.

However, after establishment, the next rain was not until early January, 2011, resulting in a failed establishment and the demise of much of the Rhodes grass. Despite this, other species – particularly legumes – became well established.

This successful establishment of some species was helped by rainfall at the trial site being very good in the first year – 2012 recorded 775mm.

Over the next two years, rainfall totals fell, and in 2014 the site was affected by drought. Recorded rainfall was 553mm for 2013 and 361mm for 2014.

Over the range of seasons, total pasture yield and legume yield was consistently higher for all mechanical treatments compared to the control treatment (see Figure 1).

In fact, the differences were as much as 1600kg/hectare of extra dry matter grown; shown in 2012 between deep ripping and control. While this means that more cattle can potentially be run (see Table 1), these improvements come at a cost.

The cost of performing land-rehabilitation work through mechanical means can be quite expensive, particularly if external machinery is required, as was the case here. The cost of treatments, including seed, varied in this demonstration, with crocodile seeding being the lowest at \$150.85/ha, chisel ploughing

Rehabilitation costs put into context

Monitoring responses to pasture treatments

requiring \$210.85/ha and deep ripping being the highest, costing \$260.85/ha.

Since seeding mixture and quantity were the same across treatments, the seeding component of the costs was \$74.85/ha. This means that to undertake one of these treatments over a 100ha area, the costs could range from \$15,000 to \$26,000. Land types that have light carrying capacities may have a hard time recuperating this cost within a reasonable time frame.

To recuperate the costs, the gross profit of extra cattle able to be placed on pasture needs to eventually pay for the costs of performing the work.

For the analysis done for this project, two gross margins were calculated – one for expected cattle performance on the reclaimed land and the other for the degraded control land. Gross margins capture all variable costs, such as selling price, transport costs and husbandry costs.

The two gross margins were \$111.84/AE for the control scenario and \$178.70/AE for the reclamation scenario. The main factor driving the increase in gross margin is liveweight production increasing due to a higher availability of legume. A cost-benefit analysis was carried out to determine whether the trial would produce economic benefits for beef producers.

The results of the cost-benefit analysis showed that, at a 100ha scale and with a discount (interest) rate of 10 per cent, none of the projects returned a positive Net Present Value (NPV) (see Table 2).

Return on each dollar invested varied from 4.36 to 4.55pc. Simply, the extra carrying capacity generated by extra pasture was not able to pay for the machinery work and seed required to rehabilitate the land.

Property owners should interpret these results as



A demonstration project funded under the Reef Rescue research program has evaluated three mechanical disturbance treatments to quantify their effectiveness in rehabilitating degraded lands.

a guide to possible rehabilitation outcomes on their property, and should conduct their own assessment using property-level investment analysis.

The parameters would then be most relevant for their own land type and grazing enterprise. Businesses should pay close attention to how their situation and management strategies differ to those used in this analysis.

The trial did demonstrate that D-condition land improvement can be achieved through mechanical intervention and seeding, but it is unlikely to be an acceptable investment for landholders. Alternatively, producers should check their eligibility for financial assistance from programs such as Reef Rescue.

This support means that producers could conduct

D-condition land-rehabilitation works and avoid the potential financial losses, while providing wider public benefits such as reducing sediment and nutrient run-off losses into the Great Barrier Reef, and possibly increasing biodiversity in their pastures.

A detailed economic assessment of 'Quantifying the impacts of rehabilitating degraded lands on soil health, pastures, run-off, erosion, nutrient and sediment movement' is available on the FutureBeef website. This document presents the methodology and more details on the analysis outlined in this article.

Timothy Moravek
DAF agricultural economist, Charters Towers
(07) 4761 5156
timothy.moravek@daf.qld.gov.au

Treatment/Year	1	2	3	Average
Deep ripping	Spelled	23.5	24.4	25.3
Chisel ploughing	Spelled	17.6	16.5	20.5
Crocodile seeding	Spelled	10.7	10.6	13.4
Control		15.2	3.5	5.1
				7.9

Table 1: Calculated potential carrying capacities in adult equivalents per 100ha.

Treatment	NPV (\$ at 10%)	IRR
Deep ripping	-10,806	4.36%
Chisel ploughing	-8,247	4.55%
Crocodile seeding	-5,485	4.37%

Table 2: Results of the partial discounted cash-flow analysis.

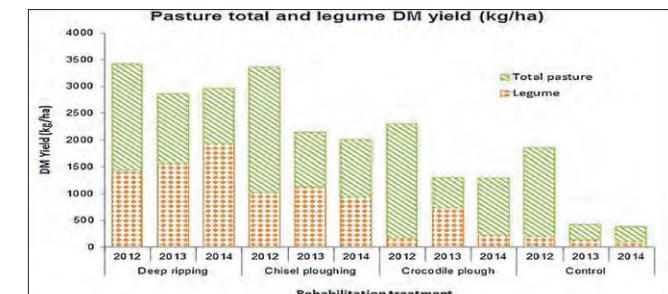


Figure 1: Pasture and legume responses to different treatments.

Pasture yield estimation an essential skill for graziers

Photo standards

FORAGE budgeting is an empowering tool for graziers to help determine appropriate stocking rates.

Estimating pasture yield is one of the essential components in undertaking a forage budget. Under or overestimating pasture yield will result in over-grazing and degraded pastures, or under-grazing and foregone beef production, and therefore income.

There is a wide range of pasture yield photo standards available on the FutureBeef website for most pasture communities in Queensland.

However, when out in the paddock, it is often difficult to decide which photo standards to use, as land types can vary over short distances and land types often blend into each other.

Producing your own set of pasture yield photo standards will make it easier to decide which photos to use. In addition, because you have been out in the pasture, you will have a good mental picture of the pasture that will reinforce what is in your photographs.

One day in the field and one day in the house/office

should be sufficient time to develop a set of pasture yield photo standards for most properties.

If you have school-aged kids, involve them in this exercise, as it may be the start of a life-long habit of pasture budgeting and monitoring. They may also be able to make it into a school project.

THE BASIC STEPS

List the major land types on the property, as a set of photo yield standards will be required for each land type. If time is an issue, select the major land type in the breeder paddock, as land condition tends to be poorer in breeder paddocks. Determining stocking rates based on a forage budget will improve land condition in this scenario.

Select the sites that are representative of the majority land condition for that land type. For example, if the box country is mostly in condition B, select condition B sites for that land type.

Select an area with a uniform pasture yield.

Mark out an area 6m x 6m (you can do this visually or use corner pegs).

Take a photograph of the site (eye height in

standing position) with all four markers of the 6m x 6m square in the photo; position the two back markers near the top corners of the photo with only a small margin around the outside. Use a focal length of about 40-50mm – not wide angle or zoomed in.

This will approximate what the human eye sees.

Do not take the photo from the tray of a 4WD as you want the photo to reflect what is seen when walking around (or driving around in a 4WD).

To enhance your photos, put something in the centre of each photo that will give an indication of pasture height. A 1m length of white 50mm PVC pipe with 10cm graduations on it (use a heavy black felt pen) is ideal. A length of sharpened 10mm reo-bar down the pipe and pushed into the ground will hold the PVC vertical.

Cut ten 0.5m x 0.5m quadrants to within 5cm of the ground in the 6m x 6m area. (If the pasture is sparse and/or short, use a 1m x 1m quadrant.)

Dry and weigh the cut pasture samples using digital kitchen scales and multiply the average dry pasture weight in grams by 40 to give a pasture

yield in kg/ha. If using a 1m x 1m quadrant, multiply by 10. (The 'Estimating dry matter yield' fact sheet provides more detail on cutting, drying and weighing. Visit www.stocktakeplus.com.au/wp-content/uploads/2013/04/Yield-estimation.pdf)

If you have a large number of pasture samples to dry, check with your local DAF office, as most of them have drying ovens that you can access.

Repeat this exercise across a range of pasture yields from high to low (four to six photos) for that land type. Repeat for each major land type on the property.

By using your own pasture yield photo standards, more realistic data can be entered into the Stocktake Plus app, which will calculate a forage budget and appropriate stocking rates for your paddocks.

There is a high likelihood that the available feed for the 2015 dry season is going to be low, so forage budgeting will allow beef producers to plan their strategies.

Bob Shepherd
DAF principal extension officer, Charters Towers
(07) 4761 5156
bob.shepherd@daf.qld.gov.au

