

CQ Beef

Information for rural business
in Central Queensland

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ISSUE 21 WINTER 2014

Cover image taken by Queensland Country Life photographer Sarah Coulton at Peter and Vicki Howard's property, Duckponds, just out side of Emerald.



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Water major concern as dry continues

Find out more about water and drought assistance

WE are now well into the dry season and stock water is a concern for many.

The Drought Relief Assistance Scheme (DRAS) includes the emergency water infrastructure rebate (up to 75 per cent) on water infrastructure purchased for emergency animal welfare needs.

A DAFF officer needs to approve a water availability statement completed by the claimant, which ensures eligibility to apply for the rebate on the basis of emergency animal welfare need.

Examples of emergency water infrastructure rebates include sinking a bore on properties where surface water has run out, or piping water to a trough in a grassed paddock that is too far from the nearest watering point for livestock to walk.

All forms for claiming water and freight rebates are available at www.daff.qld.gov.au/environment/drought or at local DAFF offices 13 25 23.

There is also help available through the DRAS scheme for fodder and water transport and freight subsidies for animals returning from agistment and for restocking after the drought.

The DRAS scheme is capped at \$20,000 (up to \$30,000 with an approved property drought management plan) each financial year.

There will be a Nutrition EDGE workshop in Emerald from the 19th to the 21st of July.

The information from the course is invaluable. The knowledge gained can help you save money through better supplementation decisions, cut your fertility losses and improve your turnoff capacity for the next few years. Please contact me if you're interested in the course.



To obtain a copy of the Dry Season Management of a Beef Business booklet please contact a beef extension officer.

DAFF 13 25 23 and FutureBeef have resources on feeding and management of livestock during drought, strategies

to help cope with stress and software packages to evaluate options and assist in decision making.

Email callweb@daff.qld.gov.au or visit www.daff.qld.gov.au/environment/drought, www.futurebeef.com.au/topics/nutrition.

Your local beef extension officer can help you evaluate supplement options to identify the most cost effective strategy for your business.

Mick Sullivan, Rockhampton, 07 4936 0239.

Ken Murphy, Rockhampton, 07 4923 6237.

Matt Brown, Rockhampton, 07 4936 0324.

Jo Gangemi, Biloela, 07 4992 9178.

Ross Dodt, Mackay, 07 4967 0734.

Jim Fletcher, Mackay, 07 4967 0731.

Lauren Williams, Mackay, 07 4967 0732.

Byrony Daniels, Emerald, 07 4983 7467.

A booklet titled Dry season management of a beef business can be downloaded free from www.futurebeef.com.au/resources/publications.

There are two producer demonstration sites (PDSs) featured in this issue of CQ BEEF.

The use of walk-over weighting equipment and telemetry at the Richmond Beef Challenge and the Bell Finishing Systems PDS make for interesting reads.

If you've got a great idea for a PDS and a group of keen graziers check out MLA's webpage for more information. www.mla.com.au.

QDAFF staff can help you with the application process and can provide technical support along the way.

Byrony Daniels,
CQ BEEF Editor



The business of beef

THE majority of producers are skilled in running their beef property, but some struggle when it comes to managing their beef business.

What are the key profit drivers for the beef business? What is my cost of production? How do I gauge if my business is truly sustainable?

These are the questions CQ graziers have been asking themselves, after attending the Grazing BMP – People and Business workshops run this year.

The workshops, run throughout the catchment from Clermont in the north to Injune in the south, were attended by 110 graziers from 87 businesses.

Guest presenter at the workshops, Steve Banney of Steve Banney Agribusiness, challenged attendees to:

- Identify the profit drivers for their business
- Analyse their economic sustainability
- Understand the difference between compliance and management accounts
- Calculate some key performance indicators for their business
- Learn how to become profitable.

Unfortunately many grazing businesses rely upon their accounting records to provide them with information about the financial health of their business.

The problem with accounting records is that they are designed to minimise tax, rather than provide a true picture of how a business is operating.

Management accounts take into consideration market values and the realistic depreciation of assets so that the business can work out its return on assets and total business return. Along with accurate cattle records, good management accounts are fundamental to a successful beef business.

Completing the people and business module is a good starting point before launching into the other four BMP modules – grazing land management, soil health, animal production and animal health and welfare. After completing the people and business module, participants have a good understanding of how to improve both their people and business knowledge and skills.

Upcoming people and business workshops to be held in the catchment are:

- Injune - August 11
- Taroom - August 12
- Theodore - August 13
- Buckland - August 25
- Emerald - August 26
- Rolleston - August 27.

● For further information, contact Jo Gangemi on 0477 345 843.

KEY POINTS

Good business decisions are based on good information. Producers with well organised management records have the data needed to analyse their business.

Grazing businesses that know their profit drivers and cost of production can make more effective business decisions. Accounting records designed to minimise taxation liability are not designed to analyse business performance.

Joanna Gangemi

Beef Extension (FutureBeef), DAFF Biloela
0477 345 843



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What can be done about Indian couch in sown pasture

Introduced species impacts negatively on stocking rates and liveweight gains

INDIAN couch (*Bothriochloa pertusa*) is a hardy perennial grass that was introduced into Australia due to its potential grazing value as a pasture, for urban lawns and ovals, and for soil conservation in areas of high erodibility.

Indian couch is now naturalised throughout grazing lands in central Queensland, and is reducing stocking rates and animal liveweight gain especially where high production sown grasses, for example panics, Rhodes, buffel were once the dominant species.

This spread has been due to a range of factors, including both seasons (long dry spells or very wet periods) and management (over stocking for too long), however soil fertility (sown pasture rundown) also plays a significant yet relatively unknown role.

One of the symptoms of pasture rundown (caused by reduced availability of nitrogen in the soil) is a change in pasture composition away from fertility demanding grasses (panics, Rhodes, buffel) to species that are more tolerant of low fertility.

Indian couch is well adapted to a wide range of soils and environments. It is very tolerant of low soil fertility and grazing pressure, and is an aggressive coloniser spreading by both seed and runners. While Indian couch has been present in many paddocks for many years, after recent wet summers numerous producers are now reporting Indian couch has vigorously invaded rundown buffel grass pastures where its presence was previously unnoticed.

This example demonstrates the complex interaction of seasonal conditions and pasture rundown, even when conservative stocking rates are utilised. So what can be done about this invasion in a sown pasture?

Nitrogen supply is normally the most limiting factor to productivity of a sown grass pasture. The options therefore are to improve nitrogen supply from either releasing unavailable N forms through cultivation, fertilising with an N fertiliser or incorporate legumes into the pasture.

Economic analysis by DAFF in the Sown Pasture Rundown Project show the most profitable long term option is to include an adapted legume into the pasture. A practical example of how legumes are improving nitrogen supply to maintain the vigour and production of a buffel grass pasture is from a trial



LEFT: Paddock will be overtaken by Indian couch in central Queensland.

TABLE 1 (below): Composition, dry matter (DM) yield and frequency in grass only and grass plus legume (*Caatinga stylo*) paddocks.

Pasture species	% dry matter yield	
	Grass only	Grass + Legume
Caatinga stylo	3	71
Buffel cv. Biloela	32	24
Buffel cv. Gayndah	22	4
Qld bluegrass	16	0.3
Indian couch	16	0.3
Forest bluegrass	5	0.1
Windmill grass	2	0.1
Sabi grass	2	0.3

currently under way near Moura.

In 1997 one paddock was planted to buffel grass only (cv Biloela and Gayndah), and the adjacent paddock was sown to buffel (same cultivars) and Caatinga stylo (cv Primar and Unica). After establishment both paddocks were dominated by Biloela buffel. After 15 years the grass-legume paddock remains dominated by the sown species (i.e. buffel and stylo) while the grass-only paddock has much higher levels of Indian couch and other grasses that are more tolerant of low fertility (e.g. native blue grasses, Sabi grass) (Table 1).

As both paddocks have been conservatively

stocked since sowing, this result is most likely due to greater N availability from the legume allowing buffel to remain competitive, whereas lack of N in the grass paddock means the competitive advantage shifts to grasses with greater tolerance of low fertility.

We know that soil nitrogen supply can have a significant role in determining grass species dynamics in a pasture. But what can be done if the sown pasture is dominated by Indian couch, or if Indian couch only forms a small percentage of the pasture?

If the pasture is dominated by Indian couch, it's unlikely that changing grazing management will bring it back to a pasture dominated by a highly productive

sown grass species, in the short to medium term.

Even if nitrogen supply is drastically improved, for example, through fertiliser, the effort to change could be a long and expensive one. A better approach might be to fully remove the pasture through cultivation, sow the paddock to an annual forage crop like lablab to control the couch and reduce its soil seed bank, then re-sow a sown grass species with an adapted legume.

Appropriate grazing management will be required to maintain a healthy grass-legume balance into the future.

If Indian couch only forms a small percentage of the pasture, then there are easier and cheaper methods! Firstly, adopt a forage budgeting approach to insure stocking rate matches the forage available.

Secondly, improve nitrogen supply by establishing an adapted legume into the grass pasture. Depending on soil type, this can be done by direct-drilling or broadcasting seed, however the competition (grass!) needs to be checked for long enough to ensure successful legume establishment. The grass can be checked by either spraying or cultivating strips, with the expectation that the legume will spread across the whole paddock over time.

But the legume(s) needs to be managed! For legumes to provide an adequate amount of nitrogen to the grass, a good population (4+plants/m²) of well-grown legume is needed. The initial establishment is critical, as is long term grazing management and soil fertility - especially phosphorus. Without adequate phosphorus, the legumes won't grow to potential, reducing nitrogen supply to the companion grass and the cattle grazing the paddock.

In summary, Indian couch is a hardy perennial grass that in many cases has taken some time to naturalise across central Queensland. Solutions to reduce its impact on grazing production will take time and effort, but by knowing how it grows and what can be done to improve the competitive advantage of other grass species will go a long way to reduce the invasion of Indian couch.

Stuart Buck

Pasture Agronomist

DAFF Rockhampton

07 4923 6205



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Is your vaccination program better than industry standard?

Survey gives better understanding of industry practices across selected regions

TO provide a better understanding of beef industry practices, DAFF has been surveying beef producers in selected regions. This information will be used to better target research and extension activities. Herd and grazing management information was collected in 2011 and 2012 from 213 producers in the Burnett Mary, Fitzroy, Mackay Whitsunday and Burdekin regions. This article covers the vaccines being given to some key classes of stock.

BULLS

The survey showed that despite bull vibriosis vaccination, being a long standing recommendation, over half the producers in the four regions were not vaccinating their bulls for vibriosis (Figure 1). As bulls transmit the disease, there is considerable risk of vibriosis reducing pregnancy rates in herds where bulls are not vaccinated. In most situations an effective bull vaccination program prevents reproductive losses. Maiden heifers are the most susceptible breeder group as they will not have been served by the bull and will not have been exposed to the bug. In herds with unvaccinated bulls, it is commonly detected by low heifer conception rates and delayed conceptions.

The data in Figure 1 shows very low levels of bull vaccination with either a leptospirosis or "7 in 1" vaccine in all regions. While leptospirosis naturally doesn't cause abortion in bulls, they can become asymptomatic carriers and transmit the organism. Females need to be vaccinated against it to prevent the disease causing late term abortions and new born calf deaths; and it is most effectively managed if all animals in the breeding herd are vaccinated.

Protection can be provided by using a leptospirosis vaccine or a "7 in 1" vaccine which also provides protection against the clostridial diseases (black leg, tetanus, pulpy kidney, blacks disease and enterotoxaemia). The choice of a leptospirosis only or a "7 in 1" vaccine for bulls should be based on the risk the clostridial diseases present in the property situation. Your local veterinarian or beef cattle advisor can provide advice.

The surveys also show very low levels of bull Three Day vaccination. Three Day sickness can cause loss of fertility in bulls and in severe cases, it can kill valuable

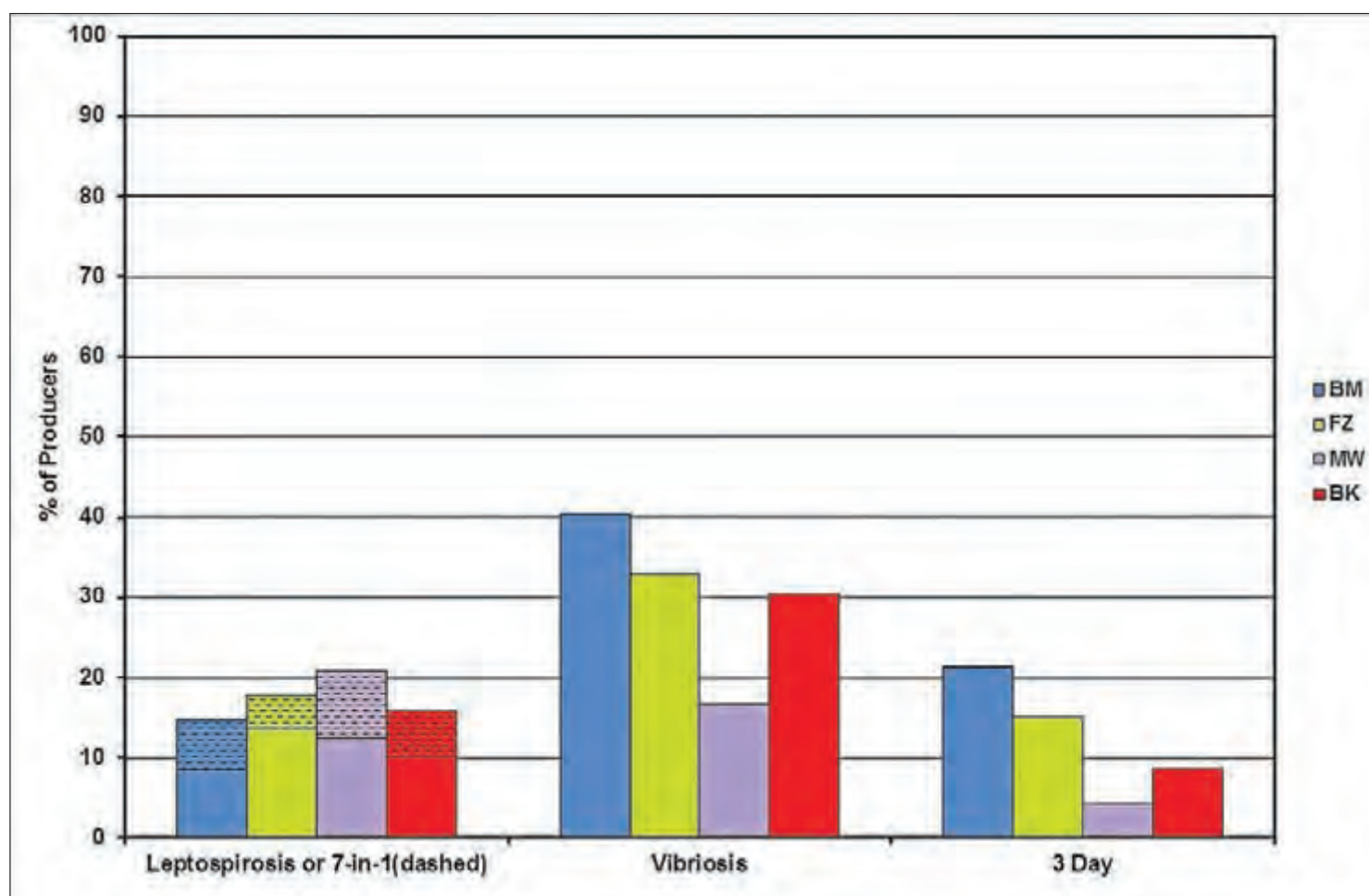


Figure 1. Percentage of producers undertaking key bull vaccinations in the Burnett Mary (BM), Fitzroy (FZ), Mackay Whitsunday (MW) and Burdekin (BK) regions.

bulls - especially older and heavier animals that have never been exposed to the disease before. Three Day vaccination is particularly important where single sire mating groups are used and when bulls have been imported from the southern states.

BREEDERS AND REPLACEMENT HEIFERS

Leptospirosis vaccination of breeding females can prevent it causing late term abortions and new born calf deaths; it is also a critical strategy for reducing the

risk of transmission to humans. Humans can be exposed to the leptospira organisms when they come into contact with cattle urine and foetal tissue.

Vaccination rates for leptospirosis for both breeders and replacement heifers were low. Across the four regions, the percentage of producers not using a leptospirosis or "7 in 1" vaccine for breeders ranged from 57 per cent to 86pc (Figure 2). For replacement heifers it ranged from 49pc to 77pc of producers.

Vaccination is best performed at pregnancy test time as the protection inferred by the vaccine lasts only about 12 months and vaccinating early pregnant animals ensures they have maximum antibody protection when they most need it.

The choice of a leptospirosis only or a "7 in 1" vaccine for breeders should be based on the risk the clostridial diseases present in the property situation. If these diseases do not present a risk to breeding



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females, leptospirosis vaccine is cheaper than a "7 in 1" product.

Heifer selection and management strategies are also a consideration. Where yearling mating is undertaken, using a "7 in 1" vaccine at branding and weaning means that the heifers are ready for mating at the end of their weaning year without any additional handling. With two year old joining, there is more time to fit vaccinations in with handling and heifer selection and a program of two initial doses of leptospirosis vaccine prior to joining can be a cheaper option. Your local veterinarian or beef cattle advisor can provide advice on the appropriate strategy for your situation.

WEANERS

Figure 3 shows that the percentage of producers vaccinating weaners against clostridial diseases ranges from 94pc in the Burnett Mary to 57pc in the Burdekin. Tetanus is the most common risk for calves everywhere, while blackleg can cause serious losses in low lying areas and especially after floods. The higher risk in the southern and eastern parts of Queensland is reflected in the higher vaccination rates in the Burnett Mary.

The choice of "5 in 1" or "7 in 1" should be based on the class of animal and its future role in the herd and management. There is little value vaccinating steers with "7 in 1" as leptospirosis cannot affect their productivity and there is far less chance of humans being exposed to urine when handling steers. However, as discussed earlier using a "7 in 1" vaccine may be the most effective strategy for heifers.

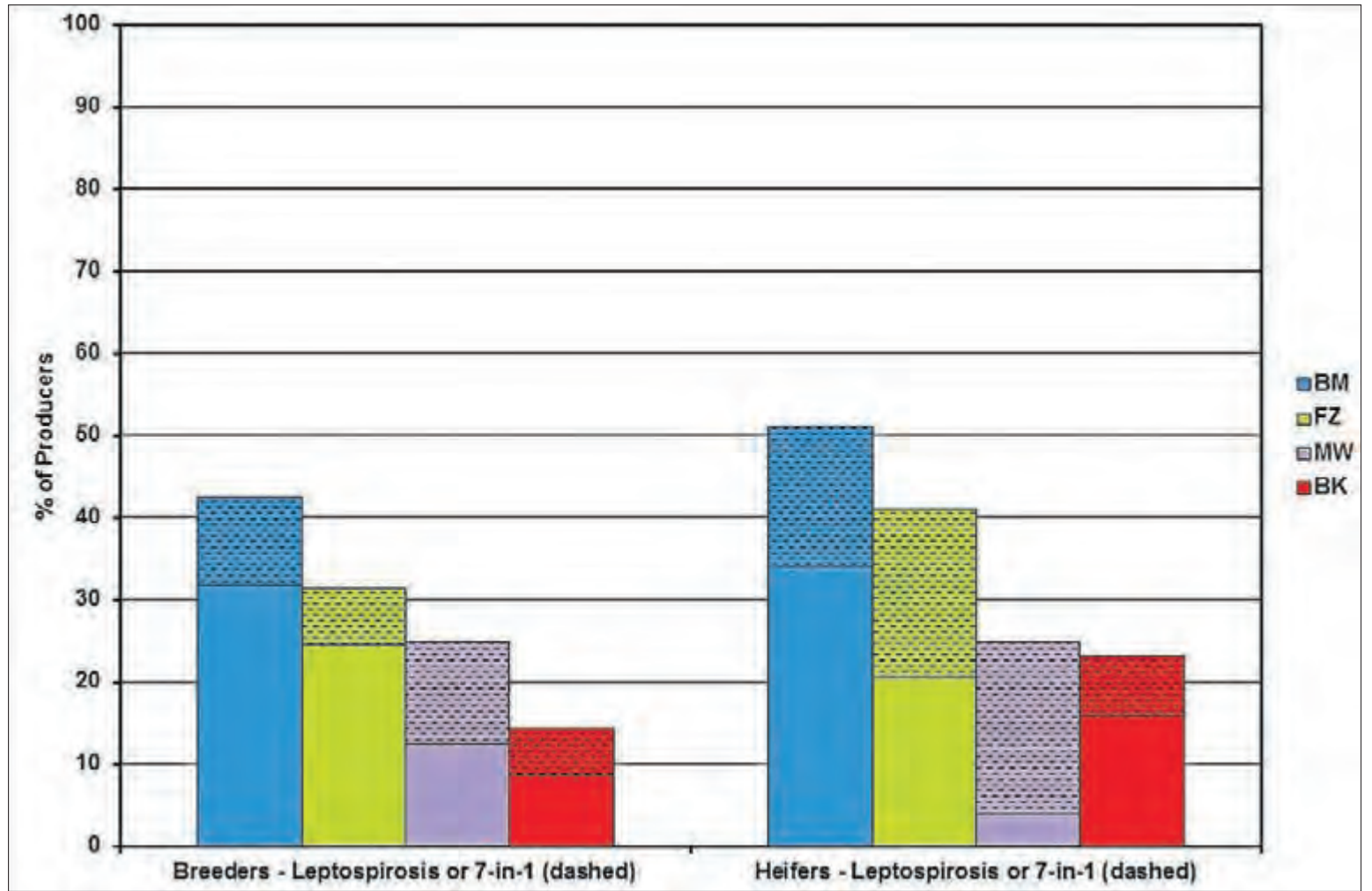
The relatively low rates of tick fever vaccination is an interesting finding as it means large numbers of cattle in these regions are potentially at risk of tick fever. While many of these cattle will have regular exposure to ticks it does not necessarily mean they have developed resistance to tick fever. In 2013, there were a number of serious cases of tick fever in central Queensland.

Another consideration is that the Brahman content of herds has tended to reduce over the last 10 years, potentially increasing the risk. Vaccination is particularly important in the marginal tick areas and when tick burdens become light.

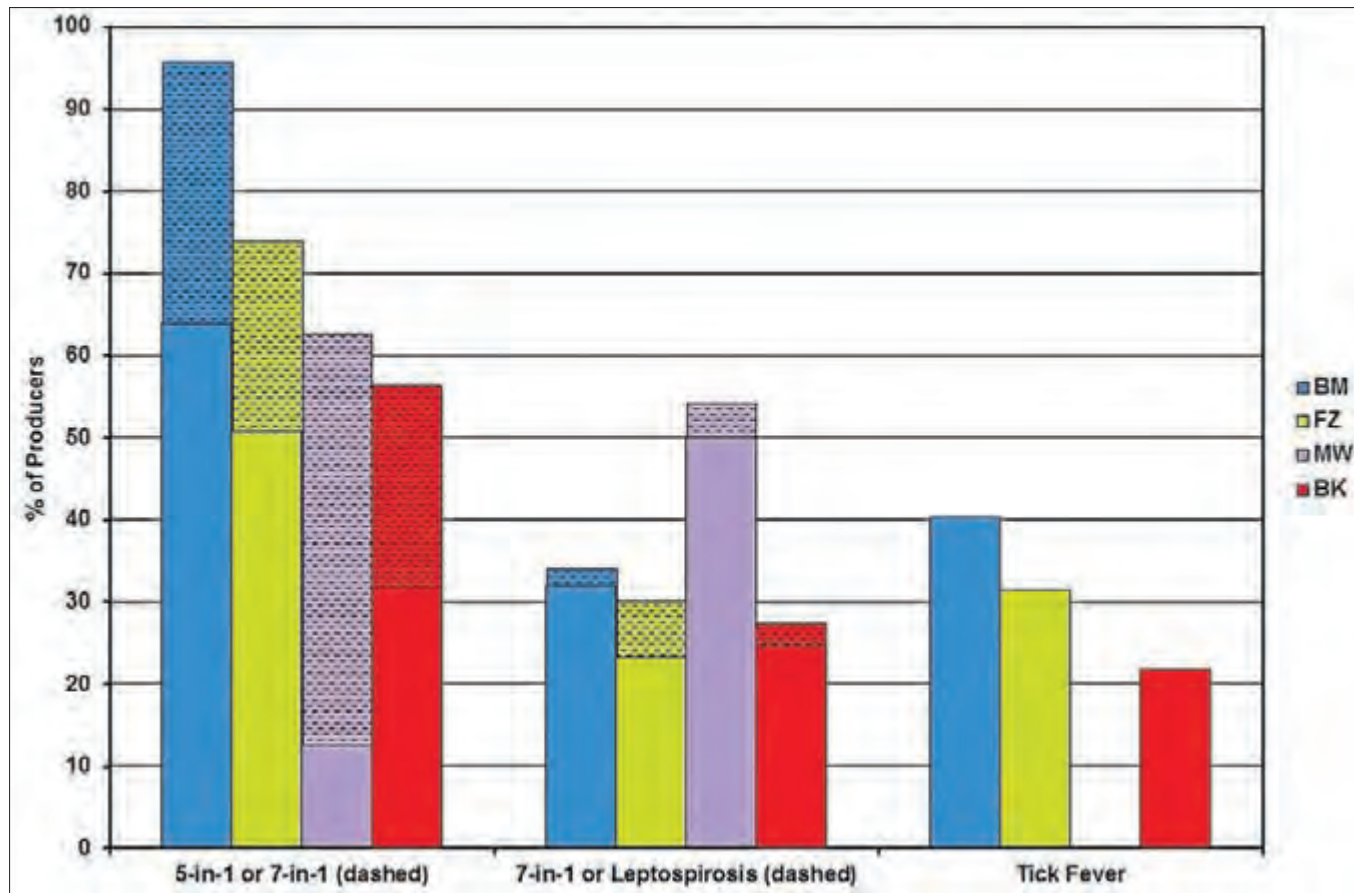
Tick fever vaccine is a relatively dear product but a good investment as it confers life time immunity.

While the product only has a three day shelf life and has to be dispatched from Brisbane, the fact that producers in very isolated areas have been using it for years indicates the logistic issues are manageable. The easiest approach is to plan to give weaners the vaccination the day they are turned out to the weaner paddock after the weaner handling period.

Emily Barbi
DAFF Rockhampton
07 4923 6226



ABOVE: Figure 2. Percentage of producers vaccinating breeders and replacement heifers with leptospirosis or "7 in 1" vaccine in the Burnett Mary (BM), Fitzroy (FZ), Mackay Whitsunday (MW) and Burdekin (BK) regions.



LEFT: Figure 3. Percentage of producers undertaking key weaner vaccinations in the Burnett Mary (BM), Fitzroy (FZ), Mackay Whitsunday (MW) and Burdekin (BK) regions.



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Timing and balance are crucial in a beef business

A written plan will ensure that activities happen when they should

YOUR beef business will be more profitable and easier to run if you get the timing of important management operations right.

A written plan can be the difference between the best of intentions and activities happening when they should.

To help you get it all down on paper we have included two planners – including one that is already filled out as an example plan for a breeder herd in the Emerald area.

The other larger planner is yours to adapt to your business and stick on the fridge or the office door as a reminder.

In a control-mated herd it is important to get calves dropping at the right time of year as the system depends on cows having enough body condition to get pregnant when the bulls go back in.

As the cows have to calve and lactate at the end of

the dry season it is critical not to have cows calving too soon as they can lose too much condition.

This problem is particularly serious in years with tough dry seasons and or a late seasonal break such as 2009, 2012 and 2013.

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. If they are not this year you need to have a good look at how you can improve next year.

Remember that a cow's gestation period is 290 days. The time between calving and her first cycle is approximately 42 days leaving 33 days or 1.5 cycles for her to get back into calf, if she is going to have a calf every year.

The timing of mating is a balance between calves arriving too soon and avoiding late calves as these become small weaners or have to be weaned later.



A breeder in a body condition score of two.



A breeder in a body condition score of three

We aim to have the bulk of calves arriving six to eight 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 three days.

To check your green date on Rainman and analyse rainfall patterns in your area, contact your local beef extension officer.

It is important to have a good stocktake of the condition of the pasture and the cattle and do a pasture budget at the end of the wet season. Knowing how much feed you have in front of you enables better and more timely decisions on stock numbers and marketing.

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 three and a score of two 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.

A pregnancy test early in the dry season (same muster as weaning) will identify animals that can be sold and leave more feed over the dry season for the remaining pregnant cows.

Understanding the cattle tick life cycle and strategically timing tick treatments to manage the spring rise in tick numbers when hatched larvae are climbing grass ready to attach themselves to passing hosts will save chemical and labour.

The life span of larvae ranges from two or three weeks in hot dry seasons to five or six months over some winters. Strategic spelling of pastures is also important in tick management.

● To facing page

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If you want some help with your tick management plan call the DAFF call centre 13 25 23 and ask to speak with your local Biosecurity Queensland officer.

Having a plan for the turnoff of dry animals will help you make important decisions.

An animal turned off late in the year before Christmas may benefit from supplementation, whereas supplementation may be wasted on an animal turned off in the new year after the benefit of the wet season and compensatory gain.

Bull vaccinations should be given at least two months before joining. Vibriosis vaccination is critical for bulls and a leptospirosis vaccination is recommended for breeding females.

It also reduces the risk of humans contracting leptospirosis.

Bull breeding soundness evaluations (BBSEs) should also be performed two months before joining as stress will have a short-term affect on bull fertility.

FOR ASSISTANCE:

If you need help with your plan please contact your local beef extension officer:

- Mick Sullivan**, Rockhampton, 07 49 360 239.
- Ken Murphy**, Rockhampton, 07 49 236 237.
- Matt Brown**, Rockhampton, 07 49 360 324.
- Jo Gangemi**, Biloela, 07 49 929 178.
- Ross Dodt**, Mackay, 07 49 670 734.
- Jim Fletcher**, Mackay, 07 49 670 731.
- Lauren Williams**, Mackay, 07 670 732.
- Byrony Daniels**, Emerald, 07 49 837 467

Byrony Daniels
Beef Extension Officer (FutureBeef)
QDAFF Emerald



Herd Management Calendar (Example for herd selling steers and cull heifers as yearlings)

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Feed status	Good protein & energy	Highest protein & energy	Good protein & energy	Fair protein & energy	Declining protein & energy	Declining protein & energy	Declining protein & energy	Low protein & energy	Low protein & energy	Low protein & energy	Low protein & energy Chance of rain	Low protein & energy Seasonal break expected late Dec
Cow status (Wet, Dry Pregnant, Calving begins and wet)	Wet	Wet	Wet and Pregnant	Wet to Dry pregnant	Dry pregnant	Dry pregnant	Dry pregnant	Dry pregnant	Calving begins late Sep	Calving & wet	Calving & wet	Calving & wet
Management activity (Branding, Bulls out, Weaning, Pregnancy testing, Bull Breeding Soundness Evaluation, Bull buying, Bulls in)	Brand	Bulls out 13 Mar (12 weeks) Mop up branding			Weaning Pregnancy testing				Bull Breeding Soundness Examinations (BBSE) Bull buying	Bull buying		Bulls in 20 Dec
Movements Draft off cows that failed to calve, Draft cull cows for sale and fattening		Draft off cows that failed to calve			Draft cull cows for sale & fattening							
Marketing Empty cows, Calves that failed to calve, Previous year's steers & cull heifers		Empty cows retained previous year for finishing Cows that failed to calve Previous year's steers & cull heifers					Fat cows culled at pregnancy diagnosis					
Health Treatments												
Calves/Weaners												
5 in 1 vaccine	X	X			X							
Longrange Botulism					X							
Tick fever vaccine					X							
Yearling heifers¹												
Bivalent botulism vaccine						X						
Leptoshiel vaccine						X	X					
Pestigard vaccine						X	X					
Breeders²												
Bivalent botulism vaccine					X							
Leptoshiel vaccine					X							
Pestigard vaccine					X							
Steers												
Bulls³												
Bivalent botulism vaccine						X						
BEF vaccine										X		
Leptoshiel vaccine						X						
Pestigard vaccine						X						
Vibriovax vaccine										X		

Notes
 1. Only heifers selected for mating receive Leptoshiel and Pestigard
 2. Only retained breeders receive Leptoshiel and Pestigard
 3. New bulls will require 2 doses of vaccine if not vaccinated by breeder i.e. Vibriovax

An example Emerald breeder herd calendar of operations.

Your fridge or office door herd management planner

Herd Management Calendar Template

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Feed status	Good protein & energy	Highest protein & energy	Good protein & energy	Fair protein & energy	Declining protein & energy	Declining protein & energy	Declining protein & energy	Low protein & energy	Low protein & energy	Low protein & energy	Low protein & energy Chance of rain	Low protein & energy Seasonal break expected
Cow status (Wet, Dry Pregnant, Calving begins and wet)												
Management activity (Branding, Bulls out, Weaning, Pregnancy testing, Bull Breeding Soundness Evaluation, Bull buying, Bulls in)												
Movements Draft off cows that failed to calve, Draft cull cows for sale and fattening												
Marketing Empty cows, Calves that failed to calve, Steers or Heifers												
Health Treatments												
Calves/Weaners												
5 in 1 vaccine												
Longrange Botulism												
Tick fever vaccine												
Yearling heifers¹												
Bivalent botulism												
Leptoshiel vaccine												
Pestigard vaccine												
Breeders²												
Bivalent botulism												
Leptoshiel vaccine												
Pestigard vaccine												
Steers												
Steers 1 yr												
Steers 2 yrs												
Steers 3 yrs												
Bulls³												
Bivalent botulism												
BEF vaccine												
Leptoshiel vaccine												
Pestigard vaccine												
Vibriovax vaccine												

1. Heifers selected for mating
 2. Retained breeders receive vaccinations
 3. New bulls will require 2 initial doses of vaccine if not vaccinated by breeder

Clermont Cattlemen's Challenge 2013/14 results

Clermont challenge showcases district's beef industry

THE 2013/14 Clermont Cattlemen's Challenge wrapped up at the Clermont Show on May 27.

The Challenge is a popular competition that showcases the district's beef industry. The Challenge comprises 5 official classes and three unofficial classes:

OFFICIAL CLASSES:

- Weaner judging - pen of 5 steers most suitable to grow for the 100 day grain fed market;
- Grain fed steer judging - pen of 3 grain fed steers most suitable for the 100 day grain fed market;
- Carcase competition - single carcass most suitable for the 100 day grain fed market;
- Weight gain - pen of 3 steers with the highest overall weight gain;
- Eating quality - taste test competition (judges choice).

ADDITIONAL CLASSES:

- Highest weight gain on grass (9 months)
- Highest weight gain on grain (100 days)
- Eating quality - taste test competition (consumers choice)

Each official class provides 5 points to the exhibitor that wins first place, 4 points for second, 3 points for third, 2 points for fourth and 1 point for fifth. The points are tallied up and the exhibitor that gains the highest point score is crowned the 'Clermont Challenge Cattle King'. No points are allocated for the additional classes, but prizes are awarded to the winners of these classes.

This article covers the final phases of the 2013-14 Challenge and follows on from 'The Clermont Cattlemen's Challenge - Update' (CQ Beef feature, Queensland Country Life, 27 March 2014, <http://resources.farmonline.com.au/qcl/CQBeef/0327cq/3dissue/index.html>).

CLERMONT CATTLEMEN'S CHALLENGE ACTIVITIES

With 17 exhibitors each entering 5 steers there was a total of 85 steers in the 2013/14 Clermont Cattlemen's Challenge.

WEANER JUDGING (OFFICIAL CLASS)

Weaner judging took place at the 2013 Clermont show in May 2013. First place was awarded to Greg and



	Liveweight gain (kg)				Average daily liveweight gain (kg/hd/day)			
	Grass phase		Grain phase		Grass phase		Grain phase	
	27/5/13 ^a 2/10/13 ^b	3/10/13 7/2/14 ^c	27/5/13- 7/2/14	8/2/14- 16/5/14 ^d	27/5/13- 2/10/13	3/10/13- 7/2/14	27/5/13- 7/2/14	8/2/14- 16/5/14
Mob average	94	51	145	214	0.73	0.40	0.57	2.18
Highest exhibitors group	119	79	184	296	0.93	0.62	0.72	3.02
Lowest exhibitors group	65	29	98	116	0.50	0.23	0.38	1.18

^a Weight at Clermont Show after overnight wet curfew
^b Weight at Wyena after overnight wet curfew
^c Weight after 5 days at Paringa Feedlot on hay and grain ration, weighed after 4 hour curfew
^d Weight Paringa after overnight wet curfew

Alicia Magee of St Omer, second to Laurel Hills and third to Trelwaney. The average weight of the weaner steers was 294kg (range; 230-355kg).

HIGHEST WEIGHT GAIN ON GRASS (ADDITIONAL CLASS)

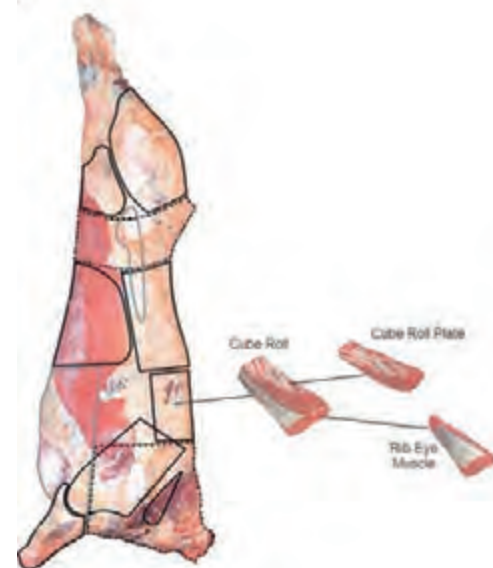
The steers were agisted at Wyena, Clermont, for the grass phase of the Challenge (27/5/13-7/2/14). The steers were weighed intermittently and diet quality was assessed monthly with Faecal NIRS. Diet quality was high over the grass phase (Dry Matter Digestibility 56-65 per cent; Crude protein 8.7-9.6pc). The average liveweight gain of the steers was 145kg (0.57 kg/hd/day) (Table 1). Steers entered by Jeff and Sarah Cook of Etonvale had the highest weight gain with a total gain of 184kg (0.72 kg/hd/day). These were followed by Tayglen (175kg, 0.68 kg/hd/day) and Merrigang

(173kg, 0.68 kg/hd/day). The highest individual steer gain was 207kg (0.81kg/day) and the lowest 89kg (0.35 kg/day).

HIGHEST WEIGHT GAIN ON GRAIN (ADDITIONAL CLASS)

Steers were inducted into Paringa Feedlot, Capella, on 7 February 2014. The average weight of the steers on entry was 439kg (range: 345-532kg). Steers were grain fed for 100 days. The steers were weighed on 16 May 2014, after 98 days on feed. The average liveweight gain of the steers on grain was 214kg (2.18 kg/hd/day) (Table 1).

Steers entered by David and Kate Moller of Trelwaney and Peter Turner of Carrie Downs had the highest weight gain on grain, with a total gain of 239kg (2.44 kg/hd/day). These were followed by Etonvale



(237kg, 2.42 kg/hd/day) and Old Banchory/Clydevale (232kg, 2.37 kg/hd/day). Highest individual steer gain was 296kg (3.02 kg/day) and the lowest 116kg (1.18 kg/day).

PARINGA FEEDLOT FIELD DAY

A field day at Paringa Feedlot on 16 May 2014, was attended by approximately 50 locals as well as two

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	Carcass Competition Specifications	Optimum Specs (% achieved)	Below Specs (% of carcasses)	Above Specs (% of carcasses)
Dentition	0-6	0 (82%)	N/A	2-4 (18%)
Carcass weight (kg)	250-390	300-340 (18%)	288-300 (6%)	341-374 (59%)
Fat depth (mm)	5-32+	10-12 (41%)	5-9 (24%)	13-19 (35%)
Eye muscle Area (sq cm)	>90	90-116 (76%)	81-89 (24%)	N/A
Fat colour score	0-5	0-1 (100%)	N/A	N/A
Marbling score	0-5	5 (0%)	0-2 (100%)	N/A
Meat Colour	1a-4	1b-1c (94%)	1a (0%)	4 (6%)
Fat distribution	1-5	5 (6%)	2-4 (94%)	N/A
Market suitability	0-20	20 (0%)	5-18 (100%)	N/A

school groups from Capella and Clermont. The steers were weighed and each exhibitor selected from their group one steer for the carcass and taste test phases and, three steers each to be judged at the Clermont Show.

A barbecue lunch, that filled hungry stomachs, was followed by presentations from guest speakers Emma Hegarty, DAFF FutureBeef extension officer Cloncurry, and Joe Miller, Junior Research Fellow at the University of New England. Ms Hegarty provided an overview of the Richmond, McKinlay and Flinders Beef Challenges, recent Challenge results and some technologies they are using to help collect data. Mr Miller provided an insight into some supplementation producer demonstration sites that are trialling remote pastoral management technologies.

CARCASS COMPETITION (OFFICIAL CLASS)

The 17 steers selected for the carcass competition were transported to the JBS Swift Dinmore plant on 18 May 2014, and killed the morning of the 19 May 2014. The bodies were judged in accordance to the Challenge carcass specifications, for nine carcass attributes (Table 2).

The carcass competition was very tight with just 4 points separating first, second and third placing. The winning carcass exhibited by Jeff and Sarah Cook of Etonvale, scored 96 out of a possible 110 points. This was followed by Tayglen (95/110) and St Omer (92/110). The average carcass score was 84/110.

A summary of the carcass results is presented in Table 2. This summary shows compliance of the carcasses to the optimum specifications.

Eighty-two per cent of steers (n=14) had 0 teeth. Two steers had 2 teeth and one steer had 4 teeth.

Average carcass weight was 342 kg. Only 18pc of carcasses (n=3) were in the optimum carcass weight range of 300-340 kg. One carcass weighed less than 300 kg (288 kg) and the remainder (59pc; n=13) were heavier than 340 kg (range; 341-374 kg).

Less than half the carcasses (41pc, n=7) had the optimum P8 fat depth (10-12 mm). Four carcasses had less than 10

mm of fat (range 5-9 mm) and the remainder (35pc, n=6) contained more than 12 mm of fat (range 13-19 mm).

Seventy-six per cent of carcasses (n=13) had an eye muscle area of 90 sq cm or more (range 91-116 sq cm). The remainder were less than 90 sq cm (range 81-89 sq cm).

All carcasses met the fat colour score specifications with an Ausmeat fat score colour of 0-1.

No carcasses achieved the optimum marbling score of five. Five carcasses (29pc) had a marbling score of 0; nine carcasses (53pc) had a marbling score of 1; three carcasses (18pc) had a marbling score of 2. Marbling is intramuscular fat that is deposited between the muscle fibres of the longissimus dorsi muscle (rib eye and strip loin cuts). Marbling is positively associated with eating quality and is the last tissue to be deposited in a beast. Marbling is well known to occur in certain breeds, such as the Wagyu, and is less likely to occur in heavily muscled, lean breeds of cattle.

Ninety-four per cent of carcasses had an Ausmeat meat score colour in the optimum range of 1b-1c. One carcass was a dark cutter with a meat colour score of 4.

Only one carcass achieved optimum specifications for fat distribution. Even fat cover is very important when it comes to chilling carcasses. Without enough fat, or with uneven fat cover, the carcass can be affected by cold shortening which has a negative impact on eating quality.

Market suitability is an assessment of the overall suitability and quality of the carcass as a 100-day grain fed product. Market suitability takes into account all aforementioned carcass attributes. Two carcasses scored less than 10 points out of a possible 20. Twelve carcasses scored between 10 and 14. Three carcasses were in the range 15-18.

TASTE TEST COMPETITION (OFFICIAL CLASS)

The taste test competition was held at the Clermont Show on 27 May 2014. Cube rolls from the carcasses judged in the carcass competition was brought back from the abattoir for the taste test. To ensure all exhibitors had equal opportunity to be judged without bias,

the cube rolls were randomly assigned a number between 1 and 17, and the exhibitors names excluded from the competition.

A panel of 4 judges consisted of Isaac Regional Mayor Anne Baker; ANZ Agribusiness Manager, Townsville, Jamie Walker; Clermont beef producer Bill Moller; and Belyando Produce owner Daryl Manely. The cube rolls were sliced into 2 cm thick steaks and cooked for 3.5 minutes on a Silex grill heated to 200oC.

The steaks were rested for 2 minutes before being cut into 2 cm cubes by professional butchers, and served.

The judges provided an eating quality score out of 100 based on their perception of tenderness, juiciness, flavour and overall liking.

Michael and Tracy Borg of Calveston won the highest eating quality score (79.8pc). This was closely followed by Wyena (79.3pc) and Etonvale (77.0pc). The average eating quality score for the entries was 69.9pc.

Exhibitors and the general public also had the opportunity to participate in the taste testing as "consumers".

Participants scored each entry on a 1-10 scale using a live polling system, which

displayed the taste test results within minutes of the meat being consumed. Everyone had a great time guessing which steak belonged to which exhibitor, and watching the positions of the meat change on the leader board as scoring progressed throughout the event. Carl and Andrea Moller of Springvale won the highest eating quality score from the consumers (73.2pc). This was closely followed by Wyena (73.0pc) and Calveston (72.8pc). The average eating quality score from the consumers was 61.4pc.

OVERALL WEIGHT GAIN (OFFICIAL CLASS)

The steers selected for judging were transported to the Clermont show on 25 May 2014. After an overnight wet curfew the steers were weighed. Average weight of the exhibitors' pens of steers was 659 kg (range 607-723 kg).

Highest overall weight gain was won by Jeff and Sarah Cook of Etonvale for the second year in a row with an average weight gain of 440 kg (0.60 kg/hd/day) over the 364 days of the Challenge. Second place went to Parnu (420 kg gain; 0.58 kg/hd/day) and Trelawney was third (400 kg gain; 0.58 kg/hd/day).

GRAINFED STEER JUDGING (OFFICIAL CLASS)

The steers were judged as a pen of 3 steers most suitable for the 100 day grain fed market. First place was awarded to Ross and Sam Martyn of Old Banchory, second place to Laurel Hills and third place to Tayglen.

Overall Clermont Show Cattlemen's Challenge competition results Jeff and Sarah Cook of Etonvale, Clermont, were crowned the overall Clermont Show Challenge Cattle King and Queen. Jeff and Sarah gained 15 out of a possible 25 points, from the 5 official classes of the competition. Table 3 summarises the overall competition results.

For further information, please contact the Chief Steward David Moller, Trelawney, Clermont on 4983 5318 or email trelawneystn@bigpond.com or Cattlemens' Challenge Secretary, Natalie Finger, Hillview, Clermont on 4983 3338 or email snfinger@bigpond.com.

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QDAFF Charters Towers
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Class	1st	2nd	3rd
Pen of 5 steers best suited to grow for the 100 day grain fed market	St Omer	Laurel Hills	Trelawney
Pen of 3 steers with the highest weight overall weight gain	Etonvale	Parnu	Trelawney
Single carcass most suited to 100 day grain fed market	Etonvale	Tayglen	St Omer
Taste test - judges choice	Calveston	Wyena	Etonvale
Pen of 3 steers most suited to 100 day grain fed market	Old Banchory	Laurel Hills	Tayglen
Special Prizes			
Highest weight gain on grass	Etonvale	Tayglen	Merrigang
Highest weight gain on grain	Etonvale	Trelawney	Parnu
Taste test - consumers choice	Springvale	Wyena	Calveston
2013/14 Clermont Challenge Cattle King			
Jeff and Sarah Cook - Etonvale			

Project to counter leucaena toxicity

New research to assist Queensland's grazing industry

GRAZIERS who rely on leucaena as a feed source for their herd will welcome new Queensland Government research exploring the shelf life of the live bacterial inoculum that blocks the plant's toxicity.

The main toxin is mimosine, which is a non-protein amino acid of varying concentrations in the leucaena plant and occurring at highest concentrations in new leaf growth.

Department of Agriculture, Fisheries and Forestry staff from the Rumen Ecology Unit, located at the EcoSciences Precinct in Brisbane, have begun this research as part of a Meat & Livestock Australia-funded project.

DAFF has supplied graziers with the means to counter the toxic affects of the plant, in the form of a rumen bacterial inoculation, for the past 17 years.

As part of the new research, the bacterial composition of the inoculum is being determined and historical samples are being used to investigate whether the inoculum has changed significantly over the past 17 years of production.

The inoculum contains *Synergistes jonesii*, a rumen bacterium that breaks down DHP, a toxic by-product of the ruminal breakdown of mimosine.

Rumen contents from steers fed leucaena were initially used to start the first fermentation to produce the inoculum, while current batches are produced by subculturing from older batches.

The inoculum is mixed with cryoprotectant (glycerol) and stored frozen until it is shipped to producers. The bacteria in the inoculum are anaerobic, so careful handling is required to prevent killing the inoculum through exposure to oxygen.

Whilst guidelines have been developed for the storage and use of the inoculum, many questions have been raised regarding its effectiveness after storage under varying conditions.

Four pure strains of *Synergistes jonesii* have been obtained from Professor Milt Allison, in the USA, who undertook the original isolation, description and naming of the bacterium over 20 years ago.

A gene (16S rRNA), often used to determine



DAFF research Dr Scott Godwin and technician Ms Anita Maguire discussing real time PCR results that determine the numbers of *Synergistes jonesii* present during a fermentation producing the bacterium inoculum.

differences between species of bacteria, has been sequenced for the four strains of bacterium and it was found that they were identical.

However, testing the strains for their ability to degrade mimosine, 3,4 DHP and 2,3 DHP showed marked differences.

Consequently, the project will look for differences at the genome level between the four strains. In this way it is hoped to identify the genes coding for enzymes involved in the degradation of 3,4 DHP and 2,3 DHP. Thus allowing the development of screening assays for these genes that could be used to detect DHP degrading activity in the rumens of inoculated cattle.

An assay to monitor the numbers of *Synergistes jonesii* has already been developed by DAFF researcher Dr Scott Godwin, who is employed on the project. This assay is based on specific 16S rRNA detection and while it does not differentiate the four different strains available to the project, it can quantify the bacterium present in the early days of the fermentation producing the inoculum.

This assay will be tested for its potential to quantify *Synergistes jonesii* in rumen contents.

Experiments are planned to monitor how *Synergistes jonesii* survives in the inoculum through the freezing and storage process as well as during transportation.

Another set of experiments will monitor *Synergistes jonesii*'s survival within the inoculum in a fridge environment post-thawing.

The results from these experiments will provide better information for maximising the survival of *Synergistes jonesii* along the inoculum supply chain. This in turn will allow beef producers to maximise the benefits of the inoculum for increasing the production benefits of leucaena.

This article was run in The Leucaena Network News February 2014.

Visit the Leucaena Network website for more information about leucaena www.leucaena.net.au.

Diane Ouwkerk,
Principal Molecular Biologist
QDAFF Brisbane
07 3255 4291

Bucks for Brains - are you eligible for a \$300 payment?

AN incentive payment of \$300 is available to cattle producers that have animals showing signs of the fatal disease Bovine Spongiform Encephalopathy (BSE).

Along with the incentive payment, eligible producers will also receive subsidised veterinary examinations and full laboratory investigations of alternative diagnoses.

Veterinarians collecting samples for the Bucks for Brains program will have funded opportunities to undertake investigations with new and existing clients, and access to incentive payments to help cover investigations, collecting and documenting submissions, and freight of samples to the laboratory. The full laboratory investigations available under this program assist veterinarians to provide a high quality service to their clients.

SIGNS OF BSE

Do your bit to help maintain Australia's favourable trading status by keeping a close eye on your animals for any signs of BSE. If you notice increased apprehension and nervousness in your cattle, a staggy gait, increased sensitivity to touch and sound or muscle tremors, act now. Cattle at least 30 months and less than nine years of age are eligible to participate in the Bucks for Brains program.

WHAT TO DO

If you think you have an eligible case, contact your private veterinarian or local Biosecurity Queensland veterinarian or inspector to have the case assessed.

Veterinarians are encouraged to familiarise themselves with the eligibility criteria for the Bucks for Brains program and to take up opportunities to submit eligible cases. Veterinarians are invited to visit www.daff.qld.gov.au for information on submitting samples and documentation to the Biosecurity Science Laboratory.

THE NATIONAL TSE SURVEILLANCE PROGRAM

The National TSE Surveillance Program helps demonstrate to trading partners and the World Organisation for Animal Health that Australia is free of transmissible spongiform encephalopathies (TSE), including BSE in cattle.

The occurrence of BSE here would also impact Australia's ability to trade so it is vital that Queensland continues to prove its BSE-free status to safeguard market access.

The surveillance program requires Queensland to collect and test brain samples from a targeted number of cattle each year and we need your help to meet this target. The program also makes it possible to identify what disease cattle submitted may have been suffering from, and to prevent or treat those conditions in future.

The surveillance program is managed by Animal Health Australia and is implemented through state and territory animal health agencies.

For more information, visit www.daff.qld.gov.au or call 13 25 23.



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Trialling two remote technologies

Producer group trial based at Richmond, NW Queensland

IN 2011 a producer group at Richmond in North West Queensland started trialling two remote technologies as part of a Meat and Livestock Australia Producer Demonstration Site (PDS).

The project, coordinated by Cloncurry-based FutureBeef extension officers Rebecca Gunther and Emma Hegarty, demonstrates using remote equipment to automatically collect animal weights, draft animals, and photographically monitor waters, livestock in the yards, and pasture condition.

The automated weighing and drafting unit allows livestock to be monitored remotely at water yards. Cattle are weighed every time they walk over the weigh bridge to exit the main water yard.

Each animal's NLIS tag is scanned with an Allflex panel reader and matched to their live weight, date and time by a Tru Test XR3000. This information is then sent to a website via mobile phone coverage using Observant software. Satellite and UHF frequency equipment is also available to use with the system if mobile coverage is not sufficient.

A drafting unit adjoins the weighing unit and can be used to automatically draft stock on live weight or NLIS tag number into different yards. This enables drafting on sale weight specifications or weaning weights or even to compare stock with or without access to a treatment or supplement in the yards.

The remote weighing and drafting technology has allowed pin point timing of key management practices by monitoring whether live weights are rising, levelling or dropping. The group has been able to specifically target the introduction of dry lick supplementation when live weights began to plateau. The liveweight data can then be used to see if there is a response to the supplement. Significant cost saving can be achieved by not supplementing too early and minimising weight loss over the dry season.

Analysing the data has shown some interesting animal behaviour with some animals only watering every second or third day in cooler months of the year, despite the relatively small 600ha paddock. The system also sends an alert when an animal's tag hasn't been read for several days. The data showed that one animal in particular would go missing periodically, jumping the fence to return later.



Beast about to exit the main water yard and cross walk over weigh bridge to be drafted one of three ways; bush and no lick, high protein meal production lick, or 30 per cent urea lick.

The project has been very beneficial in demonstrating the practical application of the system, its potential, and its limitations. Importantly livestock need to be trained to use the spear traps which are an integral part of the system, as well as being trained to become accustomed to walking over the weigh bridge and waiting for their gate to open in front of them. Since large paddocks in extensive grazing operations have multiple waters, it may be necessary to set the system up in a large holding paddock with controlled water, or accept monitoring of just a percentage of livestock in the paddock.

Monitoring cameras were the second remote technology demonstrated. One camera was set above the "in" spear to monitor the water trough and tank levels in the main water yard, while a second camera was located two kilometres from water to monitor pasture condition.

Both cameras are programmed to take a set number of photos a day, that are uploaded via mobile phone coverage to a linked website. The cameras can also be instructed to take a photo on demand, via a link on the

website. Satellite cameras are available for areas outside of mobile coverage.

The remote camera was found to be an excellent tool in decreasing the amount of water runs required in day-to-day management. The ability to check the water trough levels daily on the web site reduced the number of times required to check the trial paddock in person, saving a one hour drive round trip to the trial paddock each time.

It was estimated that such savings in labour and fuel could pay for the system in as little as 3 months. A satellite camera would take slightly longer, but payback time still measured in months, not years.

With labour costs at a premium, the project has been successful in demonstrating the potential of remote technologies to improve management efficiencies in beef enterprises. The technologies and applications will only improve in time.

Rebecca Gunther, Emma Hegarty
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DAFF, Cloncurry
07 4742 1311

Find out the code of practice for livestock transport

HOW long can a pregnant cow be transported without water? Not sure? Find out in the code of practice for transport of livestock.

The code of practice for transport of livestock (the Code) is the result of discussions nationally between the livestock industries, scientists, welfare agencies and government.

It aims to safeguard the welfare of livestock being transported.

The Code covers the transport of both commercial and non-commercial livestock and applies once livestock are assembled prior to loading and continues until the livestock are unloaded at the final destination.

The Code aligns Queensland with other states and territories to achieve a nationally consistent approach to livestock transport.

Compliance with the Code became compulsory under the Animal Care and Protection Act 2001 on 31 January 2014; however there is a qualified six month grace period for enforcement ending 1 August 2014.

It is recommended that producers, drivers and receivers of livestock familiarise themselves with the laws and ensure they are compliant.

The Code includes the responsibilities of those involved in the transport, maximum times off water, ensuring that livestock are fit for the intended journey, handling rules and special considerations.

Under the Code, animals that are not fit for the intended journey must not be transported. It is the responsibility of the consignor and the transporter to ensure the animals are fit for the intended journey.

The Code applies to the following animals being transported by road, rail or by container or vehicle aboard a ship:

- Alpaca
- Buffalo
- Camel
- Cattle
- Sheep
- Goats
- Horses
- Pigs
- Poultry
- Ostriches
- Emus
- Deer

Biosecurity Queensland has held the first in a series of webinars to help answer any questions around the changes to the compulsory requirements for transporting livestock.

● For further information and details of future webinars, producers can contact Biosecurity Queensland on 13 25 23 or visit www.business.qld.gov.au

● For information on the national animal transportation standards, visit www.australiananimalwelfare.com.au



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Country Life

Which beef cattle finishing systems stack up?

MLA-funded Producer Demonstration Site concludes with interesting data to reveal

THE three-year MLA-funded Producer Demonstration Site (PDS) called, 'The economic performance of beef cattle finishing systems used on the North-Eastern Downs' has concluded and provides interesting data for producers. The PDS was run on Ranald and Sally Ferrier's property, Bannockburn, at Bell, which is managed by Steve Munge.

The demonstration compared the performance and economics of running cattle on improved grass pastures, elevated (predominantly frost-free) leucaena-grass pastures, oats and an on-farm feedlot. None of the cattle received a hormonal growth promotant (HGP) during the main trial period.

In 2011 eighty-seven head of mostly crossbred EU steers averaging 340kg on entry were assessed over a 364-day period. One quarter of the mob grazed improved pastures of bambatsi, gatton panic, rhodes and creeping bluegrass for the whole period. The others initially grazed Cunningham leucaena-grass pastures for six months until June before splitting three ways onto Drover oats, into the feedlot and back onto leucaena. This was repeated in 2012 over 320 days with 100 head of EU steers averaging 350kg on entry.

It was found that cattle on leucaena achieved a higher average daily gain than cattle on the sown grass pastures

and were also able to be stocked at a higher rate. These combined factors resulted in double the live weight produced per hectare in 2011 and more than double in 2012. The average daily gain on leucaena-grass pastures was approximately 0.7kg/hd/day across both years and the steers on improved pastures averaged 0.58kg/hd/day in 2011 and 0.48kg/hd/day in 2012. During the winter of both years, steers on improved pastures lost 0.25kg/hd/day. Those on elevated leucaena, which retained some leaf during winter, however, added 0.1kg/hd/day in 2011 and 0.56kg/hd/day in 2012. Over summer live weight gains were similar on either grass or leucaena pastures.

To monitor diet quality regular NIRS faecal samples were collected. Generally the crude protein and dry matter digestibility was higher for steers on leucaena than on improved pastures. Levels of 15 per cent crude protein and 64pc dry matter digestibility were reached for steers on leucaena.

The economic performance of the finishing systems was compared annually on the partial return on livestock capital invested. The annual figure was also broken into two periods, that being prior to June while all cattle were on either leucaena or improved pastures, and then from June onwards after being designated to either leucaena, improved pastures, oats or the feedlot. As the partial



Steers on leucaena.

	First period		Second period		Overall annual return ^A	
	2011	2012	2011	2012	2011	2012
Improved pasture	7%	7%	6%	-5%	14%	-1%
Leucaena	19%	9%	6%	6%	26%	18%
Oats			3%	3%	22%	11%
Feedlot			10%	13%	31%	19%

A. Overall annual return is based on steer value at start of first period

TABLE 2 (above) Partial return on livestock capital invested in the different finishing systems, 2011-2012.

	Days	Stocking rate (ha/hd)	Wt in (kg)	Wt out (kg)	Weight gain		
					(kg/hd)	kg/hd/day	(kg/ha)
2011							
Improved pasture	364	1.68	337	547	210	0.58	125
Leucaena	364	1.02	342	598	255	0.70	252
Oats	105	0.43	518	599	80	0.77	190
Feedlot	113	na	518	694	177	1.52	na
2012							
Improved pasture	320	2.01	351	504	153	0.48	76
Leucaena	320	1.31	350	584	234	0.73	179
Oats	80	0.54	509	582	73	0.91	134
Feedlot	123	na	499	688	189	1.54	na

TABLE 1 (right) Production figures for 2011 and 2012 (no HGPs).

return looked at the value added by the steers less variable costs but not all overheads, the results are relative to each other only. The analysis took into consideration the opportunity cost of the steer capital, pasture development and land capital, along with the costs of labour, treatments, feeding and selling. The analysis found that steers which were on leucaena first and then finished in the on-farm feedlot recorded the highest annual return, followed by steers that grazed leucaena year-round, then ones that grazed leucaena for six months and finished on oats. The steers which grazed improved pastures for the entire trial period recorded the lowest return in both years. Table two gives the returns for each system. These results are dependent on many factors, including rainfall, cattle performance, cattle prices and grain prices.

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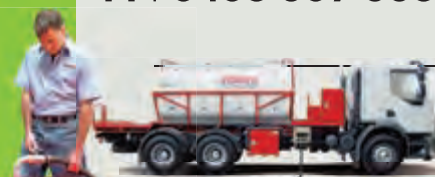
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