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Information for rural business in Central Queensland

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Welcome to the summer issue of the CQ BEEF feature for 2016.

The central Queensland FutureBeef team have hosted a range of educational activities in the past few months.

Grazing Best Management Practice (GBMP) Expos, a Breeding EDGE workshop, NLIS account training sessions, phosphorous information sessions and accelerated GBMP workshops to name a few. Congratulations if you've prioritised the time to attend, we hope you took plenty away to improve your business. If you have some followup questions or you missed out and would like some of the information presented at the events please contact your local beef extension officer.

Our Central Queensland Beef Extension Team includes;

Mick Sullivan, Rockhampton	4843 2623
Matt Brown, Rockhampton	4843 2611
Kylie Hopkins, Rockhampton	4843 2615
Jim Fletcher, Mackay	4967 0731
Lauren Williams, Mackay	4967 0732
Jo Gangemi, Biloela	4808 6878
Carly Johnstone, Biloela	4808 6887
Byrony Daniels, Emerald	4991 0867

In this edition of CQ Beef Jim Fletcher discusses all you need to think about to give your legumes a leg up! You can also read about live animal ultrasound carcass measurements at Clermont, drought preparedness and the GBMP Expos in this issue.

The central Queensland FutureBeef team would like to take this opportunity to wish all our readers a very Merry Christmas and a green prosperous New Year.

Byrony Daniels
FutureBeef extension officer
Department of Agriculture and Fisheries, Emerald
4983 7467 Byrony.daniels@daf.qld.gov.au



Planning gives your planting an Edge

With the year flying by the next wet season is looming and there are favourable rainfall predictions for the 2016–17 wet season.

There is potential for beef producers to capitalise by establishing improved pasture systems that combine appropriate grass and legume varieties.

For the best outcome the planning shouldn't start when the plough hits the paddock, it should start months earlier back in the office. This is because although pasture improvement is of benefit to the business financially, doing a poor job can be a massive waste of money.

Where to start?

The first step to planning for pasture improvement is to identify and prioritise paddocks. Some factors that may influence this prioritisation are;

Soil fertility – Your best country responds better to renovation and will provide the best outcome in terms of established high quality pasture and legumes, if prepared properly. Return on investment is improved where good country that is not producing optimal feed is rehabilitated (Figure 1). So pick the best country that's the most run-down.

Soil type – Variations in soil texture and chemistry are critical considerations when choosing the establishment method. So make sure you are aware of the soil types found on your property and how they are distributed across paddocks. Prioritise paddocks that are more uniform in soil type as these areas are easier to manage prior to planting.

Feedback from a soil test – Identify areas of consistent soil characteristics before you sample for a soil test to avoid overlap across soil boundaries. If you are planting long lived grass plants and/or tap rooted legumes its best to take 2 samples per site. The first at a depth of 0–10 cm and a second below 30 cm from the surface. Be mindful of changes in the soil horizon to ensure that soil horizons are not mixed. The deeper sample will identify if any elements of the soil environment, might positively or negatively affect the outcome of pasture establishment and subsequent performance. This might sound like added expense, but in the grand scheme the cost of a soil tests is minimal, spending thousands of

dollars on seed and ground preparation for a poor result is not!

The best place for people to start is to look at some mapping information. The Queensland Globe is a free spatial imagery service provided by the Department of Natural Resources and Mines. The Globe includes mapping layers on land suitability that can be used in Google Earth. It provides some basic soil type boundaries and information on soil type and suitability for sown pastures.

Just go to <https://www.business.qld.gov.au/business/support-tools-grants/services/mapping-data-imagery/queensland-globe/install-mac-pc>



Figure 1a



Figure 1b.

Good quality Blue Gum soils (Figure 1a) that have been run-down and are now predominantly Indian couch and broadleaf weeds are a better option for resowing than the lighter country (Figure 1b), which is also run-down but doesn't have the same potential to respond due to lower soil fertility.

Should we plant this year?

There are a number of forecasting tools that can assist producers in judging whether the upcoming season is more favourable to

pasture establishment (Figure 2). Below are just a handful from the Bureau of Meteorology website;

- Climate Outlooks – Gives a 3 month overlook for rainfall for the whole of Australia. As well as a number of maps that explore the probabilities of rainfall.

<http://www.bom.gov.au/climate/outlooks>

- ENSO Wrap-up – Gives a detailed overview of how weather patterns which influence rainfall in Australia are currently trending as well as outlooks from eight international climate models.

<http://www.bom.gov.au/climate/enso>

- Interactive Weather and Wave Forecast – Gives a fairly detailed forecast for the movement of showers across Australia over a 7 day period.

<http://www.bom.gov.au/australia/charts/viewer/index.shtml>

- Australian Landscape Water Balance (ALWS) mapping – Is an interactive map of Australia that can give comparisons on soil moisture levels for upper and lower soil profiles.

<http://www.bom.gov.au/water/landscape/>

What's our summation for the season given the information provided on these websites? Well currently the soil moisture balance for Queensland as shown on the ALWS layer shows soil moisture levels not seen since this time in 2010. The Indian Ocean Dipole (IOD) has been in strongly negative territory since June resulting in the rainfall events we have received, but this is due to ease as we move closer to Christmas.

If the SOI continues to remain in the high positive figures this will elevate the chances of a movement towards La Nina. But most of the models predict neutral ENSO conditions or an average season. The probability of significant rainfall prior to Christmas is higher than in recent years, with many parts of Queensland showing an 80 per cent chance or higher of 100 mm in the period October to December. Use these tools to get a more accurate picture for your property.

What if it gets too wet?

Some areas of properties are prone to periodic waterlogging and this can affect the chances of establishment and also heighten the risk of soil loss if ground cover is removed. There are two ways to mitigate against this risk. The first is to plan for preparation of a seed bed and planting towards the end of the wet. This will assure a full moisture profile in the right years. Grass utilisation of soil moisture prior to removal and potential increased evaporation through soil agitation means that follow up rain is required for success. In addition late planted pasture also needs to be spelled late into the year. The second option to guard against soil loss is to work or spray out strips (Figure 3). This tends to work better when establishing legumes only, as strips of sown grasses in native or less desirable pastures are prone to excessive grazing.



Figure 3. Strips worked into timbered country that periodically floods for legume establishment.

What do we need to do to ensure a good strike?

Management of paddocks prior to planting is critically important to germination and establishment, yet in many cases it is poorly done in the northern beef industry. A few rules to abide by:

1. Remove competition, store water. Make it your mantra!
2. Species selection is critical! Get some advice!
3. Get a germination test and adjust seeding rates up if you have to use coated seed.
4. Soil-seed contact is critical, as is planting depth.

Jim Fletcher
Beef Extension (FutureBeef)
DAF Mackay
07 4967 0731 or 0428 960 572



What about the next drought?

Now that it has rained it is time to reflect on the question "How can I manage drought better?" In what condition did your pasture, cattle and finances make it out of the drought and what tools are available to help you manage the next one?

Graziers in a reef catchment and more generally are facing increasing community concern about land condition and ground cover.

We know it's to the graziers advantage to maintain healthy pastures to maximise grass production and kilograms of beef turned off. Knowing how much feed you have in front of you enables better and timely decisions on stock numbers and marketing.

The **Stocktake App** was developed to provide land managers with a practical way to assess land condition, long term carrying capacity and calculate short-term forage budgets. If this sounds like something you would like to update yourself on, please contact your local beef extension officer or local catchment group for help.

Setting your breeder herd up for ease of management is also something you could think of doing now to improve your management for the next drought. **Tailoring calving to the best time of year** could save you a lot on supplementation in drought years.

So how do you work out the timing? Aim to have the bulk of calves arriving 6-8 weeks before your green date. Your green date is the date at which there is a 70 per cent chance of having 50 ml of rain over 3 days. To check your green date on Rainman and analyse rainfall patterns in your area, contact your local beef extension officer.

The safest way to manage a herd into **control mating** is with a pregnancy test in April/May. Cows can be drafted into three management groups.

1. Cows calving at the desired time.
2. Cows calving earlier than desired in the dry season. This group may need looking after with an energy and protein supplement.
3. Cows calving later than desired who may need to have their calves weaned early to look after their body condition.

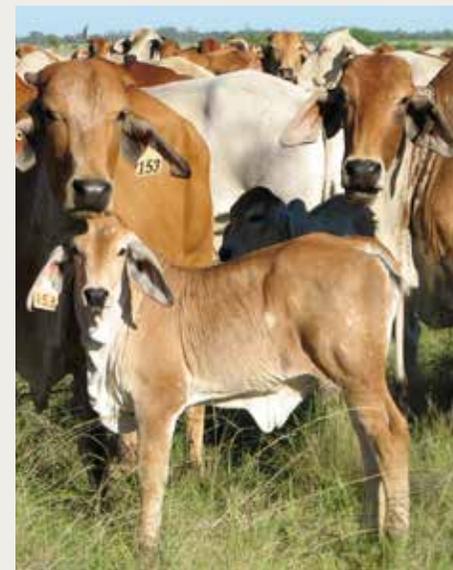
Drafting cows into **management groups** can also be used to lower supplementation costs by only feeding the group that needs help to maintain condition. For good re-conception rates cows need to be in store to **forward store condition** (BCS 3-4) at the end of the dry season when they calve. A pregnancy test early in the dry season (same muster as weaning) will also identify animals that can be sold and leave more feed over the dry season for the remaining pregnant cows.

The **Feedcalc spreadsheets** available from beef extension staff can help you compare the economics of different supplements in terms of dollars per gram of protein or MJ of metabolisable energy. **Faecal NIRS** tests can be used to determine if a mob of cattle require protein, energy or phosphorous.

It is also advisable to clarify an **end date** (date by which if you haven't received useful rain you need to start destocking). St Patrick's Day (March 17) is an end date for many graziers in the Central Highlands.

Did you need help evaluating which animals were going to be the best to offload in the drought, i.e. which animals would have the least effect on your profitability if you kept them? The **Cowtrade** and **Bullocks** programs of the **Breedcow Dynama** herd budgeting software can help you do just that. Other programs in the suite allow you to compare the likely profitability of the herd under different management or turnoff systems, evaluate long-term investments and make forward projections of stock, sales cash flow, debt and net worth. Your local beef extension officer can organise help with the Breedcow Dynama program.

In the midst of a drought it is cheaper to feed the calf than to feed the cow. Wean calves before the cow slips in condition and you will save on crisis feeding at the end of the dry season. **Weaning** saves 10-15 kg of breeder body weight per month in the early-mid dry season and 5-10 kg per month in the late dry season. The difference of a body condition score of 3 and a body condition score of 2 is 30 to 50 kg liveweight. Weaning is the most effective tool for managing breeder body condition as it has twice the impact of dry season urea supplementation on cow liveweight. Weaning is also important in a good season, we need to have plenty of condition



on her back in case the next year is a late break and she has an extended dry time to get through with a calf at foot.

Does your **property infrastructure** need improving, could additional waters allow cattle to graze areas they currently don't access and alleviate pressure on currently overgrazed areas. There will be a Grazing Land Management EDGE workshop in Emerald on the 21st to 23rd March 2017. This course is an opportunity to get some help measuring distance to water and planning your property infrastructure.

Byrony Daniels
Beef Extension (FutureBeef)
DAF Emerald
07 4991 0867 or 0427 746 434



Editorial committee

Byrony Daniels, Michael Sullivan (DAF)

Enquiries

Byrony Daniels
Phone: 07 4983 7467 Mobile: 0427 746 434
Email: byrony.daniels@daf.qld.gov.au
6232 11/16

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Establishing pastures this summer with cover crops... or smother crop

Access training support and expertise to benefit your grazing business in the Fitzroy region

Fitzroy Basin Association Inc. (FBA) has a number of programs on offer that provide different levels of support to grazing businesses.

The team in collaboration with its partners will take the time to understand your business, and recommend programs suited to you and your property.

What's on offer?

The programs can provide opportunities to benefit your business and improve reef water quality. You may be eligible to receive one-on-one assistance to develop property management plans, participate in training or access grants to undertake projects such as installing additional fencing or watering points.

The benefits to you:

- Improve productivity and profitability
- Enhance current knowledge and skills
- Access experts for information and advice
- Learn how to use online management tools
- Receive assistance to plan for your property's future
- Access incentives for on-ground projects

Eligibility

To assess your eligibility, contact the Fitzroy Basin Association. If your property is located in another Reef catchment, contact your local NRM group.

For further information contact:

Fitzroy Basin Association Inc
4999 2800
Email: admin@fba.org.au



Poorly-establishing pasture sown with a silk sorghum cover crop.

Many graziers are planning to renovate old pastures, sow new pastures or are establishing a legume in an existing pasture this summer to improve long-term productivity.

This year could be a good opportunity for pasture improvement due to the rain many areas have received during winter and spring, and the resultant subsoil moisture significantly improving the establishment success (or conversely reduce the risk of failure).

One question that is commonly asked is "should I use a cover crop when sowing a new pasture, and if so what should the cover crop be?"

The short answer is cover crops generally provide too much competition for the pasture, resulting in poor pasture establishment with lower plant numbers and significantly lower pasture yield.

Cover crops can provide some quick feed, but these pastures commonly have to be grazed lightly in the first couple of years for the pasture to thicken up, which markedly reduces the return on the pasture investment.

Cover crops are more successful when planting a summer growing pasture with a winter crop;

that is, sowing generally occurs in autumn and the cover crop is either a winter growing annual forage or grain crop.

The cover crop can provide protection from frosts and early income while the pasture is establishing. The other benefit is that another planting operation is not needed to get the pasture seed into the paddock. However, this technique is only successful if there is a full soil moisture profile at sowing (generated from a full summer fallow), if there is adequate in-crop rainfall, and if the cover crop is planted at half or less than the normal seeding rate (to reduce soil water competition).

Pasture establishment failures can still occur if competition from the winter crop is too great, frosts are severe (for summer growing pastures) or the spring and early summer period is dry.

Pastures sown with summer growing cover crops, for example silk sorghum or millet, are

generally unsuccessful. This is due to high competition for soil moisture from the cover crop due to its high biomass growth, which can kill the young pasture plants especially if hot and dry conditions follow planting.

Cover crops place a very high demand on soil moisture and fertility, and significantly increase the period to full establishment or at worst increase the risk of a complete pasture establishment failure. The more reliable option, by far, is to fallow the paddock to conserve moisture, then sow the appropriate pasture species (grass and legume) without a cover crop at the right time of the year.

Including a cover crop with the pasture seed to provide early feed is tempting, however consider that a return on the investment in pasture seed will only be generated when the pasture is in full production, and anything that slows establishment will significantly decrease this investment return. Happy pasturing!

Stuart Buck
Senior Agronomist (Sown Pastures)
DAF Rockhampton
(07) 4843 2605 or 0427 929 187
Stuart.buck@daf.qld.gov.au

Assessment of live animal ultrasound carcass measurements

The Clermont Cattlemen's Challenge is an annual competition in which local cattle producers enter five weaner steers for growing out and feedlot finishing for the 100 day grain-fed market.

A demonstration of the measurement accuracy of crush side ultrasound scanning of carcass traits was undertaken as a group learning exercise and to compare ultrasound and carcass measures to eating quality.

At the Cattlemen's Challenge Laurel Hills Feedlot Field Day one steer from each property group was selected for slaughter and carcass measurements after 110 days on grain.

There were 16 steers in total with an average live weight of 615 kg. The eye muscle area (EMA), intra-muscular fat (IMF), rump (P8) fat depth and rib fat depth of each steer was scanned using a Pie Medical Aquila System used to measure ultrasound scan data for BREEDPLAN.

P8 fat was also scanned with an UltrAmac®, designed to measure P8 fat to aid cattle selection for marketing. The steers were slaughtered three days later at the Kilcoy Pastoral Co abattoir and carcass measures taken by Kilcoy employees.

The striploin of each steer was judged in a blind taste test at the Clermont Show for juiciness, flavour, tenderness and overall liking. The following sections outline the findings from the demonstration.

The minimum recorded P8 fat depth in the Challenge steers was six mm. The Ultramac is potentially a useful tool to help select sale animals as long as the animals have some fat (i.e. > four mm).



The UltrAmac® fat depth scanner designed to measure P8 fat to aid cattle selection for marketing.



The Pie Medical Aquila System used to measure ultrasound scan data for BREEDPLAN. Photo courtesy of David Johnston.

Live animal scans vs. Carcass measures

P8 fat depth

Both Pie and UltrAmac® ultrasound measures of P8 fat depth were strongly correlated with carcass P8 fat depth. Pie scans of P8 fat depth were within 1 mm of carcass P8 in 10 of the 16 steers and within 3 mm in 13 of the 16 steers (Table 1).

UltrAmac® scans of P8 fat depth were within 1 mm of carcass P8 in 9 of the 16 steers and within 3 mm in 12 of the 16 steers. The Pie scanner correctly predicted P8 fat depth to be within or outside optimal carcass specifications of 8–12 mm in 13 of the 16 steers and the UltrAmac® in 11 of the 16 steers.

Rib fat depth

Pie measures of rib fat were weak-moderately correlated with carcass rib fat depth. For most steers (13 of the 16) scanned rib fat depth was smaller than carcass measures.

Differences between the measures were due to different measuring sites: ultrasound rib fat depth was measured at the Agricultural Business Research Institute (ABRI) prescribed position at the 12/13th rib whereas carcass fat was measured at the quartering site at the 11th rib.

Eye muscle area

Pie ultrasound measures of EMA were moderately-strongly correlated with carcass EMA). Pie scans of EMA were larger than carcass EMA in 14 of the 16 steers. The difference could potentially be due to chiller shrinkage. The Pie scanner correctly predicted the two steers with the largest carcass EMA (Steer # 10 and 46) and the two steers with the smallest carcass EMA (Steer # 54 and 83).

Intra-muscular fat

Pie measures of IMF were strongly correlated with carcass MSA marbling and moderately correlated with AUS-MEAT carcass marbling). The MSA marbling score is assessed on a finer scale (100-1190 in increments of 10) compared to the AUS-MEAT carcass marbling score (0-6 scale in increments of 1). The Pie scanner assigned an IMF > 5% to 5 of the 6 steers with the highest MSA marbling score (Tag # 17, 83, 31, 80, 60). All 8 steers with a scanned IMF < 5% gained an AUS-MEAT carcass marbling score of 1.

Carcass traits vs. eating quality

The strongest correlations between carcass traits and eating quality were found between MSA marbling score, flavour and overall liking. A higher MSA marbling score related to higher eating quality scores. The positive influence of marbling on improved eating quality for many cuts is generally well known. Weak-moderate correlations were found between carcass EMA, tenderness, juiciness and overall liking. A smaller carcass EMA related to higher eating quality scores.

Table 1 Ultrasound and carcass measures of 16 grain-fed steers. *Carcass MB is AUS-MEAT marbling score (0-6 scale in increments of 1). Carcass MSA_MB is MSA marbling score (100-1190 scale in increments of 10)

Steer #	P8 fat depth (mm)			Rib fat depth (mm)		EMA (cm ²)		IMF (%)		
	Pie	UltrAmac	Carcass	Pie	Carcass	Pie	Carcass	Pie	Carcass MB*	Carcass MSA_MB*
4	9	10	9	5	12	85	72	5	1	380
10	10	7	11	4	9	95	84	2	1	320
15	6	6	7	4	4	83	76	2.5	1	310
17	11	10	11	8	11	77	75	7	1	390
27	11	11	11	4	7	91	73	4	1	320
31	12	12	7	5	15	85	78	6	1	390
39	9	8	7	5	8	88	72	2.5	1	320
42	10	10	11	4	6	85	79	5	2	440
46	6	7	7	4	6	85	80	3	1	310
54	10.8	11	10	6	5	70	72	2	1	310
60	11	11	7	6	12	91	78	5.5	2	410
65	11	12	17	6	9	90	73	4.5	1	340
68	14	12	11	11	13	80	76	3	1	340
72	10	9	11	8	13	73	75	5	1	300
80	12	13	11	7	15	82	74	6	2	460
83	18	18	21	9	6	70	68	7	2	440
Average	11	10	11	6	9	84	75	4.4	1.3	361

Lauren Williams
Beef Extension (FutureBeef)
DAF Mackay
0467 804 287
Lauren.williams@daf.qld.gov.au

Melissa Holzwart
Beef Extension (FutureBeef)
DAF Charters Towers
0477 755 243
Melissa.holzwart@daf.qld.gov.au



Ultrasound scanning carcass traits of grain fed steers at Laurel Hills Feedlot, Clermont.

Pie scanner vs. UltrAmac®

The UltrAmac® performed well against the Pie scanner for P8 fat depth. Measures of P8 fat were within one mm of each other in 14 of the 16 steers (Table 1).



Grazing BMP Expo Success

The highly successful Grazing BMP Expos held at Biloela on 2-3 August and Blackwater on 11-12 October have highlighted the strength of the Grazing BMP Program and its value to industry.

The expos received strong industry support with 134 producers attending the expo at Biloela and 98 producers attending the Blackwater event, with many travelling hundreds of kilometres to attend. Furthermore, approximately 50 agribusiness service providers participated in each event.

The expos were organised by central Queensland beef extension officers Jo Gangemi, Kylie Hopkins, Carly Johnstone, Byrony Daniels and Matt Brown with support from the Fitzroy Basin Association, AgForce, Meat and Livestock Australia and delivery partners; Dawson Catchment Coordinating Association (DCCA), Central Highlands Regional Resources Use Planning Cooperative Limited (CHRRUP) and Capricornia Catchments.

The expo program included 10 mini workshops, covering all aspects of land, livestock and business management and provided an excellent opportunity for producers to hear from industry experts including Department of Agriculture and Fisheries staff who ran workshops on nutrition, grazing land management, genetics and communication.

Key note industry speakers, Dalene Wray (OBE Organic) and John Seccombe (Northern Cooperative Meat Co) highlighted the value of Grazing BMP in the beef supply chain by providing assurance to their customers of sustainable and ethical beef production.

Shane Webcke attended the expo in Blackwater in his role as Queensland Safety Ambassador to emphasise the importance of Workplace Health & Safety in the rural industry, an important area of Grazing BMP. Shane had the audience captivated as he recounted his personal experience of losing his father in a workplace accident and the impact that had on his family and his view on farm safety.

The forum aimed to re-engage producers who have previously completed the Grazing BMP program and also those new to the program.

Grazing BMP is an industry-lead program which allows graziers to assess their business against industry best-practice principals to identify areas in which they excel, and areas that need further improvement.

The Grazing BMP staff then help producers find the further training and skills needed to improve their business. Many producers completed their Grazing BMP reassessments at Biloela and Blackwater, ensuring that their knowledge gained from attending the expo would improve their business performance by being documented in action plans.

High levels of engagement by attendees at both the workshops and in interactions with

agribusiness service providers made the event very valuable for all that attended. Many producers commented on the "excellent two days" with most "taking home plans to improve bull selection, on farm safety and biosecurity" to name a few. One producer commented "There is help out there which provides a solid framework to improve your business".

Producers keen to be a part of the Grazing BMP program are encouraged to keep an eye out for upcoming workshops or get in touch with Grazing BMP staff at their local Department of Agriculture and Fisheries office.

Carly Johnstone
 Technical Officer (Grazing BMP)
 DAF Biloela
 07 4808 6887 or 0467 801 673
Carly.Johnstone@daf.qld.gov.au



DAF Grazing BMP staff Alice Bambling, Charters Towers, Kylie Hopkins, Rockhampton and Carly Johnstone, Biloela celebrate the commencement of the Blackwater Grazing BMP expo.



Dr Sadi Karimov PhD, Turakul Murodov, Darcy Gibbs, Anara Jumabayeva (Food & Agricultural Organization of UN), gained much insight into the Australian agricultural industry by attending the Blackwater expo.



Participants gain a practical water and soil erosion demonstration by Bob Shepherd, Department of Agriculture & Fisheries, Charters Towers.



Mick Sullivan, Department of Agriculture & Fisheries explains the compartments within the rumen with help from 'Buttercup'.



Grazing BMP producers Kate and David Moller catch up with Mick Sullivan, Department of Agriculture and Fisheries, Rockhampton while completing their Grazing BMP reassessment.



Emerald Agricultural College Students Lucynda Anderson and Lucindy Bugg, with Livestock Supervisor Petrina Vaughan enjoyed the Grazing BMP expo at Blackwater.



Amongst the numerous trade displays were Jodie Lucas and Fiona O'Sullivan from Workplace Health and Safety Queensland.