Queensland Primary Industries and Fisheries

CQ BEEF

Better Economic and Environmental Futures

CQ Issue 4 JULY 2009

futurebeef

Kangaroo grass

Grader grass

# Kangaroo grass in Queensland

David Orr, QPIF Rockhampton

## Background

Kangaroo grass (*Themeda triandra*) is a summer growing, palatable, native perennial grass which is widely distributed throughout Australia and much of Queensland. Kangaroo grass is widespread throughout the world and is an important native grass across much of Africa. Prior to European settlement of Queensland, kangaroo grass was thought to be the dominant perennial grass over much of what is now the black speargrass (*Heteropogon contortus*) area but was replaced by black speargrass because kangaroo grass is intolerant of heavy grazing.

Kangaroo grass can be confused with the undesirable, introduced, but closely related, grader grass (*Themeda quadrivalvis*). Grader grass can be distinguished from kangaroo grass because grader grass is usually taller, is more robust and possesses hairs on the seed head clusters.

## Soils

Kangaroo grass can be found on a wide variety of soil types.

## Growth

Kangaroo grass is a summer growing perennial grass which usually starts growing with the start of storms in spring and growth continues throughout summer until early April, depending on rainfall.

New growth occurs from small tiller buds located at the base of existing tillers and almost all of these new tillers (or stems) emerge early in spring. During the summer, these tillers expand in growth becoming taller until about February – March when some tillers flower and the tussock produces seed.

## Plant turnover

Some kangaroo grass tussocks can live for up to 5 – 6 years. New seedlings usually appear after the first spring / early summer storms but only where mature plants are present and have produced seed in the previous summer. Burning probably boosts seedling recruitment.

## Reaction to grazing

Kangaroo grass is susceptible to grazing and this susceptibility is thought to be related to the fact that almost all of the new season tillers emerge at the same time in early spring. Therefore, grazing at this time kills these new tillers and so kills the grass tussocks. Because of its sensitivity to grazing, kangaroo grass is often sparse on heavily grazed country.

Kangaroo grass will benefit when rested from grazing until these new tillers become established. Many graziers are seeing increased density of kangaroo grass as they incorporate more wet season spelling into their grazing management.

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## Editorial

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

With the establishment of a Middlemount group in June there is now a network of eight groups across Central Queensland.

Because carbon pollution has become such a dominant issue we have included an article on the implications of a carbon pollution reduction scheme for the beef industry. Lindy Symes has provided an update on the Biloela group's MLA Producer Demonstration Site on the use of NLIS technology.

Grazing and land management is covered in an article on land condition by Gina Mace and an update from Ken Murphy on pasture renovation work being undertaken by David Parsons at Raglan.

Byrony has provided an update on the key issues for meeting MSA specifications.

Bec Gowen and David Hickey have written articles to help make the best use of ProfitProbe analysis.

We would like to welcome Joe O'Reagain to the project and his role as the FBA Grazing Land Management Officer based at Biloela.

As well as BEEF 2009, May was a big month for babies. Congratulations to Renee and Brett Christie on the arrival of Heidi Jane and to Ainsley and Rob McArthur on the arrival of Adelaide Claire.

Best wishes also to Stuart and Melinda McKenzie on their recent marriage.

I hope you enjoy the articles.

**Mick Sullivan Project Leader, *CQ BEEF***

# Australia's carbon pollution reduction scheme – *implications for the beef industry*

We are all aware that the Federal Government announced, at the end of last year, a Carbon Pollution Reduction Scheme (CPRS) to reduce Australia's greenhouse gas emissions. Agriculture, though exempt from the initial start-up year of 2010, is a significant player. The grazing industries have the largest potential liability, with the least room to move, of all agricultural industries. Paradoxically, the grazing sector also has the greatest opportunities in providing carbon offsets either internally or externally to other emitting sectors. Meeting obligations under a CPRS poses the greatest challenge to the grazing industries for the next decade.

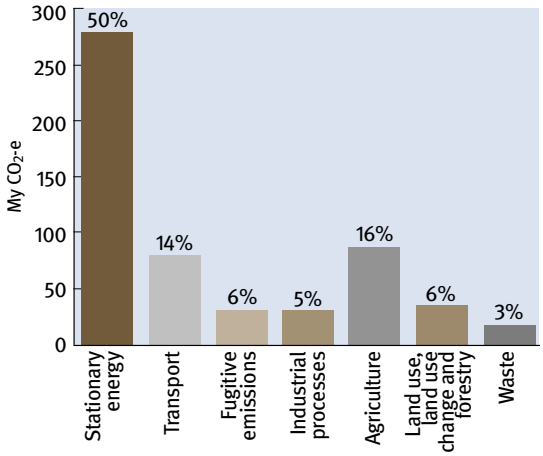



*Figure 1. Australia's emission profile (Source: Greenhouse Office)*

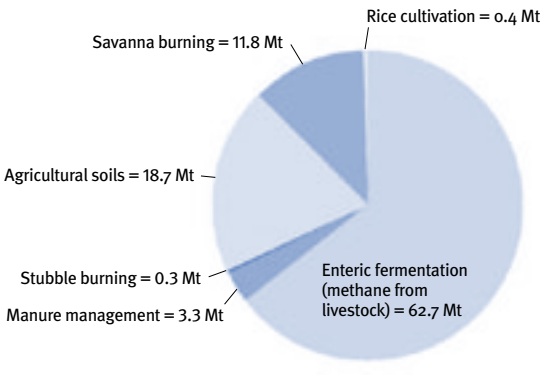



*Figure 2. Greenhouse gas emissions from Australian agriculture in 2003. (Source: Greenhouse Office)*

In light of the growing scientific, public and political concern surrounding climate change, the Federal Government commissioned Professor Ross Garnaut to investigate the economic impacts of climate change and actions required to reduce greenhouse gas emissions. The CPRS is largely based on Professor Garnaut's findings.

### *Australia's emissions*

In terms of total global emissions, Australia is about the 12th heaviest emitter producing (in 2006) about 550 Mt $CO_2$–e (mega tonnes of carbon dioxide equivalent) or about 1.4 per cent of global emissions. Whilst we are a long way behind countries like USA and China in terms of total emissions, on a per capita basis we are the 3rd heaviest emitter.

Stationary energy (electricity) is the largest emitting sector in Australia, producing about half of our total emissions. Agriculture and transport are the next two largest emitting sectors at 16 per cent and 14 per cent respectively (Figure 1).

Within the agricultural sector (Figure 2), methane production from ruminants is the largest emission source at about 62.7 Mt $CO_2$–e, with savannah burning also significant at 11.8 Mt $CO_2$–e. The grazing sector accounts for about 12 per cent of all Australia's emissions but contributes less than 1.3 per cent to GDP. It is the grazing industries that have the largest emissions liability.

### *Emission reduction targets and the CPRS*

The Federal Government has set emissions reduction targets for the mid and long term. They propose an emissions target for 2050 that is 60 per cent lower than emissions in 2000: about 210 Mt $CO_2$ $^{-e}$ per year (down from the 2000 level of 525 Mt $CO_2$ $^{-e}$).

The interim target for emissions in 2020 is between 5 per cent and 15 per cent lower than the 2000 levels. The 15 per cent reduction (about 446 Mt $CO_2$ $^{-e}$ annual emissions) applies if the rest of the world agrees to similar schemes; the 5 per cent reduction (about 499 Mt $CO_2$ $^{-e}$) applies if Australia acts alone.

To achieve these reductions, the Federal Government will introduce the CPRS as a cap and trade scheme (text box 1). The 'cap' means that there will be a limit to emissions and the 'trade' means that polluting industries can buy or sell the right to pollute up to the level of the cap. The CPRS will commence from 2010.

### *Including agriculture*

Professor Garnaut highlighted the problems of including agriculture in a CPRS. The major issues include:

- the large number of commercial entities (several hundred thousand versus one thousand or so for energy, transport and waste),
- lack of accurate or effective means of measuring gross and net emissions at the enterprise scale, and
- problems with the current rules for accounting under the Kyoto Protocol.

Following his recommendations, the Federal Government has opted to exempt agriculture from the initial start-up. From 2009 until 2013, the Government will investigate the feasibility of including agriculture in the CPRS. If feasible, agriculture will be included from 2015. If it is not feasible to include agriculture at that stage, then the Government will consider Garnaut's suggestion of downstream point of obligation payment:

'For example, under the New Zealand emissions trading scheme, a point of obligation further downstream is being considered for a subset of agriculture emissions—such as covering emissions from enteric fermentation and manure management through a point of obligation at the dairy or meat processor.' (Garnaut 2008).

TEXT BOX 1

## Mechanics of a cap and trade scheme

- Emitters of greenhouse gases need to acquire a permit for every tonne of greenhouse gas that they emit.
- The quantity of emissions produced by firms will be monitored, reported and audited.
- At the end of each year, each liable entity will need to surrender a permit for every tonne of emissions that they produced in that year.
- The number of permits issued by the Government in each year will be limited.
- Firms will compete to purchase the number of permits that they require. Firms that value the permits most highly will be prepared to pay most for them, either at auction or on a secondary trading market. For some firms, it will be cheaper to reduce emissions than to buy permits.
- Certain categories of firms will receive an administrative allocation of permits as a transitional assistance measure. Those firms could use the permits or sell them.

Quoted from the White Paper titled 'Carbon Pollution Reduction Scheme: Australia's Low Pollution Future', which can be accessed at http://www.climatechange.gov.au/whitepaper/summary/index.html

### *Implications for the beef industry*

Implications for the beef industry are many and varied, and somewhat speculative at this stage. The implications are slightly different depending on whether agriculture is included in the scheme from 2015 or not.

Regardless of agriculture being included, some impacts will be felt from 2010. Generally, all agricultural industries can expect an increase in input costs as the other polluting sectors meet their obligations under the CPRS.

TEXT BOX 2

## Methane

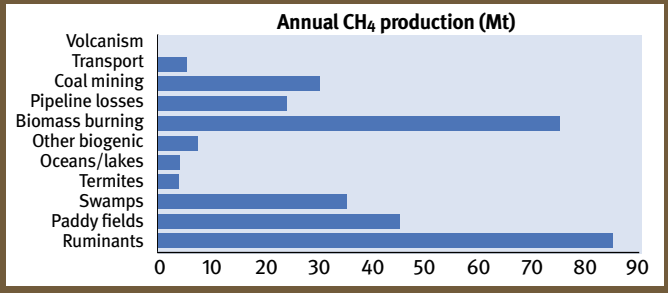
Methane, or $CH_4$, is a by-product of anaerobic fermentation by certain bacteria (methanogens). Atmospheric methane is derived from either biotic (living) sources such as ruminants, paddy fields, swamps and termites, or abiotic sources such as biomass burning, natural gas pipeline losses, coal mining, transport and volcanism.

The total amount of methane produced is reasonably small on an atmospheric scale (compared with $CO_2$ and water vapour) and it is not a long-lived gas in the atmosphere. However it is a significant contributor as a greenhouse gas, being about 23 times more potent than $CO_2$.

Ruminants are a major source of methane. Production varies between animals and is influenced by forage quality. Generally, poorer feed means higher methane production. Cattle in northern Australia produce between 40 and 160 kg $CH_4$ per year, or about 1 to 4 t $CO_2$ $^{-e}$. In intensive animal industries, methane is produced by anaerobic effluent ponds.

Methane has always been a production issue in that it indicates a wasteful fermentation process in the rumen; energy that could be used by the animal for growth or lactation is lost as methane.

Using high quality forages, supplements and some rumen modifiers can reduce methane production. Improving reproductive performance and growth rates and reducing age of turn-off will reduce whole-of-life methane production.



TEXT BOX 3

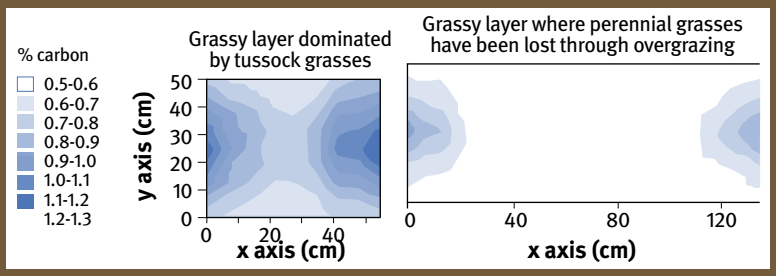
## Bio-sequestration in soils

Plants use photosynthesis to capture solar energy and convert atmospheric $CO_2$ into carbohydrates (simple sugars). Plants then use these to build structural carbohydrates (fibre) and other organic compounds (e.g. proteins and fats). All life on earth depends on this process.

Terrestrial plants have biomass above ground (leaves, stems, flowers etc) and below ground (roots). The above-ground biomass is a source of food for a wide range of animals (including us) and is the basis of food chains. Similarly, the below-ground biomass is the basis of entirely different food chains. Collectively it is referred to as organic matter.

About 33 per cent of soil organic matter is comprised of plant material (mostly roots), about 6 per cent is made up by meso- and macro-fauna (termites, earthworms, nematodes, microscopic mites), and the remaining 60 per cent or so is made up of micro-fauna (bacteria, protozoa etc). Organic matter is vitally important in maintaining the soil's structure, water and nutrient-holding capacity and is important in nutrient cycling.

While organic matter maintains soil health, it also represents a huge carbon sink. Over half of the organic matter is carbon (57%). Reducing soil organic matter emits $CO_2$; increasing it sequesters (stores) $CO_2$. Land condition impacts on soil organic matter.




The diagram above is from the Ecograze Project and shows the relative proportion of organic matter, as indicated by % carbon, under grass tussocks where land is in good condition (left) and poor condition (right).

How much carbon is lost or stored by a change in soil carbon of 0.5 per cent?

In one hectare there are 10 000 $m^2$; the volume of the first 10 cm of soil (which contains most of the organic matter) is 1000 $m^3$. Using a bulk density of about 1.4 t/$m^3$ for soil, we can calculate there is about 1400 tonnes of topsoil per hectare. If the soil carbon content is 1%, the soil contains 14 tonnes of carbon/ha. Increasing soil carbon by 0.5 per cent means an extra 7 t/ha carbon, which is equivalent to about 26 t.

If it takes 20 years for this increase to occur, the annual bio-sequestration rate is 1.3 t $CO_2$ per year. If this carbon is valued at $20 per tonne, then you can potentially earn $26 per hectare per year. Bear in mind however that if this carbon is lost in any way (droughts, overgrazing etc) then you may be liable for the carbon lost, potentially at a higher value of $CO_2$.

These sectors will have to cover the cost of purchasing and surrendering emission permits, make production changes to reduce emissions, and/or invest in carbon offsets. In a practical sense the cost of electricity, transport, fertiliser and (to a lesser extent) water will potentially all increase. An additional impact will be increased slaughter costs as the processing sector meets their obligations. For Australia's northern beef industry, increases in transport and slaughter costs will have the largest impact.

If agriculture is included in the CPRS (either on a compulsory or a voluntary basis) individual enterprises will need to meet obligations under the CPRS. These included measuring annual emissions (and potentially offsets), purchasing emission permits, completing annual 'carbon accounts' and surrendering permits in accordance with the rules of the scheme. There is also the potential to trade permits or provide offsets for other sectors (i.e. provide carbon sinks).

Potential costs to individual enterprises include:

- financial (permit purchase, accounting/ admin costs, non-compliance penalties)
- managerial costs associated with developing skills to measure and account for emissions and offsets, or using third party providers to do this
- adaptation costs associated with abatement of emissions.

If agriculture is not included in the CPRS, or if individual enterprises opt not to be included, then emissions reduction will be achieved via a point of obligation payment at some level in the chain, most likely the processor level. This will entail a cost to the processor that will either be passed back down the chain to the producer or up the chain to the retailer/consumer, or both.

The implications of costs being passed back to the producer are obvious (less income). The implications of passing the cost up the chain include a shift in consumer purchasing habit toward protein sources that have a lower 'carbon' cost of production such as chicken or pork.

Obviously, both scenarios pose a major challenge for the beef industry. The problem is exacerbated by the situation that the majority of our beef is exported, meaning that the industry is trade exposed, especially if our competitors don't face the cost of an emissions reduction scheme. Garnaut recognised the problem of trade-exposed sectors and suggested ways in which the issue can be addressed.

### *Adapting to the CPRS - if not climate change itself*

The main emissions issue for the beef industry is methane production (text box 2). One way to reduce your liability under the CPRS is to minimise whole-of-life methane production (methane production per kg beef produced). This is achieved by improving production efficiencies such as weaning rates and growth rates to reduce age of turn-off. These can be achieved through a combination

of enhanced breeder management, nutritional management, grazing management and improved genetics.

Reducing stocking rate doesn't necessarily reduce production by a proportional amount, and in many cases is more profitable when long-term costs such as loss of land condition is taken into account. Similarly, reducing emissions by reducing stock numbers doesn't mean that production is reduced by the same amount. The carbon cost per kg beef produced is reduced. The challenge under the rules of the CPRS will be measuring, recording and monitoring this.

The other adaptation that beef producers can make is in land use itself. There is significant potential for agricultural land to be used as a carbon sink, either internally within the enterprise or by other emitting enterprises or sectors, to offset emissions.

### *Bio-sequestration and carbon offsets*

There are several approaches for using bio-sequestration to establish carbon sinks. The most common approach (also recognised under Kyoto) is to establish plantation forests on previously cleared land. The trees extract $CO_2$ from the atmosphere using photosynthesis and 'fix' carbon in the form of the carbohydrates that make up their tissues (primarily wood). There are general 'rules-of- thumb' for measuring, accounting for and monitoring carbon sink forests. These have been included in the CPRS.

As most graziers know, you don't need to plant trees in most of our cleared eucalypt and brigalow country; they regenerate naturally. While there are some issues with using regrowth as a sink under the Kyoto protocol, and even more for using woodland thickening, there remains significant potential to use these as carbon offsets. Even if this form of bio-sequestration is included in the CPRS, the trade-off between trees and grazing needs to be evaluated on an individual property basis.

Another approach to bio-sequestration is to build soil carbon (text box 3). Generally, by increasing soil health (and soil organic matter) you increase the carbon stored in the soil. While some third party providers are already promoting schemes that measure increases in soil carbon and broker the carbon offsets from emitting industries, they are external to the CPRS.

The key to using bio-sequestration to offset emissions from either within the enterprise or from external sectors will be having robust and auditable measuring, accounting and monitoring processes in place to ensure compliance under the CPRS.

### *Summary*

The implementation of a CPRS to reduce Australia's greenhouse gas emissions will commence from 2010. Agriculture, although contributing 16 per cent of total emissions, is initially exempt from the CPRS. A decision will be made in 2013 as to whether agriculture will be included in the CPRS from 2015. This decision will depend on the development of suitable measurement, accounting and monitoring procedures.

The grazing industries are the most exposed of all the agricultural industries as they contribute about 68 per cent of agriculture's and 12 per cent of Australia's emissions while contributing less than 1.3 per cent to GDP.

Implications for grazing will commence from 2010 with probable increases in inputs, transport and slaughter being the most obvious. Implications may vary from 2015 dependant on agriculture's inclusion in the CPRS on either a mandatory or optional basis.

Costs associated with administering the CPRS and meeting obligations under the scheme will probably increase at the individual enterprise level. If not participating in the scheme, industries or individual enterprises could face reduced income as impacts of a point of obligation payment filter back down from the point of payment. Increased costs to the consumer could result in reduced demand for beef.

Regardless of the mechanism of negative impact, individual grazing enterprises need to look at improving production efficiencies to reduce whole-of-life methane emissions, or carbon costs per kilogram beef produced.

There is potential for grazing enterprises to use bio-sequestration to offset enterprise emissions or to generate revenue by providing offsets to external enterprises or sectors. This potential will depend on effective rules being developed under the CPRS.

Further information:
*www.climatechange.gov.au/whitepaper/summary/index.html*

# Grazing Land Management workshop

## Strategies to increase profit and sustainability

### *Willows Gemfields Community Hall 20 - 23 July 2009*

The EDGEnetwork Grazing Land Management workshop is tailored to the Fitzroy Basin to answer all your questions about land condition assessment, carrying capacity improvement, sown pastures and their worth, the use of fire, and many more.

*The workshop will to assist you to:*

- Assess the condition of your paddocks and improve their carrying capacity,
- Understand the relationships between pasture, water, soils, woodlands, biodiversity, fire and weeds,
- Assess the suitability of different pasture development options,
- Determine the financial impact of a range of grazing management options.

*The workshop consists of 7 modules:*

- Understanding the grazing ecosystem
- Managing grazing
- Managing with fire
- Sown pastures and pasture restoration
- Managing tree-grass balance
- Managing weeds
- Developing a grazing management plan

A locally relevant case study property is used to explore different management options. Participants are provided with the tools and knowledge to help the owners of the case study property solve their management issues and develop a grazing land management plan.

At the end of each session participants will work on their own issues and begin developing their own grazing land management plans.

The EDGEnetwork GLM workshop is a 3.5 day workshop commencing late afternoon on the Monday and running from 8:30am – 5pm,Tuesday to Thursday.

Please register your interest with Gina Mace (details on back page).

# Grazing land condition classification – it's as easy as ABCD

Gina Mace
FBA Emerald

Managing grazing land is a complex process which requires strategic management of pastures and stocking rates to ensure uncontrollable climatic conditions can be used to their optimum.

The ability of grazing land to produce useful forage is dependent on the condition of that land. Land condition is referred to as the measure of how well the grazing land is capturing energy, cycling nutrients and using water, and can be defined as, the capacity of land to respond to rain and produce useful forage. This of course, directly impacts on the carrying capacity and animal productivity from the grazing land.

*A, B, C, D*

Land condition can be classified into four categories – A, B, C and D (see Figure 1), based on the following indicators:

- Density and coverage of 3P (Palatable, Productive and Perennial) grasses
- Levels of ground cover
- Condition of the surface soil
- Evidence of erosion
- Presence of weeds
- Woodland condition.

3P grasses (perennial, productive and palatable) are the key to maintaining effective water use and nutrient cycling as they provide soil organic matter and keep moisture and nutrients in the paddock, preventing them from being lost down the slope. Ground cover is essential for protecting the soil surface from erosion, as well as ensuring good soil infiltration, which means more efficient use of our precious rainfall. Ground cover also improves the condition of the surface soil though organic matter content which in turn improves the soil structure.

The condition of the land determines how vulnerable it is to changing, and the ease in which a change can be reversed. 'A' condition land is reasonably stable, while land trending towards 'B' can be fairly easily reverted back to 'A' through management. Land in 'B' condition however can quickly and easily drop down to 'C' condition, but the reverse generally requires major changes in management over a longer period of time. 'C' condition land is highly susceptible to rapid decline to 'D' condition. Once in 'D' condition land cannot revert back to 'C' in

a practical time frame by simply changing the grazing management. Rather, it requires much time and energy, generally mechanical intervention, provided the soil type and condition is stable enough.

### *Why assess land condition?*

By assessing land condition, managers are better able to identify areas of high degradation risk and implement practices to ensure the condition of those areas is stabilised or improved. Assessing the condition of all land types within each paddock allows for a more accurate calculation of the carrying capacity of each paddock, and will identify problem areas or potential problem areas (i.e. sweeter landtypes preferentially grazed over less fertile land types).

Grazing land condition should be assessed every 1-3 years to monitor the effectiveness of the management strategy on stabilising, improving or decreasing the condition and adjust accordingly.

How do you manage land condition to enhance production and sustainability?

Grazing land management is about using tools such as grazing pressure, fire, sown pastures, weed control and woodland management to optimise energy flow, nutrient cycling and water cycling. The GLM workshop covers each of these tools, showing how to use them to achieve your goals for land condition and productivity.

### *Land condition guide available*

FBA have recently released a paddock guide for Central Queensland graziers. The 'Ground Cover Standards for Central Queensland Grazing Lands' booklet is designed for use in the paddock to help graziers assess their land condition and will fit easily into a glove box. It includes valuable information on maintaining ground cover and the factors influencing ground cover levels, as well as a series of photos to give graziers a visual reference point for measuring ground cover levels.

Graziers can order a free copy by phoning 4999 2800 or emailing gina.mace@fba.org.au.

## Land condition indicators

### 'A' or good

- Good coverage of perennial grasses dominated by those species considered to be 3P grasses for that land type; little bare ground (<30% in general)
- Few weeds and no significant infestations
- Good soil condition: no erosion and good surface condition
- No sign, or only early signs of woodland thickening

### 'B' or fair

- Some decline of 3P grasses; increase in other species (less favoured grasses and weeds) and/or bare ground (>30% but <60% in general
- Some decline in soil condition; some signs of previous erosion and/or current susceptibility to erosion is a concern
- Some thickening in density of woody plants

### 'C' or poor

- General decline of 3P grasses; large amounts of less favoured species and/or bare ground (>60% in general)
- Obvious signs of past erosion and/or susceptibility currently high
- General thickening in density of woody plants

### 'D' or very poor

- General lack of any perennial grasses or forbs
- Severe erosion or scalding, resulting in a hostile environment for plant growth
- Thickets of woody plants or weeds cover most of the area

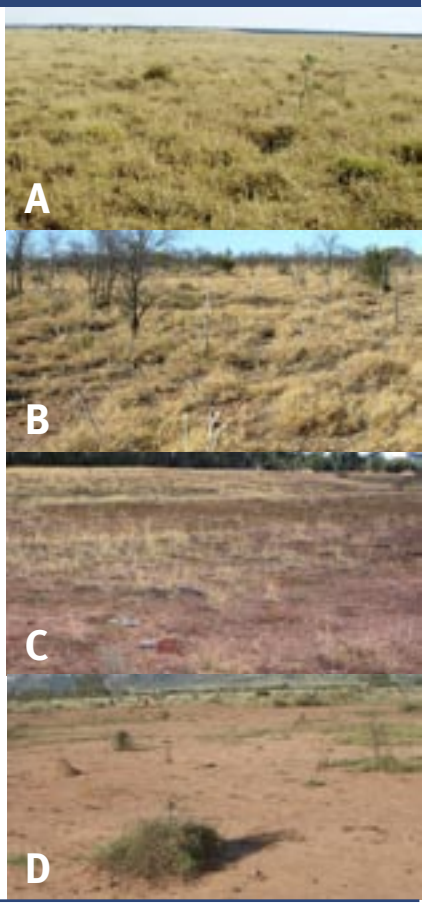



*Figure 1. Land condition framework. (Source: EDGE network's Grazing Land Management)*

# Biloela group NLIS producer demonstration site

Lindy Symes
QPIF Bileoela

CQ *BEEF* Biloela Group members are keen to capitalise on their investment in the mandatory NLIS (National Livestock identification System) electronic tagging system and take advantage of the technology to improve herd management and profitability.

A Meat and Livestock Australia-funded Producer Demonstration Site (PDS) was established in late 2007 to enable producers to gain a better understanding of how to incorporate the NLIS technology into day to day operations. This project aims to quantify the potential management benefits of using NLIS and associated technologies and communicate the benefits of using the technology to other producers.

Activities are being undertaken at Cooinda the Ubobo district property breeding property owned by Gavin Muller and Paul Ross and Gavin and Megan Muller's Biloela finishing property Gavyna. To simplify the initial setup and provide support with data collection and management, the project has contracted the services of Don Menzies of Outcross Performance Pty Ltd.

*Recording individual weaner liveweights against the NLIS electronic ear tag identification at the CQ BEEF Biloela NLIS technology field day are Don Menzies, Outcross Performance Pty Ltd (left) and trial host Gavin Muller, Gavyna, Biloela.*

Data collection commenced in May 2008 with the Cooinda No 8 weaners. In July 2008, the No 6 and 7 steers and heifers at Gavyna were weighed and entered into the system. In August 2009 at pregnancy testing the Cooinda dry breeders were entered into the system with the balance to be entered in 2009.

Data being collected on individual animals includes;

- NLISID (visual EID number)
- RFID (electronic number)
- Visual ID (matching paddock management tag)
- Sex
- Live-weight
- Breed composition
- Calf age at weaning (estimated by AgInfolink software from liveweight).
- Body condition score (BCS)
- Pregnancy status
- Lactation status.

On 12 November 2008, the finishing animals at Gavyna (No 6s, 7s and 8s) were weighed to provide an end of dry season weight and plan the 2009 turnoff. Data management and reporting has been undertaken by Don Menzies using AgInfoLink software.

Local producers have attended weighings to see first hand how the equipment and software could be used and discuss its application to their enterprises.

The next data collection will be the 2009 weaning in June.

# Cattle nutrition focus of field day

Ways to improve cattle nutrition was the focus of a field day in April attended by around 25 beef producers.

Water medication and faecal Near-Infrared Reflectance Spectroscopy (NIRS) were showcased on the day, which was organised through the CQ BEEF project.

FBA Grazing Land Management Officer Gina Mace said it was a day of learning and producers valued the chance to learn from others' experiences.

'Our hosts Colin and Marg Kirby of *Kotri* station Springsure shared their experiences of using water medication, including the gains in water quality, when to use, and the products and mixture of medication used,' Mrs Mace said.

'Technical advice about water medication systems and the economics of using water medication versus other methods of supplementation was provided by Adam McEvoy of Norprim,' she said.

'They also raised the importance of testing water quality, treatments available for unsuitable water, and the equipment needed.'

Mrs Mace said producers saw a medicator in use and some of the latest water medicator technology and systems.

Graziers also received technical advice from Rob Dixon from QPIF who spoke about faecal NIRS sampling to indicate diet quality and when to supplement.

Studying cattle dung with near-Infrared reflectance spectroscopy is an area of current research by QPIF to help producers identify when diet quality falls short of the animal's requirements.

They explained the potential benefits of using faecal NIRS to:

- measure dung to estimate the quality of the diet of cattle grazing pasture; and
- predict N content, digestibility and energy content, non grass to grass ratio and growth rates.

The discussion about faecal NIRS also covered when to sample dung and the cost of analysis versus unnecessary supplementation or loss of production.

More information about the CQ BEEF project can be found on the QPIF website at www.dpi.qld.gov.au or by contacting Gina Mace on 4987 7904.

For further information or interviews contact: Jody McDonald, Media and Communications Co-ordinator, 4999 2816, 0429 992 808, jody.mcdonald@fba.org.au.

# Meeting MSA specifications

Byrony Daniels, QPIF Emerald

MSA premium prices are now a target for many graziers involved in the CQ *BEEF* project. To learn more about the northern experience in targeting the MSA market, I recently attended an MSA update for Queensland Primary Industries and Fisheries staff in Townsville. Graziers are looking to meet the MSA specifications without cutting into the profit margin between cost of production and sale price. Factors affecting MSA compliance and strategies to assist producers in meeting MSA specifications were discussed.

Before delving into this information an understanding of the MSA score range is needed. The MSA score range and cut-offs for 3, 4 and 5 star MSA products are shown below.

**MSA scores / cut-offs**

| Fail | 3 star | 4 star | 5 star |
|---|---|---|---|
| **MSA score** 46 | 64 | 76 | 100 |

## *Ossification and dentition*

This is a contentious issue because many producers have had cattle achieve the desired MSA boning groups but not receive the MSA premium because the cattle failed company specifications, particularly dentition. Company specifications are set by requirements that the processor may have to meet to supply all or parts of the carcase to their particular markets.

MLA's consumer testing has proven ossification to have a better relationship to eating quality than dentition. Hopefully down the track ossification will be used as a company specification rather than dentition.

A low ossification score results in an increased MSA score. The table below shows the relative impact of ossification scores. For example, an ossification score of a 120 will increase the MSA score by 4.5 points. Ossification scores greater than 200 will have negative effects on MSA scores.

| Ossification score | Impact on MSA score |
|---|---|
| 100 (approx 10 months) | + 9.5 |
| 120 | + 4.5 |
| 140 | + 3 |
| 160 | + 1 |
| 200 (approx 30 months) | 0 |

To achieve the MSA ossification target of 200 or less animals need to be growing at 0.6 kg/day. An animal growing at 0.8 kg/day will increase its MSA score by 5 points. The improvement in MSA scores with increasing growth rates is shown below.

| Average daily gain (kg/day) | MSA score |
|---|---|
| 0.6 | 53 |
| 0.8 | 58 |
| 1.0 | 63 |

## *Hormonal growth promotants*

HGP use and management was discussed in depth at the Townsville meeting. Typically HGP's will have a negative affect of 9 percent on MSA scores. The below table compares HGP affected cuts to the same cuts with no HGP's, all other factors being equal.

| Cut | MSA score No HGP use | MSA score HGP used |
|---|---|---|
| Striploin | 64 | 57 |
| Eye round | 63 | 58 |
| Chuck | 62 | 57 |

The younger the beast at slaughter the less the difference between MSA scores of HGP and non HGP treated cattle. Improving growth rates can play a major role in achieving younger turnoff and higher MSA scores. There was an example discussed of a producer who uses HGP's aggressively and is still achieving high MSA compliance rates. This producer has been using EBV's to select bulls with high growth but in balance with other traits. The animals are also production feed to ensure growth is maintained over the dry season.

## *Breed*

Breed is the second biggest factor behind maturity/ossification to have an affect on eating quality and has a large effect on the cuts with a low connective tissue content. MLA data indicates that there is no real difference between the eating quality of a 50% Brahman (50% *Bos indicus*) and a Santa type (38% *Bos indicus*). Where the difference occurs is between 50% and 100% *Bos indicus*. MSA vendor declarations currently ask the producer to estimate *Bos indicus* content. However, this information is no longer used as it has been superseded by hump height measurements in the MSA calculations. The breed content question

will disappear off MSA vendor declarations and MSA vendor declarations may even disappear so that only a National Vendor Declaration is required.

### *Meat pH*

The optimum meat pH for meat quality is in the range 5.3 to 5.7. The pH is determined by the amount of glycogen in the animal's muscles at slaughter because once dead the glycogen is converted to lactic acid. Insufficient glycogen in the muscles means not enough lactic acid is produced to lower the meat pH to the desired level.

Glycogen levels depend initially on diet quality and level. Mustering, handling and transport take animals off feed reducing energy intake and the stress causes glycogen to be lost. Mustering and handling can cause animals to lose up to 30% of their glycogen reserves. Good weaner education is critical as animals will be less stressed when subsequently handled.

Access to feed and water before transport is important for maintaining glycogen levels. Ideally animals should not undergo significant handling and drafting within 14 days of slaughter. Because mixing cattle from different mobs is also stressful this should also not occur within 14 days of slaughter.

### *Other factors*

Fat distribution is affected by growth rate, breed and maturity pattern. Adequate fat coverage over the carcase is important because it protects against uneven chilling, cold shortening and dehydration. Typically only a small number of animals fail MSA on fat distribution.

## ProfitProbe tips and tricks 2009 – Accounting for capital improvements versus repairs and maintenance

Rebecca Gowen, QPIF Rockhampton

One of the most important areas to get right in ProfitProbe (apart from the stockflow) is the correct accounting for capital costs (improvements) versus repairs and maintenance (R&M). To understand the importance of getting this right, it helps to see where these figures are used to calculate Key Performance Indicators.

$$\text{Overhead ratio} = \frac{\text{Total overheads}}{\text{Gross product}}$$

The overhead ratio is often one which is highlighted as a key focus area. It is calculated as the total overhead cost (which includes R&M) as a percentage of gross product. If items which should be listed as capital have been included under R&M the overhead ratio will look worse than it really is.

$$\text{Asset turnover ratio} = \frac{\text{Gross product}}{\text{Total assets}}$$

Unfortunately the process of accounting for capital improvements accurately and including them as such, increases the value of your total assets, making it harder to achieve a good asset turnover ratio.

While it might be tempting to allocate items in such as way that you improve one ratio over another, remember that you are only cheating yourself and that a clear and accurate picture of your business performance is the end goal. There is no point focusing on improving your overhead ratio if the reason it is so high is that you've included the cost of brand new fences and yards and a new watering system which will greatly improve the management ease and carrying capacity of your property.

### *Fencing example*

In determining whether fencing costs should be attributed to repairs and maintenance or capital, ask the question, does this fence improve my property? For example, does it make mustering a particular paddock easier? Does it improve the flexibility of my grazing rotation or allow faster access to the yards? If so, the fences costs should be attributed to capital improvements for the purposes of ProfitProbe. If, on the other hand, the fence simply replaced an old fence in the same

location, it should be listed as repairs and maintenance.

## Fodder and fuel and oil costs

This is another area which often causes problems. Difficulties arise because stocks of these items are typically kept on hand and a particular fodder or fuel purchase is often used in two financial years. ProfitProbe questions also arise because of the multiple areas which require input for fodder and fuel. The key thing to remember is that if you have fodder/fuel on hand at the end of the year it is an asset. The amount that was used during the year is either a direct cost or an overhead – depending on the normal rules for deciding direct costs and overheads.

### *Fodder*

The value of fodder used (i.e. eaten) should be entered into Direct Costs – Page 13 (see Figure 1). For example if, in 2008-09 you purchased 500 bales of hay @ $10/bale and fed out 250 bales, the value entered here would be $2,500. The value of the uneaten hay is entered into Farm Assets – Table 16.2a Produce and Materials - Page 29 (see Figure 2).

### *Fuel and oil*

Similar rules apply for fuel and oil. In **Overheads – Page 25** (see Figure 3), enter the value of fuel and oil used. The tricky part is the **Assets page – Page 29** (see Figure 4) where the fuel and oil on hand is accounted for.

There are two options;

1. *Show opening value, sales (used), purchases and closing value.* You enter the value on hand at 1st July and then get the closing balance correct by adding the sales ('Used') and purchases.

2. *Show closing value only.* You enter the closing value in the opening column and leave the sales and purchases blank.

**For both options you must still enter the amount of fuel used on the overheads page.**

This is one of the little 'tricks' which are being ironed out in the new version of ProfitProbe to be available from 2010.


*Figure 1. In Line 13 enter the value of fodder purchased and eaten*

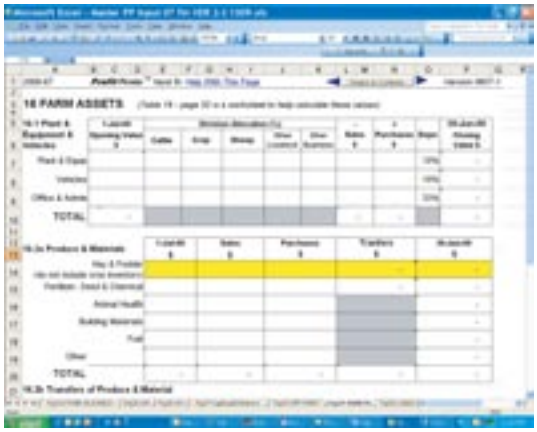



*Figure 2. In Line 14 enter the value of fodder on hand*


*Figure 3. In Line 28 enter the value of fuel and oil used*

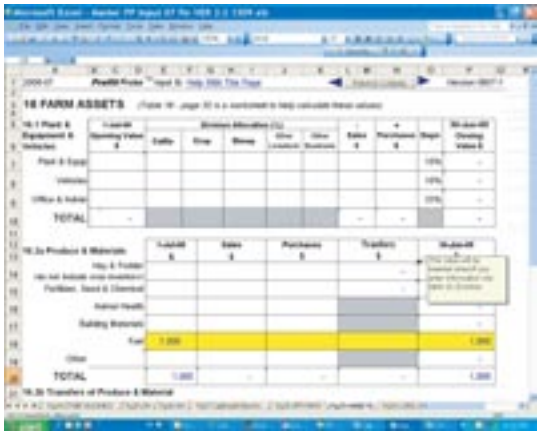



*Figure 4. In Line 18 enter the value of fuel and oil on hand*

# Staff profiles

## Joe O'Reagain,
### Grazing Land Management Officer, FBA Biloela

**Childhood:** Born in South Africa, where I lived until the age of ten before moving to Charters Towers, Australia in 1995 where the remainder of my childhood was spent.

**Career:** Studied Bachelor of Agricultural Science specialising in animal studies at the University of Queensland 2005-08. Studies included a final year project investigating leucaena toxicity in steers and the potential for the development of an on-farm toxicity test kit. Commenced the position of Grazing Land Management Officer with the Fitzroy Basin Association based in Biloela in March 2009.

**Interests:** Agriculture, rugby, guitar, fishing

**Brag sheet:** Survived a fire that destroyed the two storey, 40 room building that I was staying in at university.

**Holiday:** I have yet to return to South Africa. I have a lot of people to catch up with and the national parks and scenery must be seen to be believed.

## Gina Mace (nee O'Sullivan),
### Grazing Land Management Officer, FBA Biloela

**Family:** Married Alistair in March!

**Childhood:** Raised on a remote sheep and beef cattle property 130 km north west of Charleville.

**Career:** Studied a Bachelor of Applied Science – Animal Studies, specialising in Animal Production at UQ Gatton from 2001-04. Worked at the Whyalla feedlot in Texas (Qld), on the veterinary team from 2004-05. Moved to Hughenden as a DPI&F Stock Inspector in 2005. In 2006, moved to Emerald where I worked as a Technical Officer with the QPIF grazing systems project. In 2007, I took up my Grazing Land Management Officer position with the Fitzroy Basin Association, based in Emerald.

**Interests:** Horse sports, fishing, socialising

**Brag sheet:** Stared as the lead role in a Wheat Bix advertisement when I was 6; ate about 10 Wheat Bix and couldn't go near another one for many years after.

I also caught a 32 kg yellow fin tuna on my honeymoon.

**Holiday:** From Townsville to Broome and back via Perth! Catching up with mates on the way and seeing all that this beautiful country has to offer.

| Primary Industries and Fisheries | | | | | |
|---|---|---|---|---|---|
| Byrony Daniels | Beef Industry Devpmt Officer | Emerald | 4983 7467 | 0427 746 434 | byrony.daniels@deedi.qld.gov.au |
| David Hickey | Beef Extension Officer | Rockhampton | 4936 0217 | 0428 544 223 | david.hickey@deedi.qld.gov.au |
| Ken Murphy | Beef Extension Officer | Rockhampton | 4936 0337 | 0419 585 412 | ken.murphy@deedi.qld.gov.au |
| Lindy Symes | Beef Industry Development Officer | Biloela | 4992 9178 | 0428 104 248 | lindy.symes @deedi.qld.gov.au |
| Mick Sullivan | Beef Industry Development Officer | Rockhampton | 4936 0239 | 0428 104 374 | mick.sullivan@deedi.qld.gov.au |
| Rebecca Gowen | Agricultural Economist | Rockhampton | 4936 0205 | 0417 791 297 | rebecca.gowen@deedi.qld.gov.au |
| **Fitzroy Basin Association** | | | | | |
| Gavin Peck | FBA Technical Manager | Rockhampton | 4999 2805 | 0429 066 047 | gavin.peck@fba.org.au |
| Gina Mace | Grazing Land Management Officer | Emerald | 4987 7904 | 0429 992 810 | gina.mace@fba.org.au |
| Jill Lyons | Three Rivers Catchment Coordinator | Rockhampton | 4999 2820 | 0427 992 800 | jill.lyons@fba.org.au |
| Joe O'Reagain | Grazing Land Management Officer | Biloela | 4992 5417 | 0427 572 200 | joe.o'reagain@fba.org.au |
| Johnnelle Stevens | Isaac/Connors Catchment Field Officer | Middlemount | 4985 7511 | 0428 985 440 | johnelle.stevens@fba.org.au |
| Kate Wilson | Mackenzie Catchment Field Officer | Emerald | | 0429 992 822 | kate.wilson@fba.org.au |
| Kellie Nilsson | Dawson Callide Catchment Coordinator | Theodore | 4993 1004 | 0417 938 022 | knilsson.dcca@bigpond.com |
| Lisa Sutton | FRCC Project Officer | Rockhampton | 4921 3834 | 0428 123 017 | lisa.sutton@frcc.org.au |
| Robyn Mapp | Callide/Wowan Dululu Field Officer | Biloela | 4992 3894 | 0407 686 476 | rivaness@dodo.com.au |
| Sara Cue | Lower Dawson Field Officer | Theodore | 4993 1777 | 0417 938 739 | scuedcca@bigpond.com |
| Susie Bate | Comet Catchment Field Officer | Emerald | 4982 2996 | 0427 326 400 | susie@chrrup.org |
| Vicki Horstman | Nogoa Catchment Field Officer | Emerald | 4982 2986 | 0427 320 539 | vicki@chrrup.org |