Queensland **the Smart State**

CQ BEEF

Better Economic and Environmental Futures

CQ Issue 3

Cattle drinking at the Mountain Hut dam

futurebeef

Wet season spelling the secret to healthy pastures

Grazier Jeff Edgar has been amazed by the positive impact fencing to land type and wet season spelling has had on the condition of his pasture.

In 2006 Mr Edgar received help from the Fitzroy Basin Association Inc (FBA) and Fitzroy River and Coastal Catchments Inc. (FRCC) to fence the hills from the lower creek flats on his Morinish property *Mountain Hut*.

Following soaking rains in the last wet season, Mr Edgar used the new fence to move his herd into the hills to give the pasture along the creek flats a rest for three months' of the growing season.

'The difference along the creek flats is amazing after only one wet season's spelling. We've already seen a big improvement in ground cover and general pasture condition.' Mr Edgar said.

FRCC Field Officer Darcy Murray said Mr Edgar's story was a timely example of the benefits of wet season spelling of pastures.

'Following the recent soaking rain across CQ graziers will be tempted to take advantage of fresh feed by restocking. However it's critical to give grasses time to fully recover from the dry conditions,' Mr Murray said.

'Grazing grass early in the wet season when it is starting to grow from its reserves will weaken it and can lead to the loss of productive grass species from the pasture system.

'Wet season spelling is the secret to allowing drought affected pastures to recover for long term beef production.

'Spelling or resting pastures for the first 6 to 8 weeks of active growth allows productive pasture plants to replenish reserves, set seed and allow seedling recruitment.

'The results speak for themselves; wet season spelling is the cheapest and most effective pasture renovation option available.'

Ground cover monitoring being conducted by FRCC had recorded an improvement in pasture cover of up to 27% in Mr Edgar's 9-Mile Creek paddock.

'If we can do this (spelling) for a few years in a row, that'll really cover up the bare patches. We are aiming at 75% cover over the whole area which will

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Queensland Government
Department of Primary Industries and Fisheries

Editorial

Welcome to the third edition of the *CQ BEEF* newsletter.

We are about to have a changing of the guard with our economists. Mark Best will soon move to Toowoomba where Rebecca Gowen has come from to join the team. We would like to thank Mark for his hard work in the project and wish him Lilly and Stephen all the best with their move.

Rebecca has hit the ground running and we would like to welcome her to the team.

We would also like to welcome Byrony Daniels to the role of Beef Industry Development Officer in Emerald. Byrony has been employed under the DPI&F *FutureBeef* Initiative which has been implemented to improve beef extension services in Queensland with the Central Highlands identified as a key region for extra resources.

This edition has articles highlighting the range of activities being undertaken by FBA and DPI&F to improve industry profitability and environmental outcomes. Articles on FBA work on wet season spelling and water quality monitoring demonstrate this dual approach.

Analysing production and turnoff options is a key activity in the *CQ BEEF* project and Mark Best has an example of this work in an article on an analysis of feeder steer versus Jap Ox production. The recent DPI&F Spotlight on Beef forum for the Agribusiness sector highlighted some serious productivity and profitability issues for industry. Rebecca Gowen provides an overview of these issues.

Brendan Hamilton the QRAA Client liaison Officer for Central Queensland based in Rockhampton has provided an update on QRAA services for the region.

A profile of the Moura group members is included in this edition and this month's feature plant is black speargrass.

On behalf of the project team, FBA and DPI&F, I would like to thank Wayne Moxham-Price, Pindari Biloela and Howard Smith, Mt Panorama Rolleston for agreeing to be members of the project steering committee.

An application was submitted to the National Landcare program for funding to expand the project in Central Queensland. This has been just approved by the Federal Assessment Panel.

I hope you enjoy the articles.

Mick Sullivan Project Leader, *CQ BEEF*

Jeff Edgar (left) chats to FRCC field officer Darcy Murray about pasture condition

make a huge difference production wise,' Mr Edgar said.

'During the recent rain it was great to see the improved grass coverage helping to retain topsoil and nutrients and the dams filling so well. You've got to keep that water and soil on the land and not washing down into the creeks,' he said.

Download Jeff Edgar's case study from www.fba.org.au

FBA Water Quality Monitoring Program improves understanding of local water quality

Recent flooding in the Fitzroy Basin and the resulting sediment and nutrient run-off into our waterways has again highlighted the importance of sustainable land management practices that improve ground cover and reduce erosion.

Reducing the impact of agricultural land use on the health of our waterways is vital and FBA works closely with graziers across the region to adopt best practice land management techniques to achieve this goal.

FBA also invests in a number of research and on-ground activities designed to improve the ability to set accurate local water quality targets, and to help gauge the success of changes in land management.

The Priority Neighbourhood Catchments (PNC) Water Quality Monitoring Program is helping provide much needed data to support this process. The program aids in setting water quality targets, collection of baseline water quality data and improved understanding of water quality issues among stakeholders.

The success of FBA's PNC Water Quality Monitoring Program can be attributed to the involvement of landholders across the basin

Landholder testing water

who take an active role in the monitoring process.

Dedicated individuals in strategic locations within priority catchment areas collect up to six samples from each rainfall event that causes flows in creeks and rivers. The objective of this monitoring program focuses on sediment, salinity and nutrient (nitrogen and phosphorus) parameters.

More than 20 reports have been produced over the last two years for flood events that have been monitored, and more will be produced in 2008 as a result of recent heavy rainfall. The reports are made available to landholders, scientists and the general public through the FBA website.

View current Event Reports

Visit www.fba.org.au and then click on 'Programs' in the left-hand navigation panel, and then 'Healthy Waterways, Rivers and Wetlands.

Reports are available for the areas of Alligator Creek, Calliope, Capella, Canarvon, Clarke Creek, Consuelo, Kemmis Creek, Minerva, Orion, Springton Duckworth, Steven Creek, Upper Fitzroy and Wolfgang.

FBA staff install water quality monitoring equipment

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CQ BEEF Mackenzie River group scenario analysis

– Feeder steer versus Japanese Ox production

Introduction

In this analysis gross margin results for two steer growing options using purchased steers are compared. These are:

1. Feeder steer production – Growing out 250 kg steers to 450 kg feeder steers; and
2. Jap Ox production – Growing out 250 kg steers to 635 kg Japanese Ox (Jap Ox).

Comparison methodology

- Determine cattle purchase and selling prices and costs, variable production costs and production data for both growing out options.
- Use the Bullocks[1] programme to calculate gross margins.
- Gross margins are calculated on an annualised per adult equivalent (AE)[2] basis after interest. Interest cost is based on the capital value of the cattle.
- Scenario options were tested under a range of turn off weights, growth rates and sale prices in order to test the sensitivity of the growing options to these factors.

Purchased steer data

Input data for the 250 kg purchased steers used in both scenarios are shown in Table 1.

Purchase weight	250 kg
Purchase price (net)	$2.08/kg
Steer purchase price	$520/hd
Delivery freight	$8/hd
Tickicide	$4.70/hd
Induction HGP	$6.70/hd

Table 1. Purchased steer data

[1]Bullocks is a gross margins/ returns calculator contained within the Breedcow and Dynama package of herd budgeting software.

[2]Adult equivalent ratings are calculated for different class and weights of animals to enable them to be compared across a time period.

Table 2. Production and cost data for feeder steer and Jap Ox production scenarios

Production scenario	Feeder steer	Jap Ox
Target turnoff liveweight (kg)	450	635
Annual mortality (%)	1	1
Average daily liveweight gain (kg/hd/day)	0.67	0.50
Days to reach turnoff weight	300	770
Post induction tick treatments ($/hd)	NA	5.35
Post induction HGP treatment ($/hd)	NA	4.70
Liveweight sale price ($/kg)	1.80	NA
Dressing percentage	NA	52
Carcase weight (HSCW*) (kg)	NA	330
Carcase sale price ($/kg)	NA	2.90
Gross value ($/hd)	810	957
Sales freight ($/hd)	11	16
Sales commission (%)	3	NA
MLA levy ($/hd)	5	5
Net price ($/hd)	770	936

*Hot standard carcase weight

Scenario production data

The production data for the two finishing options examined are shown in Table 2.

For both scenarios an interest rate of 10% was applied to the herd capital.

Initial result

Initial results indicate a superior gross margin for the feeder steer production option of $259/AE versus $108/AE for Jap Ox. Reasons for this include the length of time animals spend on forage and the higher interest costs associated with carrying higher value animals for longer time periods.

Scenario sensitivity analysis

Because of the variability that is experienced in growth rates and sale prices it is important to test the sensitivity of the production system to changes in growth rate, cattle purchase and sale prices.

Table 3 shows the Jap Ox production system gross margins for a range of sale prices.

Table 3. Jap Ox production sale price sensitivity matrix

Selling price ($/kg HSCW)	GM ($/AE)
2.70	80
2.90	108
3.10	137
3.30	165
3.45	187
3.50	194

If the Jap Ox system steers achieved the same lifetime growth rate as the feeder steers (0.67 kg/hd/day) the gross margins are considerably improved (Table 4).

Table 4. Jap Ox production sale price sensitivities for a liveweight gain of 0.67 kg/hd/day

Selling price ($/kg HSCW)	GM ($/AE)
2.70	132
2.90	171
3.10	210
3.30	250
3.45	279
3.50	289

With a higher weight gain across the Jap Ox production cycle and a sale price above $3.30/kg HSCW, the gross margin is comparable to the feeder steer option. However, it should also be acknowledged that such weight gains are difficult to achieve across the entire production cycle.

Gross margins for feeder steer production under a range of feeder steer selling prices are shown in Table 5.

Table 5. Feeder steer production sale price sensitivity matrix

Selling price ($/kg liveweight)	GM ($/AE)
1.50	57
1.60	124
1.70	192
1.80	259
1.90	327
2.00	395
2.10	462

At a sale price of $1.58/kg, feeder steer gross margin falls to $111/AE, comparable to the initial Jap Ox result. However, this represents a fall in price of around 12% from the selling price used in the analysis, demonstrating that even with a considerable reduction in feeder steer sale prices the option modelled is superior to Jap Ox production.

Cow finishing scenario

A cow finishing scenario based on locally sourced cows was also investigated. These animals were bought in at 450 kg liveweight with a purchase price of $1/kg. The cows were assumed to gain 0.65 kg liveweight per day and sold after gaining 100 kilograms. A dressing percentage of 49% was used. Results for these analyses are shown in Table 6.

Table 6. Cow finishing sale price sensitivity matrix

Selling price ($/kg HSCW)	GM ($/AE)
2.30	216
2.40	272
2.50	328

These results compare favourably with the feeder steer option. However, this is very much a production option driven by opportunity purchasing as its viability is very dependant on purchase price. For example, if purchase price was $1.10/kg, gross margin falls to $173/AE and at $1.20, gross margin is $74. Such sensitivity emphasises the need to fully analyse such opportunities.

Discussion

Factors such as labour usage between classes of cattle, the risk exposure incurred in growing animals out beyond the year long production cycle of backgrounding, as well as the cash flow impacts of switching from backgrounding to longer Jap Ox production have not been considered in the above analysis. Cash flow budgeting is commonly used to explore such issues.

Conclusion

In looking across the potential production scenarios, under the assumed price and production combinations, a superior annualised gross margin is achieved through feeder steer production.

Future analysis

Ongoing analytical support is offered as a part of the *CQ BEEF* project. There are opportunities to apply similar methodology in order to assess the potential profitability of production opportunities throughout project teams.

Black speargrass in Queensland

Dr David Orr
Principal Scientist Rockhampton

Background

Black speargrass (*Heteropogon contortus*) is a widespread, native perennial grass which is distributed throughout much of eastern Queensland particularly in areas receiving between 600 mm and 1,000 mm annual rainfall. Prior to European settlement, much of the now black speargrass area was dominated by kangaroo grass (*Themeda triandra*) which declined substantially because it was intolerant of grazing and was replaced by black speargrass. More recently, however, there is evidence that black speargrass is now in decline throughout much of Queensland, because stocking rates have increased, in many cases, to a level that is too high for black speargrass to remain dominant. In northern Queensland, extensive areas that were once dominated by black speargrass are now dominated by inferior grasses such as Indian couch (*Bothriochloa pertusa*).

Soils

Black speargrass grows on a wide variety of soil types. It has its best growth on coarse textured soils and does not grow well on clay soils.

Growth

Black speargrass is a summer growing perennial grass with growth usually starting with storms in spring and continues throughout summer until early April, depending on rainfall. Growth occurs from small tiller buds located at the base of existing tussocks and although most of these new tillers (or stems) emerge in spring some new tillers do emerge later in the summer.

During the summer, these tillers expand in growth becoming taller until about March when some tillers flower and produce seed. By late April when the tussocks have finished seeding the characteristic 'bunches' of seeds become prominent. At this stage, the seeds are dormant and they eventually fall to the ground. Dormancy is usually overcome by the increasing soil temperatures with increasing daytime temperatures during spring.

Plant turnover

Most black speargrass tussocks live for around five years although one recent study has measured some tussocks as having survived for 15 years. This five year average life span means that regular seedling recruitment is necessary to maintain plant density. Seedlings usually appear after the first spring / early summer storms and the number of seedlings usually depends on how much seed is set in the previous autumn. Seedling recruitment is substantially boosted by burning within a few days of receiving the first rainfall event of 20 mm or so.

Reaction to grazing

Black speargrass responds well to moderate grazing pressure. However, where grazing pressure is consistently too high over a number of years the rate of death of existing tussocks exceeds the recruitment of seedling plants so that the black speargrass population is reduced.

Resting over the summer growing season can be very beneficial to black speargrass as the tussocks have the opportunity to rejuvenate. Resting over autumn will maximise seed set. Rehabilitating pastures with low black speargrass density can be achieved with careful management through resting over autumn to maximise seed production, burning in spring following the first 20 mm storm to maximise seedling recruitment and then resting again over the summer.

Property and area	Business partners	Location	Average annual rainfall	Land types	Enterprise
Moura group					
Woodleigh 2,791 ha	Owen & Hazel Anderson are owners and managers with input from daughters Fiona and Lorraine. Lorraine also works on farm.	On the Dawson River, 25 km north of Theodore	720 mm	About half brigalow, bauhinia, softwood scrub on scrub sandy loam soils. The remainder includes blue gum and silver leaf iron bark on river sand flats and box, eucalypt and bloodwood on forest shallow sandy soils.	EU Accredited breeding and fattening enterprise. Breeding towards pure Droughtmaster herd with exception of terminal sire to first calf heifers joined as yearlings. Target market EU slaughter but during drier seasons to reduce grazing pressure finished in feedlots and sold yearlings as stores.
Kilmory 3,654 ha	John & Angus Macrae	Oombabeer Rd, west of Moura	650 mm	57.75% brigalow on heavy clay soil 25% Dawson gum on light powdery clay soil 7.5% broadleaf Ironbark on brown clay loam soil 5% lapunyah on pebbly clay soil 4.75% softwood on clay loam soil	EU accredited breeding and fattening Belmont herd. Surplus heifers not fattened and are usually sold to breeders. Only replacement bulls bought. Historically 24 week mating. Heifers joined at 2 years. Regrowth control is main cost exacerbated by micro topography. Opportunity fodder cropping usually sugargraze.
Paranui 3,117 ha	Norman & Desley Becker	South west of Moura on the Dawson River	700 mm	891 ha Moreton Bay ash, bloodwood and ironbark on sandy soils 300 ha box and ironbark on sandy loam soil 250 ha brigalow on brigalow soil 680 ha coolibah and blue gum on heavy cracking clay 300 ha narrowleaf Ironbark, spotted gum and lancewood on stoney useless range country 696 ha brigalow and softwood on light to heavy scrub soils	Cattle and farming. Breeding and fattening enterprise and normally run around 800 head of cross bred (Brahman X and Droughtmaster mainly) cattle. Most progeny is fattened and sold at 2 years old except for replacement breeder heifers. We pregnancy test annually and average pregnancy rate is 90% plus and all empty cows are sold when fattened. We use HGP's in growing stock. We are developing approximately 400 ha of minimal till dryland farming. We also have a 400 meg allocation of water from the Dawson River and run one 32 ha centre pivot irrigator on two circles. This soil is extremely sandy and not suitable for most intensive irrigation crops. We have 120 ha planted to leucaena which seems to grow well in this area (despite frosting in winter) and plan to increase these areas.
Barfield 12,145 ha	Phil Homer	South east of Banana	560 mm	3,437 ha ironbark, box and gum on deep sand soil 283 ha brigalow on heavy clay soil 2,080 ha spotted gum and lancewood on laterite plateaus/deep red sand soil 2,043 ha narrowleaf ironbark on dark cracking clay soil 301 ha narrowleaf ironbark and bloodwood on shallow stoney soil on ridges 243 ha brigalow/belah on medium clay soil 2,490 ha softwood scrub on brown non-cracking clay soil/heavy rock 1,268 ha ironbark, rosewood and softwood on shallow stoney soils on ridges	EU accredited breeding and fattening operation. Wongadoo runs 1,000 breeders plus 150 replacement heifers while Barfield runs 500 breeders,100 replacement heifers and all progeny post weaning. Non replacement heifers are speyed at 12 months. All heifers and steers run on the scrub country while breeders are run on forest country. Speyed heifers and steers are finished on forage at 2-2 1/2yr old where possible. All dry cows are pregnancy tested at each muster and sold if empty. All cows are sold at 10-11 year old.
Tremere 9,558 ha	Tremere Pastoral Company, owned by the Hudson family	East of Moura	670 mm	3,000 ha brigalow on gilgaied brown/grey cracking clay soil 2,000 ha brigalow +/- silverleaf ironbark on shallow texture contrast soils interspersed with cracking clays 1,000 ha brigalow with blackbutt/yapunyah on brown sodosol soil 900 ha brigalow, bauhinia and poplar box on	Tremere Pastoral is a stud/commercial breeding operation with progeny normally sold direct to bull buyer or abattoir through a production chain of backgrounding and on farm feedlot. Grain and hay production are normally directed to the feedlot with some going to bulls and weaners. Oats is grown for the sale bulls. Excess grain and hay are sold off farm. The grain crop stubble is grazed in drier years. SM & KA Hudson graze cattle on the properties as part of their employment.

				red/yellow texture contrast soil 1,000 ha softwood scrub on brown clay 500 ha softwood scrub on deep red clay soil 500 ha open downs on black/brown cracking soil 400 ha narrowleaf ironbark with rosewood on shallow stoney soil 200 ha blue gum/river red gum flats on deep black cracking clay soil	
Can-Berra and Flat-Top 2,900 ha	Joseph & Gail Johnstone	Approx. 20 km south east of Banana	700 mm	Prominently brigalow softwood scrub with small areas of ironbark ridges & open downs	Recently EU accredited. Breeding fattening enterprise consisting of Droughtmaster X. Silage system used to provide more reliable turnoff. Approximately 350 ha used for grain cropping.
Wilgavale	Ken and Claudia Stephenson are the owner/ managers	3 km west of Moura	650 mm	One third sandy soils originally with Ironbark, eucalyptus, bottle tree and wilga. Loamy soils along the Dawson River with coolibah, ironbark and other eucalyptus spp. The remainder is brigalow/belah on black soils.	Originally a Brahman herd (approx 400 breeders) now using Limousin and Charbray bulls to produce weaners for grass fatteners and feedlots, selling cull cows to meatworks.
Namgoori 1,070 ha Carisma 1,457 ha	Ballentine Family Myles & Julie Ballentine Bruce & Kaye Ballentine.	Namgoori - 13 km south of Banana Carisma - 12 km south east of Banana	700 mm	Namgoori 1,070 ha self mulching brigalow clay Carisma 789 ha Softwood scrub. 124 ha flooding softwood/brigalow scrub. 494 ha brigalow 30 ha black soil 20 ha mudstone siltstone ridge	1,727 ha grazing. EU accredited greyman breeding and fattening enterprise. Selling direct to works. Also non EU backgrounding operation selling direct to feedlots. Both enterprises incorporate supplementary feeding of silage and or milled grain as market and economics dictate. Excepting wet breeders. 800 ha dryland farming enterprise predominantly wheat, sorghum, chickpea, forage sorghum (silage), mungbean. Other crops include corn, sesame and sunflower. Provisions made for leucaena on less productive land, or land not suitable for cultivation.

Hello All. My name is Brendan Hamilton and I am the Client Liaison Officer for QRAA in the Rockhampton Region. QRAA is a statutory authority which administers various schemes on behalf of the Federal and State Governments. You may be familiar with some of our programs such as EC Interest Subsidies and the recent Flood Assistance program. We have eight regional offices spread across Queensland and our head office is located in Brisbane.

The Rockhampton office services an area from Miriam Vale to St Lawrence, across to Capella, down to Springsure, down to Theodore and across to Miriam Vale including the former shires of Banana and Calliope. I can visit your farm/grazing property or alternatively you can visit me at my office here at the DPI&F in Rockhampton.

Current programs in my region include the EC Interest Subsidy program for those located in the southern portion of the former Duaringa Shire, the south-eastern portion of the former Bauhinia Shire, the whole of the former Mt Morgan Shire, and eastern and western portions of the Banana and former Calliope Shires respectively. Interest subsidies of between 50 to 80% of your interest are available depending on which shire you are currently in.

If you were affected by the recent floods in January and February this year, you may be eligible to apply for grants up to $10,000, and in certain cases up to $25,000, to help you recover from damage sustained from direct flood inundation. Eligible producers and small businesses can also apply for low interest loans of up to $250,000 to assist with further recovery, with terms at 4% with no fees.

QRAA also has a range of low interest loan programs, designed to help you improve your productivity or to assist you start up your first primary production enterprise. Loans of up to $500,000 are available, at concessional rates, with repayments structured to your requirements.

If you would like any further information on these schemes or any of our other programs, please don't hesitate to contact me on any of my contacts below.

Brendan Hamilton
Client Liaison Officer, QRAA Rockhampton
25 Yeppoon Rd (PO Box 6014, CQMC Q 4702)
PARKHURST QLD 4702
Ph: 07 4936 1872 Fax: 07 3032 0390 Mob: 0417 775 245
Email: Brendan.hamilton@qraa.qld.gov.au
Web: www.qraa.qld.gov.au

From left: Katie, Cameron, Dan, Gavin, Megan and Ben Muller

Gavin and Megan Muller profile

Biloela *CQ BEEF* members Gavin and Megan Muller operate under a couple of slogans. The Biloela district graziers 'aim to improve all the time' and just want to 'keep it simple'. Together the Muller's aim to improve property standards across the board and want to develop their properties to their full potential.

The Muller's and their four children operate under Dellmor Grazing Company and own a 1,108 hectare aggregation comprising *Gavyna, Dellmor* and *Nova*. This cluster of properties is located approximately 25 km north west of Biloela. Muller's also co-own the 6,312 ha property *Cooinda*, with Paul Ross. *Cooinda* is situated 20 km west of Ubobo in the Calliope district.

The Brahman dominated breeder herd is located on the spotted gum/ironbark hilly country of *Cooinda*. All weaners are trucked to the fattening brigalow/blackbutt soils of the Biloela properties where they are finished for the EU market. Finished animals are sold to Dinmore or Bothwicks meatworks through a marketing group that Muller's are part of. Gavin has also from time to time sold to feedlots and other opportune markets.

Currently Gavin and Megan's newest pet project is leucaena development. This decision has arrived after some budget planning and property development planning that the Muller's undertook with Stuart McArthur. Gavin had been pondering on planting leucaena for over two years after Stuart had assisted them in getting their business on track. They now hope to continue to develop and monitor this plan.

In November 2007, Gavin planted the first leucaena patch of 200 acres with the assistance of Tom Carige. Gavin is using the leucaena to rejuvenate poorer quality country especially in areas where traditionally feed production is minimal. Gavin hopes that with leucaena dominating the poorer areas of his Biloela properties and in conjunction with rotational grazing he will be able to improve the quality of feed and increase growth rates and turnover.

Gavin has planted 7 m twin rows of leucaena and questions whether he will plant 200 acres again in one hit. Gavin has a goal of planting 200 acres of leucaena a year for the next 4 years. However, at this stage he is not sure that locking up 200 acres at a time and then managing 200 acres of leucaena growth in its early stages is a good management decision for his business. Although with a chuckle, Gavin then says that come spring next year he will probably still plant 200 acres, but at least this time he will know what he is in for. Muller's are very much looking forward to putting their first mob of cattle on the Leucaena and seeing the benefits first-hand.

Gavin and Megan are pleased that *CQ BEEF* enables them to have the availability of people with a wide range of skills. The Muller's believe that networking within the group and other like-minded groups is a great resource to have. Gavin and Megan hope that *CQ BEEF* will aid them in continuing to develop their knowledge base and improve their business.

Given that time is limited, Gavin's dream holiday would be going away anywhere and coming home to grass as high as the fence. On the other hand Megan's dream holiday would be able to take all the children and have a family holiday in Fiji.

Spotlight on beef industry economics

Rebecca Gowen
Agricultural Economist Rockhampton

The recent Spotlight on Beef Forum held in Rockhampton for the Agribusiness sector highlighted some interesting issues for the industry's profitability.

Economics of beef

There is no questioning the importance of the beef industry to the Central Queensland economy. In this region alone the industry is worth over $750 million and accounts for 26% of the total value of the beef industry in Queensland. Beef is the second biggest export for Queensland and the industry employs over 15,000 people across the state.

On the surface, these figures would imply that the beef industry is in good shape. Digging deeper, the reality is a little more uncertain. ABARE recently suggested that for agriculture to survive there will need to be a 60% increase in productivity just to deal with climate change. This presents a significant challenge for the beef industry where total factor productivity growth (value of output relative to the value of inputs used) since 1980 has been almost zero. In comparison, the grains industry has doubled their productivity in the same time.

What is the difference between these two industries?

The first answer is that the grain industry is much better at managing their operations with one goal in mind; Profit. At a moments notice most of them can tell you how much it costs to plant, grow and harvest one tonne of grain and at what price they will make a profit. On the other hand, few cattle producers know exactly how much it costs to produce one kilogram of beef and what their breakeven price is.

Highlighting this is the fact that beef business profit, which indicates economic viability, has hovered around zero since 1991.

Consider also, that for northern Australian beef producers the return on assets including capital appreciation is approximately 11.4%. Without capital appreciation it is 0.87%. The Herron Todd White Australian Grazing Property Index shows a 14.9% per annum rise for Central Queensland properties from 1980 to 2007. From 1999 to 2007 the increase has been 26.6% per annum. While these property value increases have allowed many producers to survive where they otherwise wouldn't, the question remains as to whether the land and resources involved are being utilised at the most efficient level.

The major profit drivers are scale (turnover), gross margins and overhead costs. Assuming the gross margins for a particular enterprise on a particular land type are fairly fixed, the other options are to increase turnover, thereby increasing economies of scale or reduce overhead costs.

To highlight the importance of scale, between 2004-05 and 2006-07 beef operations with herds greater than 1, 200 head maintained a positive profit between $80,000 and $185,000. Those with 600-1,200 head averaged $42,000 while those with 300-600 head averaged a loss of $37,000.

Due to the rise in land prices, expansion through land acquisition is becoming increasingly difficult thus other options such as intensification and genetic improvements need to be investigated.

This highlights the other major difference between the grain and beef industries, the amount spent on research, development and extension (RD&E). Much of the increase in grains productivity has been a result of the development of new cultivars which are more disease resistant, less water dependent or deliver higher yields. These improvements have been made possible by the fact that for every $1 of grain production in Queensland, 3 cents is spent on RD&E. In the beef industry it is just 0.3 cents.

The first step in improving productivity is to understand the profit drivers of beef production and how these can be manipulated to maximise profitability. The CQ Beef project can play a major role in helping producers achieve this goal.

Degradation – gradual process or event driven?

Bill Schulke, Extension Officer, Bundaberg

Grazing trials have shown the impact of stocking rate (SR) to be variable in terms of profitability and sustainability. The impact of management on land condition, both positive and negative, appears to be episodic. Management therefore needs to be adaptable to avoid the risks associated with prolonged drought and to exploit the opportunities that consecutive good years present.

During the past two decades a number of mid to long-term grazing trials have been conducted in various regions across northern Australia. Some common themes have emerged from the results of these trials.

One of these themes is that degradation (loss of land condition) tends to be event driven. High stocking rates and high annual pasture utilisation rates are considered to be unsustainable as they lead to a loss of land condition. However, under good seasonal conditions or a string of good seasons, high stocking rates may not cause much degradation.

Real degradation is often associated with a very poor season or a string of poor seasons.

Show me the money

The Ecograze project conducted near Charters Towers during the mid 1990s clearly showed that high utilisation rates (>50%) in the absence of strategic spelling led to a loss of land condition. However, the Aristida-Bothriochloa (AB) project, conducted over the relatively better seasons of the mid to late 1990s, showed that moderate to heavy stocking rates may have placed the country at risk but did not really lead to degradation.

A trial at 'Wambiana' south-west of Charters Towers had fair to good seasons for the first half (1997–2001) but very poor seasons for the second half (2002–2006). Under the high stocking treatment, there was a significant loss of land condition in the dry years.

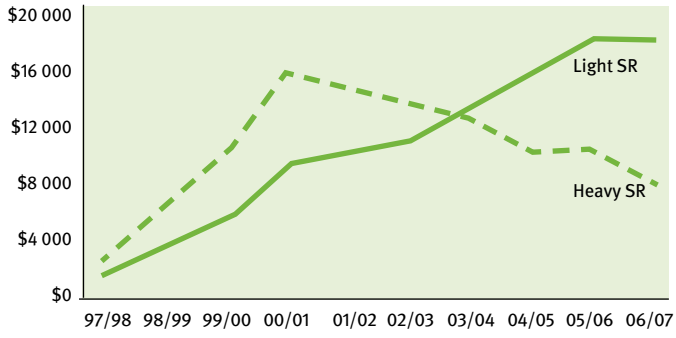
Economic analyses from 'Wambiana' show that a light to moderate stocking rate was profitable and sustainable. The heavy stocking rate was neither sustainable, due to loss of land condition, nor profitable because feeding costs were high, animal production (especially in kg/hd) was inefficient, and animals of lower value were produced.

Economics from the 'Wambiana' trial

Economic analyses from other studies (e.g. GLASS and 'Galloway Plains') indicated that returns were maximised at moderate to high stocking rates but that these rates were probably unsustainable (although no major loss of land condition was seen in either trial). These analyses didn't fully take into account the long term impact of lost land condition which either reduces carrying capacity or increases management and rehabilitation costs. The other aspect of these two trials was that they incorporated an exotic legume which may have masked the impact of stocking rate on individual animal performance.

Accumulated surplus per 100 ha

(10% interest on cattle; 20c premium for condition)



'Wambiana' Light SR

Tougher seasons but still fair condition

'Wambiana' Heavy SR

Tougher seasons and loss of land condition

Degradation causes and rehabilitation

High stocking pressure during the critical early phase of growth in perennial grasses is detrimental to pasture health. During dry years you often get some rain but it is not enough to sustain pasture growth for more than a couple of weeks. In these situations, even moderate stocking rates lead to high grazing pressure on individual tussocks. This effect is compounded if there are several poor seasons in a row.

If degradation is episodic, then pasture recovery probably is as well. Pasture spelling, reduced stocking rate, strategic use of fire, sown pastures and weed management are all useful tools to improve land condition. However, you may need a couple of fair to good seasons in a row to see the full benefit. Conversely, these strategies may not work at all during periods of prolonged drought (although reducing the stocking rate has benefits from an animal management perspective).

Country that is in good condition is better able to handle episodic events and is more stable than country that has already lost condition.

Management principles

Grazing land management needs to be adaptive. It can have taken many years for a problem to become evident, when it often seems to have done so in a short period of time. Just because a paddock could run 100 breeders during the 1970s and 1980s doesn't mean it can still run that number. In fact, it is the paddocks where producers have attempted to maintain the higher stocking rates through the last 20 years that now aren't responding to rainfall – they have lost condition. Reducing stock numbers during dry years helps prevent degradation.

You need to be adaptive when the better seasons present themselves to take full advantage of them. This may include planning to use fire, stocking up to take advantage of increased pasture growth, spelling paddocks to allow better grasses to establish and set seed, managing timber regrowth, sowing pastures for a specific reason, and treating weeds.

Grazing lands are complex systems and highly variable. Hard and fast rules don't apply!

Stocking to safe carrying capacity, varying stock numbers in response to seasonal conditions (where practical to do so) and spelling paddocks during the growing season (either each paddock once every three to five years or all paddocks each year in a rotational system) are useful principles.

Always come out of a dry spell, no matter how prolonged, with stubble on the ground

Land condition is the ability of grazing land to produce useful forage and is a relative measure of the health of grazing lands. It has three components:

Soil condition High levels of organic matter and good soil structure are key indicators of soil condition. Erosion indicates a loss of soil condition.

Pasture condition The density and coverage of 3P grasses (perennial, productive, palatable) determines pasture condition. Weeds indicate a loss of pasture condition.

Woodland condition Woody plants compete with pasture for water and nutrients. Increasing tree density indicates a loss of land condition.

Staff profiles

Byrony Daniels,
Beef Industry Development Officer

Childhood: Brought up on cattle and grain property between Emerald and Capella

Career: Studied Bachelor of Agricultural Science specialising in Rural Technology at University of Queensland – Gatton. Studies included fourth year project comparing cell grazing and rotational grazing on two different soil types in Central Queensland. Worked as AgForce CQ Regional Member Co-ordinator for three years. Commenced as Emerald Beef Industry Development Officer in June.

Interests: Polocrosse, travel

Brag sheet: I survived the crash landing of a hot air balloon in a paddock of cacti near Phoenix Arizona.

Holiday: Across Africa. Spend a couple of weeks helping to build orphanages, a couple of weeks on safari and then make my way to Egypt. I would really like to swim in the Devils Swimming Pool on the edge of Victoria Falls Zimbabwe. If you go at the right time of the year you can get right to the edge of the falls.

Rebecca Gowen,
Regional Development Officer (Ag Economist)

Childhood: Brought up on sheep and cattle property near Armidale in NSW.

Career: Studied Bachelor of Natural Resource Economics (Agricultural Economics) at University of Queensland. Worked part-time in Strategic Policy (DPI&F) in Brisbane during my final year at uni. Moved to Toowoomba in January this year as regional economist. In April, moved to Rockhampton to take over as the economist for the CQ Beef project.

Interests: Polocrosse, travel, skiing

Brag sheet: Won grand champion bull at the Toronto Royal Show while working at an Angus stud in Ontario, Canada.

Holiday: Toss up between safari in Africa and skiing in Canada – I can't choose!