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NORTHERN MUSTER

Information for rural business in North Queensland

**Indian couch invasion:
why we need to know
more!**

**Should I
restock?**

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Welcome to Northern muster 40

Welcome to the Autumn/Winter edition of the *Northern muster*. As we head into the dry season after another patchy wet, take some time on your next water run to stop and assess the feed you have available. Now is the time to make appropriate decisions on stocking rates and the number of head you can carry through to the next rains.

Important post-drought considerations are the quantity of feed you have on hand after the growing season and the quality of that feed. A paddock full of undesirable pasture species, like wire grass or feather top, will carry less stock than a paddock full of the desirable buffel or curly mitchell. Contact your local Department of Agriculture and Fisheries (DAF) FutureBeef extension officer if you need assistance with identifying the pasture species in your paddock, or forage budgeting through to your area's expected break of season rainfall.

This issue of the *Northern muster* includes an article on the StockTake Plus app, a fantastic new tool, developed by DAF and Meat and Livestock Australia (MLA), designed to assist producers manage their grazing.

Live export out of the Townsville port has not slowed throughout the summer, with the healthy prices on offer bringing serious competition for processors.

With the festive season over, the social calendar is just warming up with many information and field days coming up over the next few months.

Richmond, April 27 – Southern Gulf NRM, in partnership with the Department of Agriculture and Fisheries, will be holding a Weed Innovation Day at Richmond. The event will feature hands-on demonstrations of various new control tools, research updates, as well as new approaches to better manage prickly acacia, rubber vine and other serious weeds in north-west Queensland.

Cloncurry, April 28 – MLA Beef-UP Forum in Cloncurry.

The next Northern Beef Research Update Conference (NBRUC) will be held in Rockhampton on 15-18 August, 2016 – mark it in your calendars! The conference fosters joint industry ownership of the direction for future research, development and extension in the northern beef industry, encouraging dialogue between and within the various stakeholder groups.

It is an opportunity for beef producers, industry researchers and extension officers to get the latest technical information from some of Australia's best researchers on both recently completed, and ongoing research projects in the area of genetics and genomics, reproduction and breeder management, sustainable grazing, animal welfare and ruminant nutrition. As well as the technical presentations, the conference program includes field trips to inspect research activities in the area and social activities.

Don't forget the maximum amount of funding available under the Drought Relief Assistance Scheme (DRAS) was lifted from \$30,000 to \$40,000 per PIC per financial year for property owners in their third and/or subsequent year of drought, and with an approved Drought Management Plan in place. All fodder, freight and Emergency Water Infrastructure Rebate claim forms must be submitted within six months of the date of purchase.

We hope you enjoy Issue 40 of the *Northern muster*. Please contact the editorial team with any enquiries or feedback. To register to receive the online version of the *Northern muster*, subscribe on the FutureBeef website (www.futurebeef.com.au/resources/newsletters/) or email northernmuster@daf.qld.gov.au For the latest research-based information, tips, tools, events and recorded webinars, and events visit www.futurebeef.com.au

Happy reading,

**Melissa Holzwart, Jo Robertson,
Melissa Frazer, Rebecca Gunther**

AgForce Projects launches new mapping services

AgForce Projects has launched new mapping and GIS services that are now available to all Queensland landholders.

These services ensure Queensland producers have access to tools and technology to help them map and manage their property.

Agforce GIS technical officer Noel Brinsmead said the new services were a great opportunity for producers who needed a little more support in mapping their property for the first time or as part of ongoing property management.

'The new services are available for a small fee and provide an opportunity for AgForce Projects to continue providing important technical services to producers.

'We are providing a great range of products and services including the popular *Property Digital Dataset Mapping Pack*, which provides datasets to assist with the creation or updating of a property computer map including vegetation mapping; GLM land types; property cadastre; contours; watercourses; wetlands and Landsat imagery,' Mr Brinsmead said.

'The pack also includes the latest demo version of Phoenix software from AgData and the *AgForce Projects Property Computer Mapping workbook*.'

Mr Brinsmead said these packs are particularly useful for graziers interested in achieving 'above industry standard' within Grazing Best Management Practices (BMP).

AgForce Projects also provide a personalised digital property mapping service that allows the producer to receive a digital map of their property and training without having to take valuable time away from their property.

Mr Brinsmead said AgForce Projects recognised producers lead extremely busy lives and delivering the service online and over the phone ensures Queensland producers get the best price.

'Technology provides us with the opportunity to keep in close contact with our clients who capture property information on a printed map, which we then transfer onto a digital property map,' Mr Brinsmead said.

The producer also receives one-on-one Phoenix Mapping training and continued support.

Other products and services that can be purchased through AgForce Projects include map printing, GPS tracks for your property or a GPS Glovebox guide.

AgForce members receive a 35–40 per cent discount on the range of products and a 10 per cent discount on all Phoenix modules, which can be purchased through AgForce Projects as well.

For more information on the products available or to make a purchase visit www.agforceprojects.org.au.

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Charters Towers welcomes two new technical officers

Callum Olver and Andrew Lewis have recently joined the Charters Towers Department of Agriculture and Fisheries' (DAF) technical team.

Their knowledge and experience will be an asset with current and future research priorities at the Spyglass Beef Research Facility and on the Wambiana Grazing Trial.

Callum Olver

Originally from Bendigo, Victoria, Callum Olver's passion for agriculture stemmed from visiting his uncle's dairy farm during school holidays. After completing high school in 2007, Callum went to work on cattle stations in Western Australia and around the Northern Territory, working for Consolidated Pastoral Company in various positions.

In 2010, Callum left behind life as a ringer and went on to complete a Bachelor of Agribusiness at Charles Sturt University in Orange where he specialised in grazing management. After completing university in 2013, Callum worked on two dairies in Victoria but found himself yearning to return to northern Australia.

He returned to station life as leading hand with Western Grazing at Rocklands Station, north-west Queensland. In November 2015, Callum took up the position of technical officer for DAF in Charters Towers. Callum's practical hands-on approach to tasks will be an asset to the technical team.

Andrew Lewis

After a hiatus from the public service, Andrew Lewis has returned to his roots at DAF. Andrew worked for the then Department of Primary Industries from the mid-eighties. Based at Charleville he worked on various research projects including sheep, goats, mulga and rangeland management.

Andrew then went on to manage Croxdale Research Station at Charleville before leaving the department to take up the position of farm manager at the Bureau of Sugar Experimental Station (BSES) Sugar Research Station at Brandon. From here Andrew trained as a commercial fisher, purchased a licence and started his own business. His fishing business

was brought to a halt when marine park zoning was implemented.

Andrew then spent nine years in the Commercial Macropod Management Unit for Queensland Parks and Wildlife Service as a senior ranger and then as program manager. Prior to commencing with DAF as a technical officer in Charters Towers in November 2015, Andrew was operating a commercial fishing business in the Gulf of Carpentaria.

Andrew has qualifications in farm management, game management, and conservation and land management, as well as engineer qualifications. Andrew's extensive knowledge and experience in northern Australian agricultural industries will strengthen the knowledge and skills base of our technical team.



Bolstering BMP in the Burdekin

2015 saw a strong uptake of the Grazing BMP (Best Management Practice) program across the Burdekin with increasing interest from outside the catchment.

An increasing number of graziers are recognising the importance of Grazing BMP module completion in the growth of their business. The self-assessment process allows graziers to identify areas for improved management practices across all elements of their business.

The Burdekin has also been identified as a key catchment for the adoption of Grazing BMP to improve water quality to the Great Barrier Reef.

The Grazing BMP program has been delivered via various methods since establishment in the Burdekin in 2013.

The program was developed by producers for producers with support from the Fitzroy Basin Association (FBA), AgForce Queensland and the Department of Agriculture and Fisheries (DAF), and the Department of Environment and Heritage Protection (DEHP). Grazing BMP in the Burdekin is delivered jointly by DAF and NQ Dry Tropics.

Graziers who have undertaken Grazing BMP assessments in the earlier years of the

program are now encouraged to undertake a reassessment of their business.

A reassessment can be undertaken by logging into the website (www.bmpgrazing.com.au) or by signing up for any upcoming Grazing BMP workshops in your area. A list of upcoming workshops can be found on the Grazing BMP website as well as the FutureBeef website.

The reassessment provides an opportunity to gauge your progress and identify any changes implemented within the business since completion of the previous assessment.

To date, 1184 new modules have been completed in the Burdekin, providing the grazing industry in the region with a relatively large data set. To ensure validity and rigour around this collected data, graziers are now encouraged to volunteer to be involved in the accreditation process.

A number of graziers have already become accredited Grazing BMP businesses over the past 12 months. If you are interested in accreditation, a Grazing BMP staff member will work through a checklist with the grazier and assist them in gathering the required evidence for the accreditation process.

There are a number of accreditation rewards offered to those who become accredited businesses.

A reward could be:

- » \$500 towards property safety signs
- » \$500 towards full AgForce membership
- » \$500 towards other forms of industry certification (PCAS, Organic, EU, MSA or other recognised market certification)
- » \$500 towards professional satellite or aerial photography of the accredited property
- » \$500 towards a workplace health and safety plan from a recognised training organisation
- » \$500 towards a recognised business skills development program such as Business Edge, RCS
- » a Garmin GPS and user training package
- » a Phoenix mapping tool and user training package.

New Burdekin Coordinator

In December 2015 the DAF Burdekin Grazing BMP team farewelled Coordinator Megan Willis, who has taken 12 months off for maternity leave. We wish Megan all the best and congratulate her on the hard work and dedication she has shown towards the Grazing BMP program.

While Megan is on leave, Jo Robertson will be filling the BMP Coordinator role for the Burdekin. Jo is looking forward to working with the Grazing BMP team from a coordination perspective. Jo has spent the last two and half years as a DAF extension officer in the Burdekin involved in the initial rollout of the Grazing BMP program.

If you have any Grazing BMP enquires please don't hesitate to contact Jo.

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Jo Robertson, acting Burdekin Grazing BMP coordinator.

Performance of Wambiana grazing trial strategies through the recent drought

Despite extreme drought, moderate or flexible stocking strategies gave acceptable animal production without requiring drought feeding. Pastures were also largely maintained, ready to respond when a good season returned.

In contrast, heavy stocking required drought feeding, partial destocking and gave negative weight gains. Pastures were also severely overgrazed and will have a very limited ability to respond to rainfall.

Heavy stocking rates reduce resilience, increasing the frequency and impact of drought and reducing the ability to recover when good seasons return.

Drought is really tough for industry but essential for a long-term project testing how different grazing strategies cope with rainfall variability.

Like everyone else, the MLA- DAF-funded Wambiana grazing trial near Charters Towers has been experiencing some very harsh seasons, with 2014/15 the fourth driest year in 105 years.

The Wambiana trial started in 1997 and is testing five grazing strategies:

- Heavy stocking rate (HSR) at 4 ha/AE (adult equivalent) or 25 AE/100 ha.
- Moderate stocking rate (MSR) at 8 ha/AE or 12.5 AE/100 ha.
- Rotational wet season spelling (R/Spell) with moderate stocking (8 ha/AE).
- Flexible stocking (Flex)—stocking rates matched to pasture availability.
- Flexible stocking with wet season spelling (Flex+S).

Stocking rates in the flexible strategies have varied as rainfall has fluctuated, but since the big wet of 2011 they have been reduced steadily as seasons deteriorated.

Results

Although the 2013/14 wet season was only slightly below average, by May 2014 treatments differed sharply.

Pasture yields ranged from only 280 kg/ha in the HSR, to 1000 kg/ha in the two flexible strategies and about 2000 kg/ha in the MSR and R/Spell strategies.

Consequently, despite access to a 30 per cent urea loose lick, steers in the HSR lost weight rapidly as the dry season progressed. By November 2014, some very poor steers had to be withdrawn for hand feeding, with those remaining in the HSR paddocks having to be fed molasses and urea (M8U).

Steers withdrawn from the HSR were kept for as long as possible in the hope of returning them to their paddocks, but with the failed wet season all were ultimately sold in early 2015.

Despite the severe conditions, steers in the other, lighter stocked flexible and fixed stocking strategies remained in good condition, while also only having access to a 30 per cent urea loose lick. Although these steers also lost weight (-30 kg/head) over the dry season, it was less than half the weight loss of the HSR steers (-74 kg/head). More importantly, steers in these other strategies did not require expensive M8U feeding.

The 2014/15 wet season that followed was extremely poor with only 246 mm falling across the trial. As a result, the total weight gains for the year were the lowest recorded in the 18 years of the trial. Indeed, the HSR steers actually lost weight over the full 12 month period (Table 1).

Weight gains in the other strategies were also low (11–44 kg/head) compared to the long-term average (120 kg/head) but still far better than those recorded in the HSR. Consequently, steers in these treatments were still in good condition when they went to the meatworks in June 2015 and recorded much greater carcass weights and better prices than those in the HSR (Table 1).



Despite 2014/15 being the fourth driest year in the 105 years of records, in March 2015 steers in the 'Flexible/variable' stocking treatment were in good condition due to their relatively low stocking rate.

The poor season and treatment effects were also reflected in the pasture yields measured in May 2015. These ranged from between 600–900 kg/ha in the more lightly stocked strategies to only 64 kg/ha in the HSR (bare ground!).

Accordingly, stocking rates for the 2015/16 season were reduced further in the two flexible strategies to around 16 ha/AE (6 AE/100 ha). With a severe shortage of grass in the HSR strategy, stocking rates had to be cut from the usual four ha/AE down to 20 ha/AE (4.5 AE/100 ha).

The 2015 dry season was even worse than the previous year with the few remaining HSR steers having to be withdrawn from the trial within four to five months after first having being fed some supplementary hay.

In the other treatments steers also lost weight, but only a few particularly thin animals had to be withdrawn in late November 2015 for feeding. M8U feeding was also initiated across

all strategies at this time. This is significant, as it is the first time in 18 years that drought feeding has been required in these strategies where stocking rates are flexible or maintained at long-term carrying capacity.

What have we learnt?

The 18 years of data from the trial clearly shows that stocking around long-term carrying capacity, matching stocking rates to available forage and wet season spelling all increase the ability to cope with rainfall variability.

This is shown by the fact that reasonably acceptable animal production was attained without the need for drought feeding despite 2014/15 being the fourth driest year on record. Moreover, while pastures are very short they are still relatively intact and should respond rapidly when the seasons improve.

In contrast, heavy stocking resulted in no animal production, with animals having to be fed to escape starvation. Even at the reduced stocking rate caused by the removal of animals, production was very poor. Pastures have also been badly damaged and will take a long time to recover when better seasons return.

Overall, trial results clearly show that while heavier stocking rates may be profitable in good seasons over the short term (less than five years), they are ultimately unprofitable.

Table 1 Stocking rate, individual live weight gain (LWG) for the dry season (DS) and per year, total LWG per hectare and meatworks prices (#2 steers) for the 2014/15 season. NB Stocking rates calculated from actual paddock weights.

*The HSR stocking rate is less than four ha/AE due to the withdrawal of some animals due to drought.

Strategy	Stocking rate (ha/AE)	DS LWG (kg/head)	Total LWG (kg/head)	Price (\$/kg)	Carcass value	LWG/ha (kg/ha)
Flex	10.6	-34	11	\$3.80	\$877	1.2
Flex-Spell	9.5	-27	44	\$3.94	\$1028	4.9
HSR*	6.2	-73	-54	\$3.43	\$681	-15.4
MSR	8.3	-30	12	\$3.83	\$925	1.6
R/Spell	7.8	-25	18	\$3.87	\$1000	2.4



In contrast, even in February 2015, steers in the heavy stocking rate treatment were in poor condition and struggling to find enough to eat.

They also increase risk and inevitably magnify the impact of drought on production through a number of ways:

- First, heavier stocking rates reduce the total amount of pasture produced, lowering the carrying capacity because perennial grasses are replaced by lower producing, shorter-lived species or annuals. As a result, stock run out of grass sooner in more years.
- Second, heavy stocking rates increase the variability in pasture production between years. This occurs because evaporation rates increase and rainfall infiltration declines, reducing the effectiveness of rainfall. This amplifies the normal variability in pasture production driven by rainfall and causes far sharper boom-and-bust cycles, making management a lot harder.
- Third, heavier stocking rates reduce resilience as the system is impacted sooner and harder by drought and takes longer to recover than before. This is shown by the fact that in 2014 drought and hay feeding were required far sooner in the HSR than previously. In the 2001–2006 dry period it took a year or more of drought before feeding was required in the HSR. This highlights the loss of resilience in the HSR over time due to overgrazing and pasture deterioration.

Some unanswered questions

Aside from the HSR treatment, to date the other stocking strategies have performed at a generally acceptable level, but some important treatment differences have emerged.

For example, although pasture condition in the ‘flexible’ strategies is far better than in the HSR it is still markedly poorer than in the fixed moderate stocking and rotational spelling strategies.

Some major unanswered questions remain and the present run of seasons is a great time to get answers to some of the following questions:

- Relative to the MSR, can we run more cattle and still improve land condition through flexible stocking strategies that take advantage of good seasons and avoid drought?
- Are fixed stocking strategies like the MSR—where stocking rates are not adjusted in droughts—sustainable in the long-term?
- Is wet season spelling required if stocking at long-term carrying capacity? Data from the last six years show that animal production is improved with wet season spelling.
- What advantages, if any, does wet season spelling confer on flexible stocking strategies? Does spelling put unacceptable grazing pressure on non-spelled areas?
- What will happen in the HSR once the rains return? To what extent will animal production and pasture condition recover?

In the past few weeks the trial has received about 170 mm of rain and the 32 withdrawn steers have all been returned to their paddocks. The spelled areas have been locked up and it looks like the season has finally started, but time will tell.

We will continue monitoring the pastures and stock and trying to answer the above questions, and many others, until at least September 2016 when our MLA funding expires. With the support of industry, hopefully this funding will be extended so that we can continue working with graziers to improve their ability to remain profitable and improve pasture production in our ever-variable climate.

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Should I restock?

Some properties may have been fortunate enough to receive rain over the past few months, so owners and managers may be asking themselves: ‘What are my best options for restocking?’, ‘Should I build female numbers as quickly as possible?’, ‘Which class of female should be purchased?’, and so on.

On the other hand, other properties may not have received adequate rainfall and may be asking the opposite question ‘Which classes of stock should we destock?’, if, after a number of years of drought they still have animals left to destock.

While each property and business is different in respects to land type capability, current livestock numbers and classes, the performance of those livestock, asset and liability positions, and indeed their expectations of future performance, the broad answer to all these questions is the same.

Keep the livestock that have the highest margin going forward and sell the livestock that have already made the majority of their potential and have the lowest returns into the future.

After answering the above questions things get more complicated. Owners/managers then need to ask themselves ‘Is there enough grass to carry our animals?’ and ‘Will the water supply last?’ These last two questions ultimately dictate options for those who are able to purchase animals or for those who need to destock. The past can provide some insight into these considerations, which are just as relevant today as they have ever been. Some of these insights include:

- The profit centre is in the steers. If the country is capable, experience has shown that the margin on steers can be double that of breeders in Northern Australia. Therefore, the more steers in a group of cattle the higher the profitability of that group. The exception to this is very good breeder herds (in excess of 80 per cent weaning rates as a rule of thumb).
- Beware of the weaner trap. While the temptation might be there to retain as many breeders as possible by reducing male

offspring numbers, this ultimately leads to running a low margin (and high cost) business in the build-up period, which could be four or five years, or longer. Balancing cashflow demands here can be tricky.

- The decision to purchase (or sell) heifers or cows largely comes down to the difference in price between the two. This can fluctuate and this decision should be made by crunching the numbers as close as possible to the purchase (or sell) date. The outcome can also change depending on whether heifers can be adequately fattened if they do not fall pregnant/lose a pregnancy and what is the expected performance of the two classes.
- For many producers who have destocked large numbers of cattle over the past few years now is a good time to implement a herd recording system that can provide relevant, timely information into the future.

As always, each business is going to be different and the answer to these questions will be different. DAF provides tools and support to assist in forecasting herd build up, options analysis and impacts on cashflow. Computer programs used include Breedcow & Dynama. This package can be downloaded free from www.daf.qld.gov.au/animal-industries/beef/breedcow-and-dynama-software.

Breedcow and Dynama programs are based on four budgeting processes:

1. Comparing the likely profitability of the herd under different management or turnoff systems—Breedcowplus program.
2. Making forward projections of stock numbers, sales, cash flow, net income, debt and net worth—Dynamaplus program.
3. Deciding what to sell when the plan goes sour or what to buy when there is an opportunity—Bullocks and Cowtrade programs.
4. Evaluating long-term investments in herd or property improvement to determine the rate of return on extra capital—Investan program.

While some of the unique situations producers find themselves in can make decision-making difficult, it is imperative to know that there is assistance available to help answering some of these questions.

Producers can either contact myself directly or to connect with a local FutureBeef extension officer by calling 13 25 23 (13 QGOV).

Tim Moravek, DAF FutureBeef, Charters Towers
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Mixed market as live export booms early in 2016

Our cattle market is in a very interesting position in early February, at the time of writing this report. Southern Queensland abattoirs have opened up in 2016 with prices 40–50 cents per kilogram carcass weight below the Christmas closing prices.

Better bullocks are currently quoted closer to \$5/kg than \$6. Prices are reflecting reduced demand and a declining American manufacturing meat market, which started to fall late in 2015. Meat wholesalers in Australia are also reporting reduced red meat sales in preference for chicken and pork, which is putting downward pressure on domestic fat cattle prices.

In comparison, demand and price for live export cattle is still very strong. Current quoted prices out of Townsville are \$3.45 per kilogram live for steers in the 280–360 kg weight range and \$3.10/kg for heifers of the same weight. Heavy cattle prices are at a record high with steers 370–450 kg quoted at \$3.15/kg.

On top of the strong live export market, there has been more rainfall around the north and the rest of Queensland than for the past several years. Re-stockers are paying prices over \$4 per kilogram live weight for light steers and over \$1700 for good cow–calf units in southern Queensland store markets and online sales.

It is too early in the year to be attempting to predict beef cattle prices for the year ahead. Many parts of Queensland are still waiting on significant rainfall; however, some of the key factors influencing price are fairly favourable.

The weather experts are predicting a likely breakdown in the dry El Niño weather system. Australian total cattle numbers are well down. The ongoing drought over the past three years will affect calving rates, especially in the northern dry tropics. Cattle numbers for re-stocking and sale into various markets will be under pressure for some time, which should

have a positive influence on price. Some relief for many producers under debt pressure is the continued low bank interest rates. There has also been healthy demand from various domestic and overseas investors with property purchases.

The Australian dollar value to the US dollar has remained around the 70 cent mark, which is favourable for exports. A lot of high quality, branded meat products have continued to enjoy strong demand and prices both in domestic and export markets.

Our biggest cattle saleyard, at Roma, had a record 2015 selling season with 409 172 head of cattle sold with an approximate total value of \$327 million, equating to an average of \$800 per head.

Official figures on Australian beef exports for 2015 show we shipped 1 283 579 tonnes, which was only 2688 tonnes behind the record 2014 export tonnages. In 2015 the USA imported 415 951 tonnes, Japan 285 223, Korea 167 000 and China 148 000 tonnes.

Live export

As previously mentioned, the live cattle trade is booming with strong demand and prices especially out of Indonesia; however, similar to all live export markets, it is vulnerable to change at short notice. Australian exporters have received a 200 000 head Indonesian quota for the first quarter of 2016.

Many observers are predicting there will be consumer resistance in the wet markets soon, leading to a reduction in demand and subsequently a fall in prices. Beef market



Live export has boomed in the early part of 2016.

commentators are also indicating cheap, boxed buffalo meat from India will be flooding into Indonesia at any time, which could further contribute to downward pressure on prices.

United States

In 2015 Australia exported approximately 415 000 tonnes into the US, which was a huge turnaround from the 167 000 tonnes exported back in 2011. The prospects for US exports in 2016 are unclear at this stage.

The latest 2016 meat forecast figures from the US Department of Agriculture predicts total domestic meat production to exceed 2015 production by up to 3 million tonnes, reaching a total of 44 million tonnes. Forecasted figures show chicken and beef accounting for 18.4 and 11.3 million tonnes respectively, which places beef 500 000 tonnes ahead of what was produced in 2015. Beef imports are forecast to fall by 11 per cent to around 1.38 million tonnes and US beef exports to sneak over 1 million tonnes.

US drought conditions are over and cow slaughter numbers are dropping rapidly as the US herd rapidly builds. This has also coincided with record grain crops over the last couple of seasons, leading to cheaper feed prices.

Argentina

The situation in Argentina is changing quickly with the election of a new government and the promised removal of the current 15 per cent export tax imposed on beef exports. In 2005, before the tax was imposed, Argentina exported 437 000 tonnes of beef. At this time the Argentinian beef herd was around 51 million head, producing approximately 2.7 million tonnes of beef annually. Removal of the current export tax imposed in Argentina could lead to increasing competition in the world market place.

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Southern Gulf NRM plan close to completion

Southern Gulf Natural Resource Management (NRM) reached an important milestone in the renewal of the regional NRM plan with a presentation to members at the recent Annual General meeting.

Southern Gulf NRM Chief Executive Bob Wilson said the plan is the framework for future NRM investment in the region.

The regional NRM plan plays a very important role in identifying the most important assets in the region, the priority issues for each asset and the outcomes sought during the planning period.

‘A critical purpose of the plan is to ensure it reflects the knowledge and aspirations of the regional community, including the local grazing industry, along with the best available scientific information,’ Mr Wilson said.

‘Southern Gulf NRM’s long-established relationships in the regional community ensure that the plan will be firmly grounded in our region, responding to regional needs and proposing regionally-relevant responses.’

Australian Government funding support for the plan requires that it incorporates a regionally-relevant response to climate change—identifying risks and proposing adaptation and mitigation activities relevant to the Southern Gulf Region.

Collaboration with other northern Australian NRM bodies has helped Southern Gulf NRM to access the best available scientific analysis and predictions to support planning decisions.

Mr Wilson said colleagues at Northern Gulf Resource Management Group have produced Spatial Analysis of Southern Gulf Climate Change Datasets for NRM Planning, which provides very detailed information about current environmental values and predicted change under different climate change scenarios.

‘Southern Gulf NRM has engaged NRM planning and climate expert Rohan Hampden to integrate community input and scientific information to bring the plan to completion.

Rohan’s energy and expertise will help ensure a quality product,’ Mr Wilson said.

The draft plan and important technical appendices are available on the Southern Gulf website at www.southerngulf.com.au.

While the formal consultation period has ended, Southern Gulf NRM would be happy to discuss planning issues and opportunities as the finishing touches are put on the plan, which is due for completion early in 2016.

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Weed control innovation forum and field day in April

Southern Gulf Catchments and the Department of Agriculture and Fisheries will host a Weed Control Innovation Forum and field day later this year.

North-west Queensland graziers are encouraged to head to Richmond on April 27 to attend the event.

The event will feature hands-on demonstrations of various new control tools, research updates as well as new approaches to better manage prickly acacia, rubber vine and other serious weeds in north-west Queensland.

More information about the field day will be available at www.southerngulf.com.au and www.futurebeef.com.au



Climate Change in northern Australia

Information on climate change for Aboriginal people living in the north



Climate Change impacts in the Gulf

A recently published report on climate change in northern Australia presents information specifically for Aboriginal people in northern Australia.

Produced by CSIRO and Griffith University, the report highlights expected changes in the monsoonal north.

Southern Gulf NRM chief executive Bob Wilson said for the Southern Gulf region predicted sea level rises are a major concern for the extensive low-lying coastal ecosystems of the Gulf of Carpentaria.

‘According to the report, over the past 20 years sea levels in northern Australia have been rising from between seven and 11 mm each year,’ Mr Wilson said.

‘Projected forward for several decades, these sea level rises will be the source of much change in our mangrove forests, our river estuaries and low lying coastal plains.’

The report highlights opportunities for traditional owners to contribute towards reducing greenhouse gas emissions through changes in the way fire is managed.

Early season burning is already widely practised in the Northern Territory, reducing emissions and providing revenue for the traditional owners who manage fire in this way.

Southern Gulf NRM has copies of the report to distribute to our regional Aboriginal communities and it can be found online at www.territorynrm.org.au.

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Indian couch invasion: why we need to know more!



Producers from north Queensland meeting with agency staff and sharing their views on the issue of Indian couch invasion in pastures and options for management.

- Rapid spread and invasion of Indian couch (*Bothriochloa pertusa*) into Queensland's pastures is continuing: widely reported in north-east Queensland but now also taking place in other, more productive areas.
- Producers in central Queensland have ongoing concerns about Indian couch invasion into pastures and the threat to feed supply and animal production.
- Producer feedback revealed strong indications that a combination of grazing pressure and seasonal conditions are drivers of Indian couch invasion.
- Producers also revealed Indian couch produces less biomass than native grasses, has low drought tolerance as it is quick to disintegrate, has a short growing period and is invasive.
- There are currently no management guidelines available for producers on options or actions for resolving the Indian couch problem.
- Indian couch invasion in pastures is an important issue that needs to be addressed before further spread occurs, risking declines in pasture condition.

Indian couch, not to be confused with green couch, is an exotic *Bothriochloa* species that has become naturalised in many parts of Queensland.

Early introductions of Indian couch into Australia took place in the 1930s and again in 1950. Many early plantings were for lawn purposes.

The least desirable strain, Bowen, spread rapidly in the Bowen and Collinsville areas of north Queensland. It is less desirable because it is early to seed, produces a loose pasture and it is the least vigorous.

However, it is a good coloniser, so it can grow on bare ground. It also tolerates heavy grazing and has competitive advantages that allow it to persist, such as its prolific seed production and growth by runners.

Today, it is widespread in the upper Burdekin catchment. Increased dominance of Indian couch in pastures may actually be a symptom of a range of issues such as overgrazing, drought or reduced soil fertility.

The fact that an Indian couch invasion is taking place on more productive landscapes or under different grazing pressures is interesting. Adding to our lack of understanding of drivers of Indian couch invasion is that there are no specific management guidelines available to producers on options or actions for either learning to live with Indian couch or for reducing or eliminating it in pastures.

This has led to a lot of interest amongst scientists and extension staff to develop a research and development (R&D) project on Indian couch. Fundamental to such development is producer engagement and feedback.

Is Indian couch really a problem?

Indian couch is a double-edged sword: it is moderately palatable to cattle, tolerates heavy grazing pressure and holds soil together. So it provides some carrying capacity and provides good ground cover on soil that would otherwise be prone to erosion.

Notwithstanding these benefits, it is also opportunistic and invasive, not as productive as other tussock grasses and can form monocultures. An adage 'turns good country bad and makes bad country better' might very well apply!

There is major concern surrounding the ability of Indian couch to invade and dominate pastures when the opportunity arises, and subsequently alter the feedbase and undermine otherwise productive systems. The opportunity to learn more about this grass and thus how to manage it and reduce further invasion is upon us—it's time to act now before it's all too late!

Work in progress: a joint venture

In November 2015 the Department of Agriculture and Fisheries (DAF) funded a small project focussed on developing an R&D proposal to address the loss of productivity in pastures invaded by Indian couch. A key aspect of the work has been consultation with producers and agency staff. Grazier feedback has been most useful and comprehensive, with the feedback captured from producers of both north and central Queensland.

This article focuses on the feedback from producers in the north. The full discussion

paper can be found on the FutureBeef website (www.futurebeef.com.au). Future workshops are also envisaged for the Burnett–Mary region.

Producer feedback: north Queensland

In November 2015 producers on the goldfields and basalt land types in the Burdekin were given the opportunity to share their views on the subject of Indian couch encroachment in pastures. Some compelling findings were revealed, as shown in Table 1.

Stark contrasts can be seen for these different areas of the Burdekin. For the goldfields Indian couch invasion has taken place over 30 plus years and today is reported as the dominant pasture species. By comparison, invasion of Indian couch on the basalt has been only within the past 15 to 20 years, with areas still relatively isolated. The feedback also revealed strong indications that a combination of grazing pressure and seasons (drought) are drivers for Indian couch invasion.

The feedback demonstrated that Indian couch, although palatable, is not a desirable grass for beef production in north Queensland given that it produces less biomass than native grasses and it also has a lower drought tolerance (it is quick to disintegrate and is invasive).

The invasive nature of the grass was a major concern for producers; particularly given that monocultures of Indian couch can form and may competitively exclude preferred pasture species.

The effect of Indian couch monocultures on soil health is not known, but was an area of interest for the basalt producers.

Table 1. What the producers in north Queensland think of Indian couch invasion—ideas, attributes and contrasts shared by producers from the goldfields and basalt land types.

Features	Native pastures of North Queensland	
	Goldfields	Basalt
Time frame	Invasion since the 1980s	More recent invasion—within the last 15 to 20 years
Occurrence and extent	Dominant Front paddocks: 100 per cent Back paddocks: Indian couch around heavily grazed areas	Restricted to areas with increased grazing pressure, such as holding yards, around waters, front paddocks It hasn't reached its maximum extent, so potential for further spread
Grazing value and animal production	It's all we've got, so it is our value! Not as much bulk so reduced animal production Not a good finishing grass Indian couch runs out Better production on native pastures	Some value but not the grass we want! Increased consumption when it starts drying off
Growing attributes	Quick response to rain (if alive) Quick to disintegrate, such as during drought Indian couch takes advantage of bare patches in the pasture	Not much rain required for a response Short growing period
Possible drivers for invasion	Feed supplements, namely M8U, which increased grazing pressure, combined with drought	Grazing pressure and drought Fire followed by no rest
Concerns	Hard to control further spread when there is a seed source already present How do we get native perennials back? With Indian couch dominance fire carries the risk of subsequent bare ground and weeds	Effect on soil health and biology? Reduced organic matter.
Important research questions &/or possible management options	Role of wet season spelling? Limited if there are not enough native grasses to make a real change Effect of mosaic burning of paddocks with light spelling? Is high density grazing the answer? Aerial seeding stylos Combination of fire plus seeding? Application of fertiliser in special use paddocks Cost benefits analysis for cultivation required	How do we suppress Indian couch? How do we prevent loss of native seed bank? What legumes are available for the Basalt? Effect of wet season spelling on Indian couch? Indian couch for weaners? How do we make it difficult for animals to selectively graze? Can we create a seed bed for more desirable seeds through animal impact?

In addition, an important concern for the goldfields' producers was the risk of bare landscapes forming should Indian couch be removed.

This presents a compelling finding and targeted management guidelines may need to be developed. For instance, where Indian couch is dominant (the goldfields) learning to live with it might be the most suitable focus of research. Otherwise, techniques for renovating land may need to be implemented, such as cultivation and sowing of new species, providing this is economically feasible.

For the basalt, however, where Indian couch invasion has not reached its full extent, research might focus on improving understanding of the plant and drivers of invasion. So management actions and options would be targeted towards reducing/halting invasion.

Where to next? Plans for an Indian couch project

Consultation with producers and numerous agency staff on the issue of Indian couch in pastures has revealed a lot of enthusiasm for addressing this problem.

The next step is to attract funding from Meat & Livestock Australia (MLA) so that research focussed on Indian couch and applicable to industry needs can commence. Major priorities are: a better understanding of the geographical extent and rate of spread of Indian couch in pastures, quantifying its impact on both landscape function and pasture production, and testing different methods and developing guidelines for managing Indian couch.

These will need to be tailored to the different circumstances that exist, such as learning to live with Indian couch where it is dominant versus options for reducing/halting invasion versus options to completely remove it on cultivated land.

I look forward to reporting back to graziers in central and north Queensland on my progress.

Lastly, but most importantly, thank you to the producers who gave up their time to take part in the consultation workshops, shared their experiences and provided feedback. Their awareness, experience and cooperation means R&D is targeted to meet the needs of the wider beef industry.

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Do you know your P status?

Previously, it was thought that most black soils and certain vegetation types were phosphorus-adequate. There has been a considerable amount of testing on properties in these areas that has shown that this is not always the case.

Ask yourself these questions:

- Have you ever had your soil P levels tested?
- Have you had the P status of your cattle tested during the wet season?
- Are your cattle not gaining as well as they should be during the wet?

Depending on the severity of the P deficiency, the productivity losses can include:

- 30–40 kg weight gain in weaners over the wet season
- 10–30 per cent decrease in weaning rates.

There are other signs such as broken bones, bone-chewing and depraved appetite (chewing odd things such as stones, wood, poly pipe) that most people are familiar with; however, the absence of these signs does not guarantee that a phosphorus deficiency doesn't exist.

When to test for phosphorus status

The most accurate analysis of P status is during the wet season. During the dry season most nutrients will become deficient and phosphorus in the pasture declines as protein declines.

During the wet season the phosphorus level in plants should be at its peak, so if it is marginal or marginally deficient when the nutritional value of the pasture is at its peak then the phosphorus deficiency must be managed.

Why it is especially important to test this wet season

For properties that have been dry or droughted for several years, the first wet season produces pasture that is very high quality, with protein levels being particularly high. Growth rates are also often very high following a drought. If phosphorus is limiting in the diet, then the production response by supplementing phosphorus will be even greater.

A phosphorus analysis during the wet season provides you with an indication of whether the cattle are phosphorus-deficient, as well as the magnitude of the deficiency.



Producers who are unsure of the phosphorus status of their cattle are urged to test them this wet season.

Phosphorus not only has to be adequate in the diet but it also must be balanced up with protein and energy. When protein and energy levels increase, such as in the wet season, then the demand for phosphorus will also increase.

If you really don't know the phosphorus status of your cattle, I urge you to test your cattle now. If the test indicates that phosphorus is adequate, then at least you can rule it out as a primary limiting nutrient to production and explore other avenues for improving production if your cattle aren't performing as well as expected.

How to sample?

Soils

- Soil P levels can be tested, but the correct procedures must be followed for collecting the samples and the samples taken in a paddock must represent all soil types in the paddock where the cattle are grazing
- Often soil P levels can be marginal, which means that strategies for P management of cattle need to be carefully developed to ensure that there is a return on investment with supplementation without compromising animal productivity
- Management decisions should not be based purely on soil P analyses unless P levels are deficient to acutely deficient. This is because the pH of the soil will also influence the amount of phosphorus that is available to the plants and this then obviously influences how much phosphorus is available to the animal.

Blood

- Blood samples must be taken at the end of the wet season, but in order for them to be accurate they must be taken from non-lactating animals. The results from a blood analysis will be very accurate; however, it may be impractical to muster in cattle and to collect and process the samples

Faeces

- If you have never had an accurate assessment of the phosphorus status of your cattle and you have a paddock of green feed, now is a good time to do your sampling. The best time to get an accurate analysis is midway through the wet season and, preferably, when your cattle have run out of phosphorus supplement for 7–14 days
- All classes of cattle can be tested for P status through faecal analysis. The faecal phosphorus test analyses the P status of the animal, and when done in conjunction with a diet quality (F.NIRS) test the balance between phosphorus and protein can be determined.

If you would like more information on phosphorus management or faecal P testing please contact me on 4658 3254 or contact your local DAF FutureBeef officer.

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4658 3254



Attention to detail for pasture improvement

Roma producers John and Kate Scott run a backgrounding operation at Allandale, 47 kilometres north-west of Roma.



John Scott pictured between two trial paddock preparation sites, cutter bar (left) and offset (right).

They bring an intense focus on quality to their pasture improvement program and call themselves pasture farmers who specialise in beef cattle weight gain.

When the Scotts purchased the 7 000 acre property three years ago some of it was virgin country but the majority had considerable pasture run down. The property was also rife with feral animals including dingoes and pigs and an overabundance of kangaroos. One of the first major changes they implemented was the erection of exclusion fencing.



John and Kate Scott's improved pasture species include Premier digit and Progardes (pictured), Reclaimer rhodes, bambatsi and creeping bluegrass.

'If we wanted to develop improved pastures, we had to give it the best chance by fencing vermin out,' John says.

Kate adds: 'The pigs and the kangaroos were the main things that were going to hold back pasture development. Also, if we wanted to diversify into breeders or sheep we knew we couldn't have dingoes.'

Their quality philosophy starts with cattle selection. They choose only crossbred animals with 50 per cent Brahman content or less.

Temperament also plays a big role, with the Scotts preferring cattle that have been properly weaned and handled. They weigh and drench them onto their pastures and after 45 to 50 days they weigh the animals again to look at individual animal performance. Any animal that is not performing at the desired level is sold.

'Depending on the season we run 400 cattle in each mob, and we rotationally graze them,' Kate says. 'We don't leave them in each paddock for too long.'

They supplement with Bentobite during the green season and sulphur and mineral licks year round for rumen health and buffalo fly.

Their improved pasture grasses consist of buffel, creeping bluegrass, Progardes

desmanthus, Premier digit, Reclaimer rhodes and bambatsi. John says it was important to choose pastures that gave them a head start.

'We wanted pastures that come away earlier than everything else. The Premier digit and creeping bluegrass species are green a month and a half earlier than other species. When our buffel is frosted and dormant our improved pastures are up and away, and two months is a lot of time for weight gain. We've also learned to buy seed on germination quality rather than price.'

The Scotts introduced Progardes three years ago after considering a number of legume options, including lucerne and leucaena. They attended a number of leucaena courses, but each time felt the management requirements were going to be too onerous.

'I've been growing Progardes for two and a half years. It didn't rain for the first year, so it didn't establish, but then we had a good start to the season last year and it was away,' John says.

'We are really excited about the double function of Progardes being high protein cattle feed and a fabulous soil improver for our country,' Kate says.

Their choice of pasture species is determined by the species' suitability for their land type and conditions, where ambient temperatures can range from -5 to 45 °C.

'I think we've got a good mix now, and it's working well,' John says.

They use the FutureBeef Stocktake Plus app, developed by the Department of Agriculture and Fisheries and Meat & Livestock Australia, to measure and manage their grass.

They took the time to set it up with all available information on soils, area and rainfall, and this has allowed them to work out their carrying capacity and adjust their stocking rates according to pasture quality and quantity available in each paddock.

'We always like to leave a good body of pasture in the paddock, which means we're eight weeks ahead at the break of the season compared to if we grazed it to the ground,' John says.

'We might have to rethink this strategy now we have Progardes because the cattle have been preferentially grazing it,' Kate adds.



Kate and John Scott focus on quality at every stage of their pasture improvement program, from seed germination quality, species mix, decision support, cattle selection and timing of grazing rotations.

They have experimented with a range of paddock preparations, including deep ripping, cutter bar and offsetting. They are currently using offsets but John is open to other methods.

'I'd like to cutter bar some country then spray it, run the Kelly chain or a disc chain over it to disturb the soil and plant Progardes into that, but store the moisture first. Whether planting legumes or grasses, the more moisture stored in the soil prior to planting the better off you'll be in terms of getting them established.'

They've also learned not to let the cattle eat the paddock down too much before putting the cutter bar through. Kate says their natural instinct is to get the most out of the paddock before ploughing it, but they believe that keeping organic matter in there is better for the country in the long-term.

Their next project is to make winters more productive. They are experimenting with nitrogen fertiliser in the form of urea on 1 000 acres, to allow them to spell a lot of their country in the growing season. They are also considering feeding grain in the paddock as a low-cost alternative to feedlotting.

Their medium-term plans are to get the home farm fully productive, which they hope to achieve in three years, before looking to expand again.

'Instead of getting more land and going into more debt, we want to improve the land we've got and make it more productive. Our running costs are absolutely minimal,' Kate says. 'Compared to the southern states, we think the productivity in this country is only just starting.'

For more information contact:

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Managing shrub regrowth when the rains come

The current run of erratic storm rains may not break the widespread drought but it could provide the opportunity for effective control of shrub regrowth, particularly in the western areas of Queensland and New South Wales.

Even patchy storms can drop significant amounts of rain across portions of paddocks and properties and this may be sufficient to stimulate the growth of problem shrub species. When the drought-breaking rains do come large areas of dormant shrubs may spring into life.

Low-growing populations of prickly acacia are evident on the Mitchell grass Downs country—from well north of Longreach to the limits of its southern distribution.

Typical of any small shrubs, prickly acacia may have a well-developed root system but the drought means they have just survived and will be dependent on the stored plant food in their roots.

When effective rains occur the shrubs will revive and new leaf growth will appear—but for a short period the growth of the shrubs will still depend on their stored plant food. Once there is sufficient new leaf area, photosynthesis will provide the main supply of plant food for growth and this will continue until the plant moves into another dormant phase.

Graziers are encouraged to take the opportunity to implement control of existing shrubs at the stage when shrubs are first regrowing and before they become more established (this is when once photosynthesis starts supporting the plant).

With newly germinating shrubs the weak link lasts from while they are dependent on their seed reserves until they have sufficient leaf area to support the plant. To maximise the effectiveness of any treatment graziers can take advantage of the short period of weak-link phases in the shrub's life cycle.

The advantage of treating shrubs at the early regrowth stage applies to native invasive shrubs and introduced species. For native invasive shrubs, the goal is to regain and maintain the optimum balance of trees—shrubs—grass for each land type.

While fire is one of the most effective tools for management of shrubs, the opportunity for burning will not be available until there is sufficient fuel available. However, other methods—mechanical, chemical and grazing/browsing—can be used to manage and control shrubs. Integrating these methods can be the best approach. It allows for maximisation of the advantages and minimisation of the weaknesses for each method.

Where edible shrubs (such as mesquite and mimosa) are carrying seeds, the type of browsing livestock can make a difference to the viable seed for new shrubs. It has been found that for prickly acacia, sheep destroy about 80 per cent of the viable seeds that pass through their system; with cattle, it is about 20 per cent.

Graziers should check on the latest government regulations regarding tree and shrub management prior to commencement of treatment. Chemical selection and directions for application can be discussed with rural supply agents. Caution needs to be exercised where broad spectrum chemicals are used as they can affect non-target species.

It is sometimes difficult to obtain extensions on finance for shrub control, particularly where a relatively low population of plants occur. Removing shrubs in this scenario may not result in an immediate increase in profit. In this situation graziers may need to outline that eliminating or reducing a population of shrubs has the following benefits in the mid to long-term:

- reduction of input to future shrub seed bank
- reduction of competitive effect of existing shrubs on grass
- reduction of bare areas around shrubs (they are a focus for further encroachment)
- increase in future profit by:
 - » reduction in future shrub control costs
 - » increase in livestock productivity through higher grass production.

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Spyglass under development

It has been a busy time at Spyglass Beef Research Facility, with additional development works, including major water infrastructure works.

These works have occurred to distribute water from the Burdekin River throughout the property, due to the majority of dams going dry. Ten 47 000 litre and twelve 22 500 litre tanks have been installed, along with 20 kilometres of 63 mm poly pipe and 30 extra concrete water troughs. A commercial contractor has desilted four major dams.

Purchase of a second-hand D6T dozer has allowed a further six dams to be cleaned out by the newly appointed plant operator. Molasses storage capacity has been increased to 120 tonnes. A 4.5 tonne molasses mixer and two molasses pumps have purchased to enable the efficient distribution of the molasses.

Two new sets of yards, that can comfortably hold 1 500 head, were completed in April 2015. They each have hydraulic slide gates, a five-way hydraulic auto-draft, calf race and cradle. The yards have been designed to address animal welfare issues and human workplace health and safety (WH&S) standards. There is also a large covered workspace to allow for training needs.

Fencing works have commenced to divide some of the paddocks on the western side of the Gregory Development Road. This will increase the number of smaller paddocks available to support project requirements, including the current genetics project, walk-over-weighing scales and controlled mating programs.

Further troughs have been installed and the water holding capacity increased from 250 000 to 420 000 litres. This is currently bore water, due to all but three dams on Spyglass being dry.



Tank yards crush side, October 2015.

Queensland Nickel has completed their extraction of high-grade nickel, leaving a newly created dam site on the western side of the Gregory Development Road. In time, this will become a very important source of water for a variety of usages across this side of the property.

On the eastern side of the Gregory Development Road, the reconstruction of Mayne dam, an approximately 300 megalitre dam, has been funded. However, works cannot commence until soil moisture levels are at an adequate level. In the short-term, a further five 47 000 litre tanks, 25 kilometres of poly pipe and six troughs will need to be installed to ensure the property is adequately watered.



Tank yards under construction, February 2015.

Spyglass Beef Research Facility received 256 mm of rain in the 2015 calendar year, with 67 mm of this falling in late December. A further 96 mm (over six rain days) has fallen in January 2016. This follows on from 357 mm in 2014—well below the 600 mm annual average. Destocking has occurred due to the drought, with cattle numbers reduced from approximately 2 500 to 1 200 over the past twelve months.

Spyglass management have also completed all five self-assessment modules of the Grazing BMP program. After being assessed through the external audit process, they are now a Grazing BMP accredited producer. External auditors, Greencap, undertook an extensive WH&S audit. They gave Spyglass staff high praise for their attention to safety issues. Spyglass staff members were recently nominated for a DAF award for being proactive in implementing and adhering to high-level workplace health and safety standards.

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Spyglass Beef Research Facility projects update

wildlife, and cattle. Photos are taken in response to heat and movement. Possible explanatory variables for deer abundance include dog abundance and distance to the nearest water.

Digital Homestead Field Day

The Digital Homestead Field Day was held at Spyglass Research Facility on 9 October 2015. More than 100 people (including graziers, agriculture students and their teachers, academics and researchers) attended the informative and innovative day. Participants discovered how technology is progressing to assist producers manage beef cattle properties into the future.

The technologies on show included walk-over-weighing scales (Precision Pastoral Pty Ltd and CSIRO). The auto drafting ability of the Precision Pastoral equipment was demonstrated by drafting students into their respective school groups. Fixed wing and hovering drones fitted with cameras were flown by NQ UAV.

Tank monitors and weather stations were shown by Harrington Systems Electronics (Richmond) and Farm Monitoring Solutions (authorised dealer for Observant, Victoria). Graziers Richard Hughes (Wentworth Cattle Company) and Michael Lyons (Wambiana) gave their experiences and perspectives of the technology.

Greg Bishop-Hurley (CSIRO) demonstrated the digital dashboard, which allows data from the various remote technologies and other external websites to be easily accessed from the one screen, rather than having to go to a number of different individual websites to access your data.

High school students from Townsville and Charters Towers assembled digital sensors in the morning. The data captured by the sensors were then shown to field day participants that same afternoon by Professor Ian Atkinson from James Cook University.

The Isolated Children and Parent's Association were also able to raise funds for their end of year sports camp through the catering arrangements. These funds will keep the costs down for families and allow more rural kids to attend the camp and play sports that are not normally available to them.

For more information about projects at Spyglass Beef Research Facility contact:

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High school agriculture students from Townsville and Charters Towers participated in hands on activities at the Spyglass Digital Homestead Field Day.

MLA genetics of female reproduction research

This project aims to identify those influential Brahman, Droughtmaster and Santa Gertrudis sires that possess the genes to produce highly fertile daughters, as outlined in Issue 36 of the Northern Muster (<https://futurebeef.com.au/resources/newsletters/queensland-newsletters/northern-muster/>).

To achieve this goal, the project will improve the accuracy of Estimated Breeding Values (EBVs) within these breeds and develop the genomic tests that provide additional accuracy. The project is managed across three research facilities—Spyglass (North Queensland), Douglas Daly (Northern Territory) and Brian Pastures (Central Queensland).

Early in life, reproduction is determined by measurements at three main stages—birth, age at puberty and time from first calving to cycling. Those females with shorter time from birth to first cycle (lower age at puberty) and

with shorter time from calving to re-breeding are considered more fertile.

To achieve this information at Spyglass, daily birth data is recorded within the calving season of late October to early January. Maiden heifers born in the 2013/14 calving season are being monitored for age at puberty. Puberty is identified in these heifers when the first cycle is observed by regular ultrasound scanning of the ovaries.

First calf heifers (born in 2012/13) will also be monitored from calving until cycling using the same ultrasound technique. The calves of the current calving season will be the last group to be followed through these early lifetime reproduction measures. Therefore, the on-ground project work is scheduled for completion in late 2018.

It has been difficult to maintain this research given poor seasons. However, the gain is likely to far outweigh the pain, as results from this trial will allow producers to be much better equipped to make bull purchasing decisions.

Reproduction trait data of much greater accuracy will become available and, at this stage, it is estimated that information will be provided on over 180 popular sires.

Biosecurity: chital deer

Tony Pople and Mike Brennan from Biosecurity Queensland are working with researchers from Victoria's Department of Environment, Land, Water and Planning on the distribution of chital deer on pastoral properties north of Charters Towers, including Spyglass Beef Research Facility.

Deer in this area are so closely associated with homesteads that deer are rarely seen more than a few kilometres away, yet hundreds may congregate close to buildings and fawns will often be found in work sheds.

To better understand this pattern of distribution 100 trail cameras were placed on cattle and wildlife pads along 10 kilometre transects radiating out from homesteads on seven properties. These cameras are recording deer, wild dogs, feral pigs, macropods and other