Department of **Employment, Economic Development and Innovation**

Beeftalk

Taking stock of your future

Prime news and views for beef producers of South East Queensland

Issue 32 Spring/Summer 2011

in this issue

Queensland Government

editorial

After a very mild winter, the bulk of feed on offer after last season has created a number of issues and opportunities for graziers. This edition of *Beeftalk* has many articles to assist you in your management over the next few months.

The good seasons have seen a significant increase in tick numbers and the risk of tick fever, both inside and outside the 'Tick Free Zone'. Drench resistance in worms in beef weaners has also been discovered in Queensland. Both these important topics are discussed in this issue.

A number of articles provide advice on selecting breeding stock, including which breed to use, bull selection and maintaining fertility while selecting for production traits.

For those keen to reduce the incidence of horns in their herd there is news on the Beef CRC's new test for polledness that is effective across a wider range of cattle breeds.

At this time of year many producers are aiming to improve their pastures. Damien O'Sullivan reports on a great online tool for selecting pasture species. Roger Sneath's article on assessing muscle and fat will no doubt be very useful as the season rolls on. Updates on Hendra virus, NLIS and PMAVs should bring you up to date on these issues and PhD student Rececca Gowan is offering you the opportunity to have your say on agriculture's role in carbon policy.

As always, we would like to hear from you. This edition we are offering a great prize of 5 litres of Grazon Extra donated by Dow Agrosciences. The winner's feedback form will be drawn from all the feedback forms we receive by 16 December, 2011. I hope you enjoy this edition and have a great summer!

Happy reading!
The Ed

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Poll gene test for Australian cattle breeds

The Beef CRC and its partners, Meat and Livestock Australia, CSIRO, AGBU and University of Queensland, have discovered and commercialised a new DNA marker test for identifying genetically polled individuals (i.e. those that do not grow horns) in Australian Brahan cattle herds.

This test is a world-first for Australian tropical cattle breeds and offers the more than 56% of Australian cattle producers who breed Brahman or Brahman-derived cattle in northern Australia a simple, cost-effective genetic solution to dehorning young cattle.

In the near future, there is potential that animal welfare codes will be changed to require the beef industry to utilise welfare-friendly animal management practices that could, for example, mandate dehorning of animals before a certain age. Alternatively, the dehorning of older animals may in future need to be undertaken under veterinary supervision using anaesthetics. This DNA test offers a breeding alternative to dehorning.

Welfare and productivity benefits

Dehorning at young ages is simply not practical in many areas of northern Australia. Undertaking a routine practice such as dehorning under veterinary supervision would not only be very time consuming for the veterinarian, but excessively expensive for the beef producer. Any change in animal welfare codes of practice associated with dehorning is likely to encourage a much wider use of the Beef CRC's polled gene test, particularly across northern Australia.

The simple, cost-effective Australian poll gene diagnostic test can be used by industry to classify polled breeding bulls or cows as carrying one (heterozygous) or two (homozygous) copies of the favourable polled marker. A homozygous polled bull produces very few horned calves regardless of the cows to which he is mated. The DNA test does not perfectly identify homozygous bulls in Brahman cattle but it distinguishes the homozygous phenotype over 80% of the time, which is sufficiently accurate to successfully implement a breeding program to increase the incidence of polledness.

The CRC Marker

The inheritance of horns in European breeds of cattle is believed to be controlled by a single gene. Although the gene has not been identified, DNA tests associated with polledness are commercially available from the USA for those breeds. However, there were no tests available for *Bos indicus* and *Bos indicus* crosses, which dominate the cattle population in northern Australia. It was believed the mode of inheritance of horns was much more complex for *Bos indicus* cattle than in the European breeds. *Bos indicus* cattle commonly have scurs (incompletely formed horns that are not attached to the skull) and it was believed that another gene, called the African horn gene—although it had never been identified—also controlled the trait in these cattle.

The poll gene marker discovered by the CRC, like other tests on the market, is a linked marker. That is, we can't directly measure whatever it is that causes horns, so we measure something that is located close to the casual gene. Mostly, but not always, the close-by measurement is a good predictor of the unknown underlying genotype at the polled locus. Most alleles at the marker are almost always associated with the same allele (either polled or horned) at the polled locus.

However, some alleles at the marker show associations with both polled and horned alleles at the polled locus. For these ambiguous marker alleles the test cannot return an unambiguous result. The frequency of ambiguous marker alleles varies between breeds: in breeds where ambiguous marker alleles are rare the test works very well. In breeds where ambiguous marker alleles are common the test is unable to clearly predict the genotype at the polled locus in a significant percentage of animals.

The poll gene marker innovation was recognised nationally in 2009, being awarded a prestigious *Voiceless Eureka Prize for Scientific Research that Contributes to Animal Protection*.

Ongoing work

To improve the test across a range of breeds, research continues on a number of fronts. Soon we may have breed-specific estimates for some marker alleles for some breeds. Currently, estimates do not take account of progeny horn phenotypes or of horn phenotypes and marker genotypes on more distantly related animals.

Methods are also under development for shifting a herd from horned to polled in an optimal way that will also maintain the progress made selecting for other economically important traits.

Further information:

See the story about the commercialisation of the test on page 3 or contact the Beef CRC on 02 6773 3501 or beefcrc@une.edu.au

Poll gene test validated

A genetic test to identify true polled animals, which wont pass horn genes on to their offspring, has shown an 89 per cent success rate in Brahmans in a six-month industry validation trial of Australian cattle breeds.

Beef CRC CEO Dr Heather Burrow said the new poll gene test is helping Brahman producers to determine whether their polled animals are true polled (homozygous polled) or carrying one copy each of the poll and horn genes (heterozygous polled). She said the polled gene trait is reasonably well understood in *Bos taurus* breeds but the Australian beef industry also needed a test developed for *Bos indicus* breeds.

Having the test validated in Australian breeds means producers can be confident in using it to make selection decisions for polledness.

Beef CRC project leader Dr John Henshall, of CSIRO Livestock Industries, says the test is working well with Brahman, Hereford and Droughtmaster breeds, and has a lot of potential in the Charolais, Santa Gertrudis, Shorthorn, Simmental and tropical composite breeds.

The Beef CRC, CSIRO, MLA and the Animal Genetics Breeding Unit at the University of New England developed the test in direct response to industry concerns about dehorning and animal welfare. While dehorning has long been used to reduce carcase bruising and hide damage and to improve handler safety, it is also labour and time intensive and can adversely affect animal productivity and welfare.

You can't tell if an animal is true polled or a carrier of horns without genetic testing or extensive progeny testing. The new test is based on a marker that is linked to the polled gene. The test is not perfect, but the industry testing of around 1800 samples showed it does provide a reliable prediction for breeders in many instances.

The Beef CRC worked in collaboration with the University of Queensland and the cattle industry to test samples representing most breeds in commercial cattle populations.

The University of Queensland's Animal Genetics Laboratory offers the polled gene marker test for $33.00 (including GST) per animal.

Maintaining fertility while selecting for production traits

Selecting for certain production traits can have a negative impact on other favourable traits. There are concerns that selecting for fast growing, feed efficient and high yielding steers could result in larger, leaner, less fertile cows that require higher maintenance.

Similarly, selecting for feed efficient, high yielding steers could lead to reduced marbling in the meat, which could be detrimental in some markets.

Understanding these relationships requires extensive research, including measurements across thousands of animals, and is a major undertaking for scientists at the Beef CRC. Information about the relationships between traits will help producers to achieve the right balance and select for efficient, fertile breeders that are able to rear progeny that meet market specifications.

Preliminary indications are that it is possible to combine favourable fertility and production traits, though this will not necessarily be straight-forward. As always, it requires very good measurements and a balanced approach to selection for important genetic traits. Easy to say!

Whilst the research will contribute to our future ability to run more efficient beef herds, the fundamentals remain—be sure you understand your current situation and how well your cattle are meeting your targets for fertility, growth and carcase characteristics.

For instance, what are your current pregnancy and weaning rates? How well are your steers growing and are they too lean or too fat for the market?

Property records and feedback will help you to identify areas for improvement. BREEDPLAN and the evolving DNA measurements being incorporated into BREEDPLAN are the best tools we have for using genetics to take your herd in the direction you desire.

More information on using BREEDPLAN figures for stock selection is available at http://breedplan.une.edu.au/

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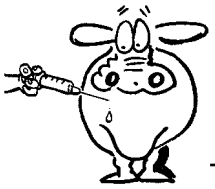

Principles for using vaccines

Primers and boosters

Killed vaccines usually require two initial injections, given at least four weeks apart, to take effect. If the second initial shot is not given, there is every chance that no protection will be provided and the first shot will have been a complete waste. If the second shot is delayed for up to four months after the first, it is likely that a fair percentage of the animals will receive some protection, though not at the same level as would have been achieved by giving the second shot at the recommended time. However, some killed vaccines (for example, two of the available botulism vaccines) require only one initial shot.

Most live vaccines require one initial shot but there are exceptions; for example, the bovine ephemeral fever (BEF or three-day sickness) vaccine requires the same protocol as for killed vaccines.

After the initial shots, annual booster shots are required for most live and killed vaccines to sustain protective immunity.

Vaccinate at the right time

Vaccinate animals before likely exposure to the disease but as close as possible to the likely period of transmission. For example, give Vibrovax to bulls at least 10 weeks before mating and to heifers about six weeks prior to mating. Also give BEF vaccine to at-risk cattle prior to the wet season.

It is difficult to vaccinate calves, but they do require protection. They can get this from antibodies in the colostrum immediately after birth. Maximise the levels of antibodies in the colostrum by giving breeders their annual vaccinations prior to calving. Diseases like pestivirus can spread during mating and vaccination before calving is strongly recommended in herds where this disease is a problem.

Avoid vaccinating wet cattle. The chance of infection at the injection site is much greater if the cattle are wet.

Plan for giving multiple vaccines

Some vaccines can interfere with the development of immunity from other vaccines if they are given at the same time. For example, avoid giving tick fever (blood) at the same time as any initial (priming) injections; however this vaccine can be given at the same time as boosters.

Vaccines based on gram negative bacteria (this includes most of the bacterial vaccines) can cause toxicity problems (endotoxins) in some cattle if given with multiple vaccines. Avoid giving more than two bacterial vaccines at the same time.

Live and killed vaccines

Killed vaccines are a mix of the dead bug (minced up) and compounds called adjuvants which stimulate the development of immunity. Water-soluble adjuvants are preferred, but sometimes oily adjuvants are used to get enough stimulation; examples of these are SingVac and Vibrovax. This extra stimulation can cause prolonged site reactions if the injections are not given properly.

Live vaccines have altered organisms to cause immunity but not disease. They do not generally have adjuvants.

Hit the right spot, gently

Even when given properly, all vaccines cause significant reactions and pain, to the point of lameness in some animals, for up to a week. A swelling will be seen on most animals at the injection site in the days after injection.

Most vaccines for cattle should be given under the skin, especially oil-based vaccines. If the vaccine is injected into muscle, severe reactions can occur. The preferred site is above the backbone in the neck area forward of the hump. Injecting into this site will minimise the potential for carcase damage.

The needle should be sharp and clean and should be inserted as gently as possible. The best needles are capped but these are only available in ¾ inch (Monoject 16G); ½ inch needles would be ideal if they were available.

The anal fold is an UNACCEPTABLE site for vaccination; there are too many nerves, blood vessels and opportunities for infection, and this site is adjacent to several valuable meat cuts.

Avoid injecting more than one vaccine into the same site. Before starting to vaccinate a group of cattle, determine where each vaccine will be injected, for example either side, forward or back of neck area.

Handle vaccines for effectiveness and safety

Vaccines should be treated a bit like milk. Vaccines exposed to freezing, heat or light can break down and become ineffective. The sterile packaging

means vaccines can have a much longer shelf-life than milk, but they must be kept refrigerated. Once a pack is open, its sterility is lost. Opened vaccines that are kept chilled and clean can still be used within a week. Refrigeration needs to be maintained crush-side during vaccination.

Use clean gear. Re-usable guns should be disassembled, cleaned, sterilised and reassembled between each use. Disposable guns should be replaced after use.

Don't miss the animal and get yourself. A 16 gauge needle hurts. If you inject yourself with vaccine it can cause nasty prolonged reactions. It is VERY important to ensure you do not accidentally vaccinate a person with an oil-based vaccine as this can cause very serious reactions requiring surgical excision and cause significant permanent damage.

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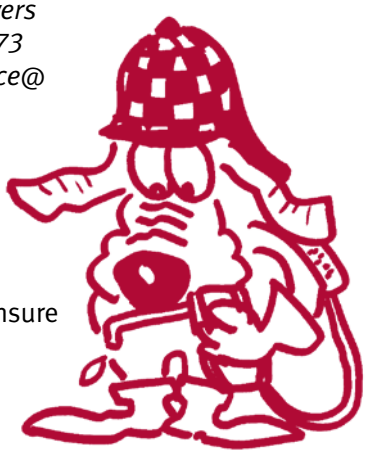

Drench resistance in beef weaners

In the past, the impact of worms on beef weaners in Queensland has been successfully controlled with long-acting formulations of anthelmintics (drenches) conveniently applied as pour-ons and injections.

Recently, resistance to drench treatments was identified in subtropical and tropical worms of both beef and dairy cattle weaners for the first time in Australia. Agri-Science Queensland researchers found worms were resistant to the long-acting Macrocyclic Lactone (ML) drenches. Drenches containing this active ingredient type are among the most commonly sold in Queensland.

In 2009 and 2010 beef calves aged between seven and ten months and carrying natural worm infections were tested for resistance to drenches from the:

- Benzimidazole (BZ) group
- Levamisole (LEV) group
- Macrocyclic Lactone (ML) group, i.e. either Ivermectin (IVER) or Moxidectin (MOX).

Faecal Egg Count Reduction Tests (FECRTs) were conducted on three beef cattle properties and one dairy property in south-east Queensland. Dung samples were collected from individual animals at day 0 and day 10 post-drench for faecal egg count and resistance calculations.

Cooperia punctata was the predominant nematode on all properties although significant numbers of *Haemonchus placei* were also present. ML resistance in *H. placei* was found against IVER on one of the beef properties. ML resistance in *H. placei* and *C. punctata* against IVER and MOX was identified on the dairy property.

These results confirm that repeated use of drenches from the same chemical family group leads to worm resistance in beef cattle. It also reinforces the importance of using integrated parasite management strategies to ensure drenches remain effective.

This can be achieved by spelling weaner paddocks or grazing weaner paddocks with adult cattle, and using the LEV and BZ drenches for worm control if you are using ML products for lice, tick and buffalo fly control. A multi-active pour-on drench product will become available in the near future.

Producers also need to be aware that there are many different brand names of drenches but only three active ingredient types, namely the BZ, LEV and ML groups. Always read the active ingredient list on the drench label before you purchase the product.

In addition, using the faecal worm egg counting service of the WormTEST laboratory at the EcoSciences Precinct at Boggo Road, Brisbane before drenching will help producers to identify whether worms are a problem and if animals need to be drenched. This service is very cost-effective compared to the overall cost of drenches. A further option is to use a WormTEST at day 10 after drenching to determine whether the worm burden has been cleared by the drench. Further analysis can be carried out if a problem is found.

Staff at the WormTEST laboratory, in conjunction with local beef extension advisers, are available to assist producers in monitoring the current worm situation and developing integrated management systems to suit individual properties.

Further information:

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WormTEST laboratory

Phone: 07 3255 4241

National Livestock Identification Scheme: 6 years on...

The National Livestock Identification System (NLIS) ensures individual livestock can be identified and traced.

Lifetime traceability improves confidence in product integrity, ensures market access and assists with the management of disease and chemical residue issues.

Under NLIS, properties are registered and allocated property identification codes (PICs). These PICs are the key to tracking livestock movements between places.

Since the implementation of the scheme in July 2005:

- some 74 000 PICs have been registered in Queensland and 25 000 NLIS accounts have been created
- 14 million NLIS devices have been sold in Queensland in the last three years

Each week in Queensland 70 000 head of cattle are killed and 85% of these cattle have lifetime traceability. The remaining 15% mostly have post-breeder devices or devices that have missed a transfer at some stage during their lifetime.

It is timely to recap on some of the requirements of the scheme.

For cattle...

Identification

- For animals leaving the property of birth, use a white NLIS device (an ear tag or a rumen bolus/ear tag combination).
- For animals not bred on the property, use an orange NLIS device (an ear tag or a rumen bolus/ear tag combination).

Transactions

The NLIS database must be notified of the movement of stock no later than 48 hours after the movement has been completed.

- For cattle bought or sold through a saleyard or sold to an abattoir, the saleyard or abattoir records the transaction.
- If cattle are bought or sold privately, the person who receives the cattle is responsible for notifying the database.
- If cattle are moved between properties that have different PICs, the movement must be recorded on the database, even if the properties have the same owner.
- If cattle are moved to an agistment property owned by someone else, movement off the owner's property and onto the agistment property must be recorded on the database.

Use in management

NLIS technology offers producers many opportunities for increasing efficiencies in data management within their businesses, in the areas of:

- production performance e.g. weight gains, carcase feedback
- reproductive performance
- health management e.g. vaccination, HGPs, sickness, chemical application, etc. This is useful for Livestock Production Assurance (LPA).

For sheep and goats...

- Sheep and managed goats must be identified with NLIS visual ear tags before leaving the property.
- If the animals are not home-bred the PIC on the tag must also be recorded on the NVD/waybill for the livestock movement.
- The use of year-colour and post-breeder tags is voluntary in Queensland.

Further information:

NLIS helpdesk on 1800 654 743 or email nlis.support@mla.com.au

Your local Biosecurity or Stock Inspector on 13 25 23.

Doug McNaught

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Live assessing for fat and muscle: and their impact on retail meat yield

Assessing animals for fat and muscle is useful for matching stock to market specifications and for predicting meat yield. It is best to assess animals for fat first because sometimes fat is mistaken as muscle.

Assessing fat score

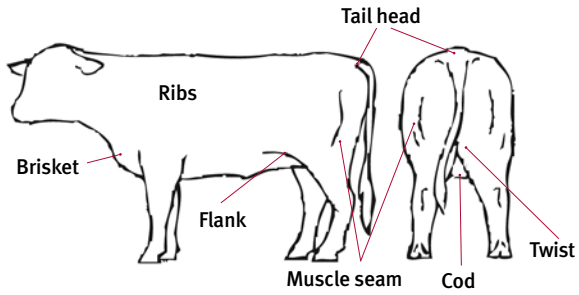
Fat assessment methods in the live animal include:

- visual observation at key indicator sites
- hands-on assessment at key sites
- ultrasound scans.

Your visual and manual assessment skills will improve if you also take note of the feedback you receive from selling cattle with similar genetics and background.

Key indicator sites, where only fat is laid down, include the short ribs, tail head and long ribs. As cattle fatten their:

- ribs become less visible
- tail head softens and rounds of fat increase beside the tail
- muscle seams of the hindquarters become covered with fat and are less evident when they walk
- brisket, flank, cod and twist fill out, giving them a square appearance compared to the roundness of a muscled animal.



Points for visual assessment

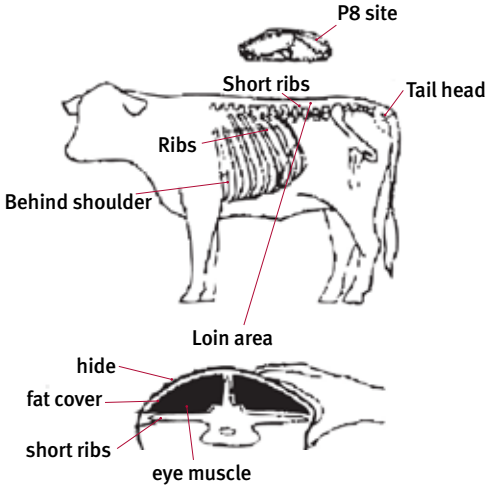
Adapted from: The Australian Feedlot Directory (Elders Livestock) 1994 p.19

Fat scores

Fat scores range from 1 (lean) to 6 (very fat), indicating the depth of fat in millimetres at the 'P8' site on the rump. The term P8 is simply an abbreviation for 'position 8'. Table 1 describes what to feel for in assessing fat depth.

Following is a guide to market fat score requirements. Check with your customer for their specifications.

- Feeder steers entering the feedlot: 2 to low 3
- Domestic and Korea: 2 to 4



Points for manual assessment

Table 1: Description of fat scores at the P8 rump site

Fat thickness at P8 Rump (mm)	Ausmeat fat score	Description
0 to 2	1	No fat around tail head.
3 to 6	2	Short ribs of loin sharp and easily distinguished, hip bones and ribs are hard to the touch.
7 to 12	3	Short ribs can be individually felt but feel increasingly rounded. Ribs clearly felt. Hip bone still quite hard and only light deposit of flank fat and around tail head.
13 to 22	4	Short ribs only felt with firm pressure. Moderate fat cover. Hip bone carrying some fat cover.
23 to 32	5	Short ribs cannot be felt or need very firm pressure. Ribs and hip well covered. Tail head fat as slight mounds, soft to touch.
33+	6	Hard to distinguish bone structure. Tail head buried in fatty tissue. All other sites show obvious soft fat deposits. With a hand placed flat over the ribs behind the shoulder, it is difficult to detect these ribs.

- Japan and EU: high 3, 4 and 5
- US manufacturing: any, lean preferred.

Assessing muscling and yield potential

Retail meat yield is predominantly affected by the proportion of muscle and fat. Heavier muscled cattle produce higher yields.

Live assessment of muscling uses a subjective scoring system from A (very heavy) to E (very light). Since fat and muscle can be easily confused in the live animal it is best to assess fat first.

Muscling is assessed by looking at the animal's stance and movement as well as its shape:

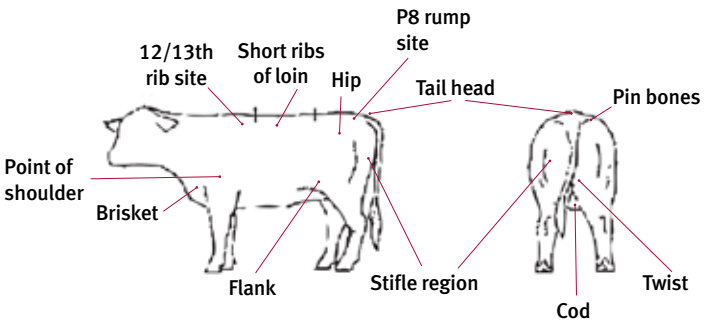
1. To begin, view an animal from behind and assess the thickness through the lower hindquarter (stifle area); heavy muscled cattle are thickest through the stifle.
2. Well-muscled cattle have a wide stance. Lightly muscled cattle have a narrow stance and the gut can be seen from the rear.
3. Muscle will bulge and ripple as an animal walks; fat will wobble and give an animal a smooth appearance.
4. The thickness through the backline and shoulders should also be viewed when assessing muscle.

Reference points used when assessing live cattle

Accurately assessing muscling potential in feeder steers is difficult, but important. Lightly muscled cattle will finish earlier and lay down more waste fat, particularly on a long feed program. Heavier muscled cattle will have a better dressing percentage and produce a higher yielding carcase for the same liveweight. Muscling can be independent of frame; both large and small frame cattle can be heavily muscled.

Effect of fat and muscle on retail meat yield

The relationship between fat and muscle on dressing percentage and retail meat yield is shown in tables 2 and 3. Dressing percentage is the proportion of carcase weight to live animal weight, whilst retail meat yield is the proportion of saleable meat cut from the carcase. A higher fat score will mean a higher dressing percentage (Table 2), but it can also mean a lower meat yield for the same amount of muscle because more of the carcase is discarded as fat trim (Table 3). Increased muscle score increases both dressing and retail meat yield percentage.



Adapted from: The Australian Feedlot Directory (Elders Livestock) 1994 p.19

Table 2: Dressing percentage changes due to muscle score and fat score

	Live muscle score		
Fat score	**B**	**C**	**D**
2	55.9	53.9	53.0
3	56.6	54.7	53.7
4	57.6	55.7	54.7

Table 3: Retail meat yield percentage changes due to muscle score and fat score

	Live muscle score		
Fat score	**B**	**C**	**D**
2	72.3	70.5	69.0
3	71.0	69.4	67.7
4	70.0	68.2	66.6

Further information:

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References:

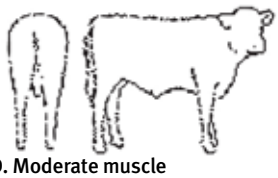
Shape assessment and muscle score in beef cattle www.dpi.nsw.gov.au

CALM Services Manual (1994)


A. Very heavy muscle


B. Heavy muscle


C. Medium muscle


D. Moderate muscle


E. Light muscle

Hendra virus

What is Hendra virus?

Hendra virus is a zoonotic disease, which means it can transfer from animals to people. Hendra virus can cause disease in horses but only rarely causes disease in humans.

How Hendra virus is transmitted

Hendra viruscan be transmitted from flying fox to horse, horse to horse and horse to human. There is no evidence of human-to-human, human-to-horse or flying fox-to-human spread of Hendra virus.

While the actual mechanism of transmission is not known, it is thought that horses contract Hendra virus by ingesting material contaminated by body fluids and excretions from infected flying foxes.

The transmission of Hendra virus from horse to horse can occur through direct contact with infectious body fluids, or indirect contact via equipment contaminated with body fluids from an infected horse.

The few cases of Hendra virus infection in people have been the result of very close contact with the respiratory secretions (e.g. mucus) and/or blood of an infected horse. This can occur both before and after the horse develops clinical signs, as well as during autopsies. Other people have reported having contact with infected horses but have remained well and their blood tests have shown no evidence of Hendra virus infection.

Seven cases of human infection have been recorded, of which four have resulted in death.

Where the disease occurs

Hendra virus was first isolated in 1994 following an outbreak of disease at a stable in Hendra, Brisbane. Since then, more than 40 cases of Hendra virus in horses have been detected on or east of the Great Dividing Range from Cairns to northern New South Wales.

The disease in horses

Hendra virus can cause a range of clinical signs in horses and should be considered in cases where there is acute onset fever and rapid progression to death associated with either respiratory or neurological signs. The mortality rate in affected horses is approximately 75 per cent. Hendra virus is not known to infect other livestock, domestic pets or native animals.

Protective measures for people

To avoid infection, take great care regarding personal protective measures. In particular, do not make contact with the body fluids (blood, respiratory and nasal secretions, saliva and urine) and tissues of horses suspected of having Hendra virus.

Before cleaning contaminated equipment from a sick horse, cover any cuts or grazes you may have. Wear gloves while washing the equipment, and wash your hands thoroughly afterwards.

If you do have contact with possibly infected material, wash the contaminated skin thoroughly with soap and water, ideally by taking a shower. Thoroughly clean any cuts or abrasions that become exposed or contaminated. After washing, apply an antiseptic with anti-virus action, such as povidone-iodine, iodine tincture, aqueous iodine solution or alcohol (ethanol).

If you suspect Hendra virus, and potential human exposure occurs, seek medical advice immediately and contact the Queensland Health Hotline on 13 43 25 84.

Reducing the risk of horses getting the disease

Based on our current understanding of the virus, there are a number of measures horse owners can take to reduce the risk of their horses becoming infected with Hendra virus.

- Move horse feed and water containers from under trees. If possible, place feed and water containers under a shelter.
- Inspect and identify flowering/fruiting trees on your property. Remove horses from paddocks where flowering/fruiting trees are attracting flying foxes. Alternatively, consider fencing (temporary or permanent) to restrict access to the area around flowering/fruiting trees.
- Return horses only after the trees have stopped flowering/fruiting and the flying foxes have gone. Clean up any fruit debris underneath the trees before returning horses.
- If you cannot remove horses from paddocks, try to remove them during times of peak flying fox activity (usually at dusk and during the night).
- Isolate sick horses from other horses, other animals and people until you obtain a veterinarian's opinion.

- If you have more than one horse on your property, handle unaffected horses first. Then handle sick horses only after taking appropriate precautions (read more on the website in *Further information* below).
- Clean and disinfect all gear exposed to any body fluids from horses before using it on other horses. This includes halters, lead ropes and twitches. Talk to your veterinarian about which cleaning agents and disinfectants to use.
- Practise good biosecurity and do not travel with, work on or take sick horses to other properties or equestrian events.
- Do not allow visiting horse practitioners (e.g. farriers) to work on sick horses.
- Seek veterinary advice before bringing a sick horse onto your property.

Hendra virus and flying foxes

Queensland has four native species of flying foxes—grey-headed, black, little red and spectacled.

Hendra virus occurs naturally in flying foxes however there is no evidence that it can be transmitted directly from flying foxes to humans and flying foxes should not be targeted for culling.

Flying foxes are protected species and are critical to our environment. Flying foxes pollinate our native trees and spread seeds and without them we wouldn't have our eucalypt forests, rainforests or melaleuca forests.

Any unauthorised attempt to disturb flying fox colonies is illegal. Disturbing flying fox colonies to reduce the risk of Hendra virus transmission to horses is ineffective because:

- Flying foxes are widespread in Australia and are highly mobile.
- Attempts to disturb or cull flying foxes could worsen the problem by stressing them and potentially causing Hendra virus excretion.
- There are more effective steps people can take to reduce the risk of Hendra virus infection in horses and in people.

Further information:

Hendra virus information and updates at www.dpi.qld.gov.au/4790_15093.htm

Your local DEEDI Biosecurity Officer or DEEDI Business Information Centre on 13 25 23.

FutureBeef workshops

Available workshops include:

- Nutrition EDGE
- Grassfed beef production and production feeding
- StockTake: balancing supply and demand
- Grazing land management EDGE
- Artificial insemination
- Breeding EDGE
- Breeding for profit
- Bull selection
- Pregnancy diagnosis
- Business EDGE
- Better decisions in the business of beef (Breedcow and Dynama)
- Testing management options

Custom-made workshop development and delivery

Custom-made workshops, field- or information-days can also be developed and delivered to meet specific industry issues, for example:

- BREEDPLAN: beef cattle recording and selection
- Buffel rundown
- Climate, carbon and your property
- Managing your livestock business through drought
- Weed identification and management

Register your interest

If you would like more information about a workshop please:

- register your interest online at www.dpi.qld.gov.au/27_15835.htm
- email FutureBeef team beef@deedi.qld.gov.au (or info@futurebeef.com.au)
- phone DEEDI on 13 25 23 (cost of a local call within Queensland) or +61 7 3404 6999 or email callweb@dpi.qld.gov.au

PMAVs are still important

About the only aspect of the *Vegetation Management Act* (VMA), which regulates the management of vegetation in Queensland, that has given landholders some security and peace of mind has been the option to have a property map of assessable vegetation (PMAV).

Given all the advantages of having a PMAV, I'm continually surprised, if not frustrated, by the level of ignorance amongst the grazing sector of the value of having a PMAV. Despite all the work to promote the importance of PMAVs by organisations such as AgForce, DEEDI (particularly through *Beeftalk*), some rural Landcare groups and catchment groups and PFSQ, somewhere between 10 and 50 per cent of landholders at field days, workshops or industry forums admit not having a PMAV.

Some of these landholders have made a conscious decision to not have a PMAV, as a form of personal protest against the VMA, but most are simply ignorant of the process or confused by the terminology.

There are many cases of landholders who, having determined that they had no remnant vegetation on their property, mistakenly believed they had no need for a PMAV. However, these landholders had regrowth vegetation, which subsequently was 'captured' under the regrowth legislation. If this regrowth is classed as High Value, Endangered Regrowth, they are now unable to clear it and might find it difficult to get this status changed.

They might be able to 'sell' this regrowth as an 'environmental or vegetation offset', or perhaps tap into the Carbon Farming Initiative if and when the rules for native regrowth are sorted out, or manage it for timber production. The fact is, however, they have fewer options than their neighbour who had the same regrowth but had a PMAV in place prior to the moratorium that came into effect in the lead up to the 2009 election.

Of particular value is a 'lock it in' PMAV on which non-remnant vegetation, appearing as white on a regional ecosystem (RE) map, is secured regardless of whether that vegetation status changes in the future.

Other benefits of having a PMAV include the ability to:

- change the vegetation status of vegetation mapped as remnant. In simple terms this means changing the colours from, for example, red/pink (Endangered RE) to brown/tan (Of Concern RE) or green (Of Least Concern RE)
- know where the boundaries of remnant and regrowth vegetation are on the property
- override the regrowth mapping (providing the PMAV was in place prior to the moratorium)
- change the status of the regrowth mapping (if the PMAV was not in place prior to the moratorium)
- take advantage of any opportunities under the Carbon Farming Initiative or from Vegetation Offsets (only non-remnant vegetation is, or is likely to be, eligible)
- maintain or enhance property real estate values.

The process for establishing a simple 'lock it in' PMAV is not an onerous one (see *Beeftalk* 18 and *Beeftalk* 20). To set up a more complex PMAV, challenging the vegetation status on your property, you may need to call on a consultant with experience in vegetation surveys. There is a cost associated with lodging a PMAV with DERM but in most cases this is justified by the security it provides.

Further information:

Contact AgForward (who conduct vegetation management workshops that cover VMA and PMAVs in detail), consultants who specialise in this area, not-for-profit organisations such as some NRM and Catchment Care or Landcare groups, or PFSQ. You can also contact your local DERM office.

Information is also available on the DERM website.

Bill Schulke

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Timely tips Spring/Summer 2011

SPRING: September–October–November

Breeding

Breeders

Assess breeder condition for mating. First calf cows may need extra care.

Vaccinate maiden heifers for leptospirosis if a problem has been diagnosed (two vaccinations four weeks apart).

Check calving cows, especially heifers, regularly.

If possible keep calving cows, especially heifers, in paddocks that are readily accessible and fairly close to a set of yards.

Make up a calving kit (calf pulling gear, chains, buckets, clean water, antiseptic, gloves, boots and overalls). Have all calving gear clean and ready to use.

If you have to assist a cow giving birth, make sure you wear appropriate safety gear (long gloves etc). Brucellosis, leptospirosis (from infected urine) and 'Q' fever are very serious diseases in humans.

Know, and have on display, the telephone number of your local vet.

Record all cows and heifers that have calving problems and sell them and their calves as soon as practicable.

Order NLIS ear tags or rumen boluses for calves branded this year.

Bulls

Evaluate information available on potential bull supplies, ideally after semen testing your working bulls so you know how many you need to purchase.

Purchase bulls according to guidelines. Remember, you get paid for number of calves (fertility) and by weight (weight gain).

Check purchased bulls are in working condition, not fat sale condition.

Conduct a breeding soundness evaluation test on all bulls, checking for both physical and reproductive soundness.

- Semen test all working bulls, culling any that are not fertile.
- Check all bulls for injuries, stiffness of gait, cuts or swelling and foot problems such as over-grown toes, swelling between the toes etc.
- Cull bulls on age (over 6–7 years).
- Cull any bulls with defects.

Vaccinate bulls for three-day sickness (BEF) and vibriosis (two doses, one month apart initially, then annual booster).

Check mating paddocks are secure.

Put bulls out with breeders:

- Mate heifers one month before the main herd where nutrition is adequate.
- Mate young bulls with young cows.
- Avoid mixing differently aged bulls if possible to reduce fighting.

Weaners

If you have time, spend it working the weaners and reminding them of the training they got at weaning.

Check weaners for worms and treat if necessary.

Growing cattle (steers and cull heifers)

Consider vaccinating against three-day sickness (BEF), particularly forward stock close to turnoff.

Nutrition

Review dry season management plan and climate forecasts.

Reassess pasture quantity and quality in relation to ground cover and feed values at the end of the dry season.

Feed energy and protein supplements to breeders that are heavily pregnant or lactating and to weaners to maintain liveweight.

Evaluate effectiveness and cost-benefit of winter supplementation program.

Re-order molasses, grain supplies or supplements for next dry season.

Pastures

Check pastures at the spring break. Is there enough ground cover?

Consider spelling pastures early in the growing season for a positive impact on pasture composition. Prolonged heavy grazing of fresh growth will have a serious detrimental effect on the desirable species of grasses.

Consider burning native pastures to maintain good pasture condition and control woody weed growth.

Check and control weeds before they seed. Actively patrol known 'hot spots'. Check areas used for supplementary feeding.

Watch long-range weather forecasts for suitable time to plant pasture.

Check firebreaks and fire-fighting equipment.

Timely tips Spring/Summer 2011

If pasture development is a part of your overall plan, sow pastures if seasonal conditions are favourable. If you can't get the pasture in by the beginning of October it is best to wait until the New Year. This reduces the risk of failed establishment due to heatwave and drought conditions or, in a very good year, flood conditions.

Parasites and disease

Vaccinate bulls for vibriosis.

Vaccinate for three-day sickness.

Vaccinate all breeding cattle, including bulls, for pestivirus if a problem in your area. Note that the initial vaccination can cause a fever, so vaccinate bulls well before joining.

Obtain cattle dip analysis and adjust chemical level if necessary.

Check early calves (late winter) for ticks.

Start tick control program.

Check weaners for worms (send faecal sample to *WormCheck* program) one month after season has broken.

Business

Meet with all staff to discuss progress of the business and plans for the future, including retirement and succession planning.

Research training programs and budget for personnel to attend programs applicable to your business.

Review overall property management and consider changes that may be necessary.

Review breeding program; assess whether it is producing animals suitable for market requirements.

Property maintenance

Check mating paddocks are secure.

Check river and creek crossings before wet season begins.

Before end of dry season look for green patches in paddocks that might indicate water leaking from underground piping.

Maintain fire-fighting equipment, extinguishers etc and ensure staff are fully trained in equipment use.

Clean around buildings and check gutters are free of leaves.

Ensure fire breaks are maintained and serviceable.

SUMMER: December–January–February

Breeding

Breeders

Check heifers are well-grown and in strong condition. Don't let maiden heifers get too fat.

Mate heifers with young bulls earlier than the rest of herd.

Treat all cows for buffalo fly if bad this season.

Calves

Brand, dehorn, castrate, tag and vaccinate (5-in-1 or 7-in-1).

Enter new calves onto herd performance recording program.

Enter new calves into NLIS database.

Bulls

Observe bulls in mating paddocks. Are they all working?

When mating multiple bulls with a group of cows, try to use bulls that are the same age and weight to avoid dominant behaviour by bigger, older bulls.

With single sire groups keep a close eye on the bull working. Each time note the tag number of the cow he is with and check that she does not come back in season in three weeks. If a number do return, put the bull back in, remembering that not every cycle ends in a pregnancy.

Weaners

Put all weaners through the crush. Check for re-grown horns and dehorn if necessary. Check ear tags and replace if missing.

Growing cattle (steers and cull heifers)

Weigh; assess individually rather than on average.

Assess performance against required target.

Check whether poor calves come from one bull. If so, cull bull and calves.

Treat cattle for buffalo fly if bad this season.

Consider HGP implants for steer calves for non-EU sale, remember implants can also affect MSA grading.

Evaluate markets and plan sales. Do you have to book cattle into meatworks or feedlots?

continued overleaf...

Nutrition

Start phosphorus supplementation program in deficient areas. Continue until end of the growing season.

Make sure you have correctly estimated the amount of hay needed for weaning and any other supplementary feeding. Fill hay shed while hay is cheaper.

Pastures

Evaluate post-dry season pasture management.

Spell leucaena for at least two months.

Consider applying maintenance fertiliser to sown pastures.

Lock up paddocks to build up pasture seed banks in soil.

Consider growing a summer forage crop to carry cattle while pasture paddocks are being spelled.

Consider setting areas aside for reforestation.

Parasites and disease

Continue tick control program.

Check young cattle for worms. Treat if necessary. Send faecal samples to *WormCheck* two weeks after treatment to check for worm drench resistance. Get samples from the smallest animals.

Control buffalo fly where applicable with correct sprays, insecticidal ear tags and buffalo fly traps.

Make sure all chemical treatments used are entered into correct files for Traceback. Observe withholding periods for all chemicals used on farm.

Business

Have annual health check.

Have a break with the family over Christmas.

Evaluate markets and plan sales for coming year.

Review marketing options.

Update NLIS database for all cattle that were born, purchased or sold or that died during the year.

Check all permits and registrations are up to date.

Property maintenance

While water is in dams and creeks carry out annual maintenance on windmills and watering points.

Carry out workplace health and safety audit across property.

Do annual electrical safety checks on all household and farm equipment.

Consider attending *Chemical Accreditation Program* through AgForce SMART Train.

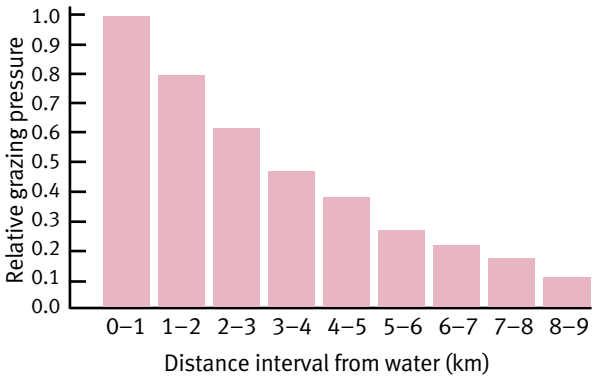
Carry out vehicle and machinery maintenance during 'wet season' break; especially look after dry season supplement feed-out trailers etc so they are ready for the next dry.

Planning stock waters

While we're getting a break in the long periods of dry weather, it is worth planning for future water infrastructure on your property. Changes in grazing practice such as rotationally grazing and spelling paddocks can put extra demand on bores and dams. Water requirements also vary according to the season, type of stock and feed quality and quantity. Following are some of the factors that need to be taken into consideration.

Distance and terrain

The further animals have to travel to water and the harder they have to work to get there, because of difficult terrain, the greater their requirement for water and feed. Grazing pressure will be greatest within a couple of kilometres of water and will decrease as the distance increases. Cattle will walk up to 10 km to water but a distance of less than 2 km is preferable.

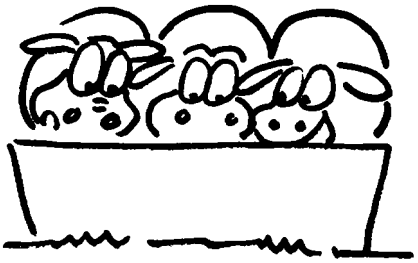


Relative grazing pressure in relation to distance from water. From: Grazing Land Management Technical Manual. MLA 2006.

Animals coming to water

Cattle are gregarious in nature and will generally come to water as a herd, or in smaller groups, unless they are in paddocks where they can make eye contact with the rest of the herd. Depending on feed availability and distance to water, cattle may water once or several times a day. If cattle come in to water as a group the animals at the head of the pecking order will drink first and take 2–4 minutes to consume 9–13 litres of water, consuming up to 40 litres per head per day. If these animals start to move back to the grazing area after drinking, animals at the end of the pecking order may not have time to consume all the water they need, especially if trough space is limited and water refill capacity is low.

Flow rate into the trough should be a minimum of the total daily water requirement of the cattle, divided by 1440 (the number of minutes in a day),



if storage capacity of one or more days is provided. Dividing the daily requirement by 1440 yields the minimum continuous flow rate in litres per minute required for supply to meet demand.

Examples:

50 cows each drinking 60 litres of water/day = 3000 litres needed per day.

3000 litres divided by 1440 minutes = 2.08 L/min minimum flow rate into the trough is required.

Trough capacity and water refill rate must be assessed accurately. Ten cows drinking 10 litres of water in 4 minutes means a replenishment rate of 25 litres a minute is needed to maintain the water level in the trough. Troughs should be of sufficient volume both to keep water reasonably cool and to act as a buffer storage at times of high demand.

There should be enough trough space for 10% of the herd to water at one time. A rule of thumb is 5 metres of trough space for 100 head.

The following recommendations come from research conducted with dairy cows:

- Provide at least 5 cm of trough space per cow.
- Optimal drinking temperature is 15–20°C.
- Troughs should be 600–900 mm high (from the level of the cows' feet to the top of the trough).
- Water depth should be 150–200 mm to maintain a cool temperature and reduce debris accumulation.
- Water reticulation systems should supply at least 20 litres/cow/hour.
- Each trough should be able to hold at least 200–300 litres of water, with a minimum inflow rate of 10 litres/minute.
- Trough volume can be reduced to about 100 litres if the flow rate is increased to 20 litres/minute, depending on herd size.

Other studies have found that weight gain in British breeds decreased if water temperature was 32°C or more, and cooling the water increased weight gain. Weight gains in *Bos indicus* cattle were less affected by water temperature.

Other factors to consider in setting up a watering system are pipe size and the amount of water delivered to a trough.

Amount of water delivered/1000 m of pipe at varying heads

Flow verses hydraulic gradient for PN 10 metric poly pipe				
Nominal size	25 mm	32 mm	40 mm	50 mm
S (m/1000m) Head difference	Flow (L/minute)			
10	6	12	22	40
20	9	18	32	58
50	15	30	53	95
100	21	43	77	138

This table demonstrates the dramatic effect that pipe size and head of pressure have on the rate and volume of water delivery. Using larger pipe means you can use smaller troughs. Conversely, if you use smaller pipe you will need larger troughs or a storage tank to ensure adequate water supply for the cattle.

Further information:

- www.coolcows.com.au/Infrastructure/stock-water-supply.htm
- *Heat stress in cattle and the effect of shade on production and behaviour: a review*, Judith K. Blackshaw and A. W. Blackshaw, Australian Journal of Experimental Agriculture, 1994, 34, 285–95
- *Mallee Farm Water Supply Manual* http://home.vicnet.net.au/~warmplan/watermanual.html
- *Pumping Water from Remote Locations for Livestock Watering* http://pubs.ext.vt.edu/442/442-755/442-755.html#L3

Normal water intake of animals (daily consumption L/day)

Sheep	L/day	Beef cattle	L/day	Other animals	L/day
weaners	2–4	weaners	25–50	horses	40–50
adult dry sheep on grass	2–6	dry stock	35–80	sow and litter	25–45
ewes with lambs	4–10	lactating cows on grass	40–100	dairy cattle	70–250
				laying hens (100 birds)	33

Adapted from www.pir.sa.gov.au/__data/assets/pdf_file/.../Livestock_Water_Supplies.pdf

Bamboo grasses
Austrostipa sps

Bamboo grass is a common and noticeable native grass found in many areas of south-east Queensland. There are eight *Austrostipa* species found in south-east Queensland. The two main types are:

- stout bamboo grass (*Austrostipa ramosissima*), which grows to 2.4 m in height and is found mainly between rainforest areas and drier eucalypt forests
- slender bamboo grass (*A. verticillata*), which is found across the region, grows to 2 m in height, and is often seen growing on lower creek banks or damp shaded areas, high above other native grasses.

Both these grasses are stout perennials with robust, dark green stems growing in individual tussocks. As the name suggests the stems of these grasses resemble bamboo rather than the weak stems seen on our other common native grasses. The seed heads can be up to 40 cm long with numerous branches, and have a feathery appearance when they dry off. The seeds are very small.

Line drawing from *The Grasses of Southern Queensland* Tothill & Hacker 1983.

These grasses are palatable to stock if kept short, and stock will often eat them off about 20 cm from ground level. However, if these grasses age and grow to full height they are seldom grazed. Generally they do not contribute much to grazing but would make a great garden specimen rather than some of the introduced grasses that are currently planted in landscaping projects.

Further information:

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Pasture Picker: What suits where?

Pasture Picker is a web-based tool that helps you to choose the optimum pastures for your requirements. Based on your selections of region, soil and drainage characteristics, pasture characteristics and intended use, the online tool will list the grasses and legumes most likely to suit your needs. For each species you can access pictures and detailed information on characteristics, use, adaptation and management of the currently available cultivars.

Content on *Pasture Picker* has been developed by agronomists from CSIRO, state agencies and the private sector, working on behalf of Pastures Australia. Pastures Australia's partners include GRDC, MLA, AWI and Dairy Australia as well as RIRDC who manage the program on behalf of all the partners. *Pasture Picker* was developed by CSIRO and the University of Queensland.

Try the pasture selection tool at: www.pasturepicker.com.au

Cattle Finishing Producer Demonstration Site

A Producer Demonstration Site (PDS) has recently been set up on the brigalow and mountain coolabah country at *Boonie Doon*, Bell to look at the economics of finishing steers on grass only compared with grass–leucaena pastures and also finishing on oats and in the feedlot. Ranald and Sally Ferrier of Roma initiated the project with support from their Bell property manager Steve Munge, DEEDI FutureBeef staff Tim Emery and Roger Sneath and MLA PDS funds.

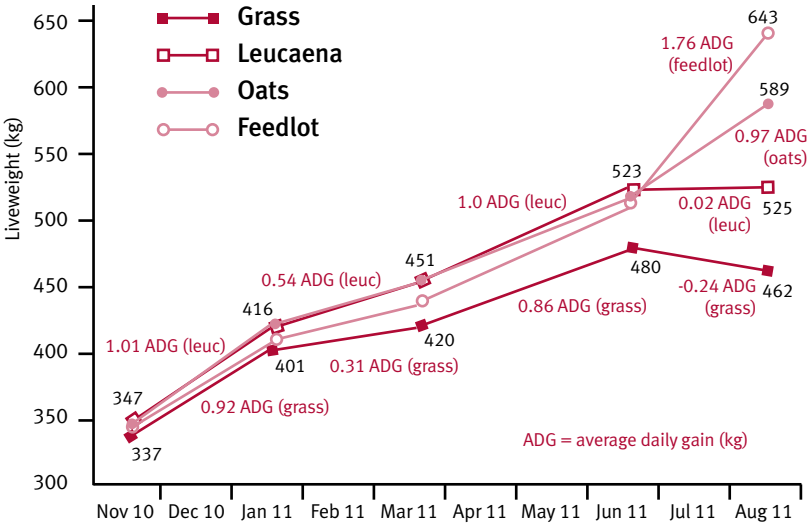
Weights: The four groups of steers have been weighed five times since 12 November 2010. The 'leucaena', 'oats' and 'feedlot' cattle were all run together on leucaena–grass pastures until 3 June 2011 and then were split three ways onto oats, into the feedlot and back onto leucaena, whilst the 'grass' cattle remained on grass. The first period of reduced weight gain from February to March was due to very wet conditions and prolific three-day sickness. Many producers in southern Queensland reported reduced weight gains during this period. The second period of reduced gains was due to the low digestibility of frosted, mature phase four pastures. The leucaena pastures used in this period are on a hill and maintained a low level of green leaf. This was sufficient to hold the leucaena cattle whereas the grass-only cattle had no access to green legumes (e.g. medics) and lost 240 grams per day. Dung sample results show crude protein down to 6.2% and digestibility of 52%. The small amount of leucaena basically acted like a protein dry lick.

Pastures: The pastures are mostly 4–5 years old bambatsi and Gatton panic with some Rhodes. Cattle are rotated through several paddocks about every eight weeks. Soil samples show the soils are fertile with abundant phosphorus.

F.NIRS: Dung samples are being tested using NIRS (near infra-red reflectance spectroscopy) technology to monitor crude protein, digestibility and non-grass intake. In February–March the digestibility of the diet available to the leucaena cattle was lower than that available to the grass-only cattle. This was because of the higher stocking rate on the leucaena, which reduced pasture selection.

Rumen bug: Tests on urine samples at 10 weeks showed no signs of toxin from mimosine. This suggested that the leucaena rumen bug had been picked up from other inoculated cattle in the paddock. Urine tests at 18 weeks showed low levels of toxin that were unlikely to impact on performance.

Two lots of cattle will be followed through these finishing systems over three years. DEEDI economist Fred Chudleigh will analyse the economics on this first set of results for discussion at a field day in early December.



Further information:

Ranald & Sally Ferrier, *Nareeten, Roma 4623 3337*
Steve Munge, *Bannockburn, Bell 0427 631 203*
Tim Emery, *DEEDI, Roma 07 4622 9903*
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roger.sneath@deedi.qld.gov.au

	NIRS Results	24 Dec 10	09 Feb 11	24 Mar 11	13 May 11	20 Jun 11	28 Jul 11
Grass	Crude protein %	9.5	7.9	10.0		6.2	7.9
	Digestibility %	58.7	59.5	59.0		52.1	52.3
	Non-grass intake %	9.0	13.0	4.7		3.0	22.0
	Phosphorus %	0.78	0.49	0.71		0.37	0.43
Leucaena	Crude protein %	12.9	8.3	10.3	12.6	7.7	7.0
	Digestibility %	62.7	57.6	57.7	60.0	54.6	53.5
	Non Grass intake %	28	25	25	39	15	17
	Phosphorus %	0.70	0.52	0.44	0.43	0.51	0.48
Oats	Crude protein %					27.2	11.7
	Digestibility %					71	63
	Non Grass intake %					0	17
	Phosphorus %					0.85	0.59

Tick fever: assess the risk

Should we vaccinate against tick fever? This is the question being asked by some producers who have been affected by the recent expansion of cattle ticks after the big wet season. It affects properties that haven't had ticks before but now have ticks or have tick infestations on neighbouring properties for the first time, and properties that are normally 'ticky' and are experiencing a substantial increase in tick numbers this season.

These aspects of the lifecycle of the tick fever organisms (*Babesia* and *Anaplasma*) and the way they are spread help define the risk:

- Cattle ticks spread tick fever; so if ticks are present, there is some risk.
- Most calves show an age-related resistance that stays with the animal until about nine months of age. Calves exposed to tick fever organisms when the age-related resistance is high rarely show clinical symptoms and develop a solid, long-lasting immunity. If this happens to all of your calves, tick fever will not be a problem, but they must be exposed to all three tick fever parasites. If cattle are not exposed to tick fever as calves, the age resistance gradually wanes with time and these animals will become highly susceptible to tick fever.
- *Babesia bovis* is spread by larval (seed) ticks and *Babesia bigemina* by nymphs. When an adult female tick feeds on a beast infected with *Babesia spp*, the *Babesia* organism is passed on through the tick eggs into the larval ticks. When the larval tick attaches, *B. bovis* can be transmitted within a few days.
- *Anaplasma* organisms are transmitted directly from an infected animal to a susceptible animal as male ticks transfer between animals in the yards or when cattle are camping together. They do not pass through the eggs and into the larvae.

What then defines the risk?

Previous exposure to ticks and tick fever organisms

Obviously, if the herd has always been tick-free, all animals will be at risk. It is, however, a mistake to think that just because animals have run with ticks at some point that they are immune to tick fever. An engorged female tick can produce more than 3000 seed ticks, but only a very small number of seed ticks (sometimes considerably less than 1 in 1000) will carry the *Babesia* organisms. Because of this, calves do not always become infected (and therefore protected) following exposure to ticks—even though it only takes one infected tick to transmit tick fever. On top of this, low cattle tick numbers, because of dry seasons and strategic tick control programs, can mean that a significant number of animals may not have been exposed to tick fever infections before they were nine months old and therefore are not naturally immune. This concern is real—low levels of immunity in weaners were verified in survey work across the tick-infested northern shires of Queensland in the mid-90s, with substantial property-to-property variation.

Breed

The message here is fairly straightforward. Brahmans do not often show evidence of disease after infection with *Babesia spp* (babesiosis), but are susceptible to anaplasmosis. *Bos taurus* breeds however are very susceptible to disease after infection with either *Babesia* or *Anaplasma* species. Importantly, work at the Tick Fever Centre has shown that exotic *Bos taurus* breeds such as Tuli and Senepol are just as susceptible to tick fever as the more traditional European and British breeds. Crossbred cattle are in-between—more Brahman content decreases susceptibility; more *Bos taurus* content increases it.

How to put this information together

Scenario 1—A property, which has been tick-free, now has a tick infestation

If it is a high Brahman-content herd in which all the cattle have all been raised in a tick-free environment but they are now experiencing a tick infestation: the risk of babesiosis is small (by virtue of breed) and the risk of anaplasmosis is small (because there should be no *Anaplasma* carriers in the herd).

If it is a high Brahman-content herd with some cattle that have previously been exposed to ticks (e.g. strays, other introductions, including bulls) and are now experiencing a tick infestation: the risk of babesiosis is small (by virtue of breed) but the risk of anaplasmosis is substantial. There could be *Anaplasma* carriers in the herd that are a source of organisms to transmit via male ticks to other susceptible animals.

If it is a low Brahman-content herd: the risk of babesiosis (derived from infected tick larvae on the pasture) increases substantially and the risk of anaplasmosis is also substantial if there is a chance of direct contact with carrier animals.

Scenario 2—A property with much greater tick numbers than usual

It is a risk in itself to assume that the cattle will be immune simply because they have been running on a tick-infested property. The increase in risk of a tick fever outbreak will largely depend on the breed–disease interaction. The risk of babesiosis will not

change much in a Brahman herd, but the risk of anaplasmosis could increase substantially. If the Brahman content is not high, then the risk of both babesiosis and anaplasmosis will be increased compared to recent years.

Vaccination

Tick incursions in the tick-free areas have typically been managed by strict tick control strategies. Tick fever will not occur in the absence of ticks. There have, however, been substantial losses on at least one property associated with tick fever this year in a previously tick-free area. Tick fever vaccination might need to be considered in combination with the tick control strategy.

If you decide to vaccinate, should you vaccinate the whole herd? For all except Brahman herds, the answer is probably 'yes'. The *Anaplasma* component of the vaccine is not transmitted by ticks but we know that the *Babesia bovis* component of the vaccine is potentially transmitted by ticks in some situations, and can become more virulent in the process. This has not caused any concern with use of the vaccine in tick areas where virulent organisms are already present. However, the risk of exposure to larval ticks that have dropped from naturally infected or vaccinated cattle could be of concern in areas with new or rapidly expanded tick populations if only a proportion of the herd is vaccinated.

Signs of tick fever

In any event, whether you have ticks for the first time or the first time in a long time, or have more ticks than usual, be on the lookout for signs of tick fever:

- lethargy
- fever (as the name suggests)
- 'red water' (red urine)
- anaemia
- weakness
- jaundice
- some neurological signs.

Get a diagnosis quickly. *Babesia bovis* in particular can cause death within days of the first signs appearing. The weakness and anaemia associated with anaplasmosis, whilst taking longer to develop, can also result in significant losses.

Further information:

Tick Fever Centre

Biosecurity Queensland
Phone: 07 3898 9655 or 13 25 23
Email: tfc@deedi.qld.gov.au
Visit: www.biosecurity.qld.gov.au and search for 'tick fever'

Ticks and tick fever in the Cattle Tick Free/Control Zone

With two good back-to-back seasons leading up to 2011 many beef producers are now facing a serious cattle tick problem. Already this year several outbreaks of ticks have occurred in the Cattle Tick Free/Control Zone. Most cattle in the Cattle Tick Free/Control Zone are susceptible to the disease carried by cattle ticks known as tick fever.

It has been common practice to vaccinate cattle born and raised in the Tick Free Zone against tick fever before introducing them into the Infected Zone. However, it has not been standard practice to vaccinate all the herd in the Tick Free Zone because the infection risk within the zone was considered to be nil.

The recent tick outbreaks mean there is a real risk of tick fever and graziers with land located within two properties of any known infestation are urged to consider their options:

- vaccination, or
- do nothing—take the risk.

Tick fever can be caused by any of these three blood parasites: *Babesia bovis*, *B. bigemina*, or *Anaplasma marginale*. In Queensland, *B. bovis* is responsible for 80 per cent of reported tick fever cases. These blood parasites are transmitted by *Boophilus microplus* (cattle tick).

Once contracted, tick fever is fatal in about five per cent of cases during an outbreak; the remainder are also severely affected. Affected cattle may lose condition, abort, experience decreased milk production or, in the case of bulls, experience a reduced fertility rate due to the fever. Treatment for tick fever is possible but costly; prevention is the most cost-effective approach.

Beef producers who consider their un-vaccinated cattle are at high risk of tick fever are encouraged to weigh up the costs of a vaccination program against stock and production losses in the event of an outbreak. Cattle ticks are a notifiable disease when they are present in the Cattle Tick Free/Control Zone and must be reported to Biosecurity Queensland.

Further information can be obtained by contacting Biosecurity Queensland on 13 25 23 and asking to speak to your local biosecurity inspector.

Rachael Palfreyman

Biosecurity Inspector
Biosecurity Queensland, DEEDI, Cloncurry
Phone: 07 4742 1311

Bull selection tips

The season for making decisions about bulls—home-bred and new bought—is drawing close. How far into the future does the bull you start using today impact on your herd? A good sound bull could be in the herd for four years. His daughters could be in the herd for 12 years. So a bull's genetics can directly influence your herd for up to 16 years.

Bulls have the following genetic influences on their progeny:

- age at which they reach puberty
- time for a female to re-breed after calving
- growth rate
- carcase traits
- temperament.

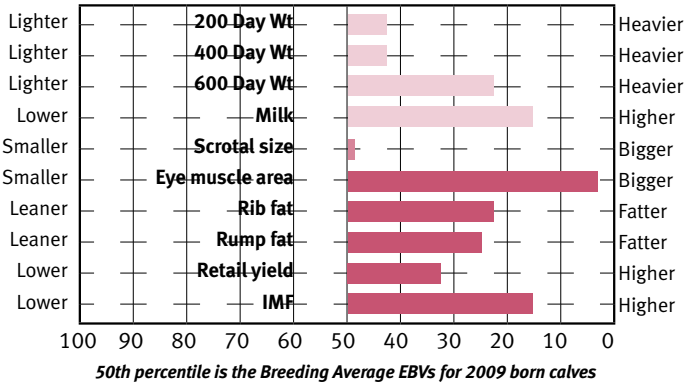
All these traits are measureable, predictable, heritable and economically important for beef businesses. But how can these traits be addressed in your herd?

Bull Breeding Soundness Evaluation (BBSE)

The BBSE was developed by veterinarians to provide a standard format for testing and describing bull fertility. The BBSE is not a genetic evaluation of reproductive traits, but an indication of the bull's present reproductive function.

The components are:

- scrotal circumference (cm) and tone
- physical examination for soundness or faults in the head, legs, joints, sheath and penis
- semen analysis for motility and morphology (structure of the individual sperm cells)
- mating behavior and ability.



Example Droughtmaster Bull EBVs—2011 Droughtmaster Group BREEDPLAN

Breeding objectives

By setting breeding objectives for your herd you can plan to improve the current performance of your herd on a range of economically important traits. For example, you may have objectives such as:

- increase calving percentage by 5%
- reduce age at puberty and get heifers in calf earlier in their first season
- increase weaner weight
- reduce age at heavier weights
- increase intra-muscular fat (IMF) percentage.

The next step is to identify the measureable traits in bulls that will help you meet your objectives.

Using BREEDPLAN EBVs for economic traits

Fertility

- Scrotal size EBV—above average EBVs will lead to earlier puberty in daughters. Use in conjunction with minimum actual scrotal size.
- Days to calving (where available, because not all breeds have them)—below average EBVs lead to quicker re-breed times after calving.

Growth

Better genetic growth will contribute to:

- higher mating weights in heifers
- heavier turnoff cattle at younger ages.

Carcase

The carcase traits of eye muscle area, rib and rump fat and intra-muscular fat (IMF) can all be improved (or decreased, depending on your objectives) by using the carcase trait EBVs.

Breed average

Always check for the breed average for each trait and see where the bull you are considering sits relative to the average.

Balance in selection

We recommend balancing your selection criteria across the traits for fertility, growth and carcase.

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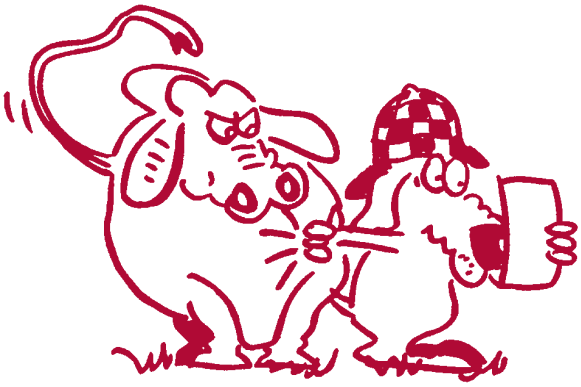
Which breed should I choose?



This is one of the most common questions I get asked by clients who are either looking to set up a new farm or deciding which bull to use this season. It is a tricky question to answer and one that can incite a riot due to the passionate opinions breeders often have about their chosen breed.

So how do I answer it? Simply put, I tell people to choose a type of animal—not a breed. There are more than 50 different breeds available in Australia but they can be broken into three main groups—tropical, European and British.

Tropical

These breeds are adapted to the heat and can tolerate the lower nutrition and longer distances between feed and water that are often encountered in tropical areas. These breeds are generally Brahman or Brahman-infused, although there are a growing number of breeds that are *Bos taurus* based such as the Senepol, Belmont Red and Bonsmara.

Tropical cattle are also more resistant to ticks than other types of cattle and show an increased resistance to tick fever (see articles on pages 18 and 19). They are very highly regarded for easier calving and lower birth weights.

European

These breeds originated in Europe where they were bred for draught duties and so were selected for a higher degree of muscling than other breeds.

This extra muscle increases the animal's nutritional requirements, so European breeds may not be suited to areas where nutrition can be lacking. European animals, for obvious reasons, can develop quite long coats making them more susceptible to ticks, although a number of breeds—mainly with Mediterranean origins—can have shorter coats.

These breeds are sought after by processors and feedlotters due to their excellent carcase characteristics, particularly the amount of lean beef they can carry when nutrition is adequate.

British

The breeds that originated in Britain and Ireland are well-known for their eating quality. We have all seen the advertising for Angus beef and this rings true as British breeds often top taste-testing competitions around the country. These breeds are known to marble better than other breeds and produce more muscle than tropical animals. Like the European breeds they can be long coated making them less suited to tropical areas and especially those areas with ticks.

British breeds have a smaller frame than most European breeds and so are better able to withstand periods of lower nutrition.

So which breed do I choose?

To answer this question you must think of your environment and your target markets. If you live in a ticky area then running tropical animals will greatly reduce the cost of treating for ticks. However if you are able to provide adequate nutrition, you may decide to go for the extra growth of European or British animals and accept the additional cost of treating for ticks.

I know you are probably thinking 'he has only told me about types—not breeds', but this is the very point I want to make. Selecting for a type of animal is more important than selecting on breed, because there is always as much difference within breeds as between breeds.

If your neighbour tells you Droughtmasters are better than Brangus, do they mean all Droughtmasters are better than all Brangus? The answer is 'no' and you should be able to find excellent bulls from a range of breeds to suit your environment and markets. By not locking yourself in to a single breed you can better access hybrid vigour through crossbreeding and potentially access bulls at lower prices.

Your property's climate and land types (and hence available nutrition), and the target market for your cattle are the key factors in deciding what breed or type of animal will best suit your enterprise.

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SEQ extension projects

Mary Catchment Reef Rescue project

The Reef Rescue project offers graziers technical advice about land management and financial incentives to implement changes to their current practices. The Australian Government will support graziers as they implement on-ground projects that reduce the amount of nutrient, chemical and sediment leaving farms and potentially polluting the water on the Reef.

To be eligible, projects must also demonstrate best land management practice and enterprise sustainability. Projects that protect wetlands such as riparian zones, billabongs and marshes are of highest priority because these systems help filter out nutrients and sediments from run-off before they reach the river systems.

For every dollar the Australian Government invests in Reef Rescue projects land managers contribute $1.50 in cash, labour, equipment and materials.

The Mary River Catchment Coordinating Committee (MRCCC) is delivering Reef Rescue in the Mary Catchment in partnership with the BMRG, DEEDI, the Gympie Beef Industry Group (GDBLG) and AgForce. The MRCCC project team will assist graziers to assess their current grazing land practices using an A, B, C, D rating system. This audit process identifies specific on-ground projects that will contribute to improved grazing land practices and contribute to better Reef water quality.

Improved grazing land condition leads to greater pasture productivity, sustainability and enterprise profitability and reduces the loss of valuable sediments and nutrients from our grazing lands.

Sun Coast FarmFLOW project

The Sun Coast FarmFLOW project aims to support landholders to improve land management, repair and rehabilitate waterways and wetlands and stabilise landslips.

Rural landholders in the upper Mooloolah, North Maroochy and Kin Kin catchments and the Maroochy canelands can seek advice and incentive funding to assist them with land rehabilitation and projects to improve land management. Eligible projects include rehabilitation and re-vegetation of waterways and wetlands, rehabilitation of landslips and erosion sites and the implementation of land best management practices such as fencing and nutrient application.

The Australian Government's Caring for Our Country program has granted the Maroochy Landcare Group $789 000 over three years to deliver support, incentives and training to landholders in the project area. The project will be delivered across the region in partnership with local government, Landcare, Waterwatch and traditional owner groups.

Through the implementation of on-ground works and improved land management the Sun Coast FarmFLOW project team hopes to:

- grow and promote a sustainable agricultural landscape in the region
- reinforce the coordinated network of strong, resilient community and industry groups
- reduce the risk of rural activities affecting Sunshine Coast waterways
- empower landholders with increased knowledge and capacity in sustainable land management
- support the continued monitoring of the local waterway to see how and where water quality can be improved.

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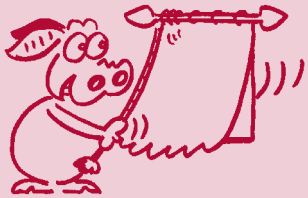
Grazing BMP on track for late 2011 industry launch



Planning for Grazing BMP (Best Management Practice) pilot workshops across Queensland is advancing and cattle producers should be involved in operational projects toward the end of 2011.

The aim of the Grazing BMP project is to develop an industry scorecard of voluntary best management grazing practices. The two-year pilot project is being modelled on the successful Grains BMP project and is rapidly gaining momentum. DEEDI's Agri-Science Queensland industry development officer, Lindy Symes, is leading the project.

Initial support for the Grazing BMP project has been progressed by the Fitzroy Basin Association through funding from the Reef Rescue component of the Australian Government's Caring for Our Country fund, with further support from AgForce and DEEDI. Now there is interest from Meat and Livestock Australia for linking the Grazing BMP project with existing industry quality assurance systems.

A Grazing BMP Landholder Reference Group, with representatives from grazing businesses in the Fitzroy, Burdekin and Burnett–Mary River catchments, has started meeting. The group has the charter to develop self-assessment modules to enable cattle producers to monitor and accurately benchmark their own management practices and identify knowledge or training gaps in their businesses.

With a whole-of-business and industry supply chain focus, discussions are exploring potential market drivers for beef practices that clearly demonstrate environmental stewardship.

Queensland's cattle industry is the only major agricultural industry without a BMP program. Such a program will ultimately allow producers to effectively manage and report on their land management and environmental stewardship to the wider community.

Graziers will be able to benchmark with other grazing businesses, both within their catchments and across the state, based on best management principles set at three levels—above, minimum and below standard. There is also scope to benchmark industries for mixed farming enterprises.

Through the Grazing BMP data, industry would be able to monitor the adoption of beef production and land management research, which is often funded through industry levies, as well as identify any shortfalls in the provision of extension and training.

The industry overview aggregated from graziers' responses should allow better targeting of incentive funding made available through natural resource management groups.

Grazing BMP project leader, Lindy Symes, DEEDI, Biloela, says cattle producers should have access to the voluntary self-assessment grazing management modules in late 2011.

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Name: .....

Address: .....

Postcode: ..... Shire: ..... Property Number: ..... No. of cattle: .....

Phone: ..... Fax: ..... Email: .....

Which of the following best describes you?

☐ Beef producer ☐ Agribusiness outlet ☐ Education ☐ Other (please state) .....

Carbon policy update

Over the last three years you have no doubt heard much about carbon. Whether it's soil carbon, carbon offsets, carbon trading or a carbon tax there are a hundred different conversations going on at any one time and it is easy to get lost in the confusion.

A quick review of the economy-wide debate

The original plan was for a cap and trade scheme (CPRS) in which the government would cap the total allowable emissions from the economy and then provide permits to emit up to that cap. These permits were to be tradeable, the assumption being that companies who could reduce their emissions cheaply would do so and sell their extra permits to those who couldn't. There was some debate for a while about whether or not agriculture would be included in this program. Eventually the decision was made to exclude agriculture. However many related sectors, including meat processing, transport and fertiliser manufacture, were likely to be included.

In February 2010 the CPRS bill's failure to pass in parliament for a second time was followed by the infamous events of June 23–24 and the eventual election of a minority government under Julia Gillard. Despite declaring during the election that no price on carbon was planned, the new Labor government has now announced a carbon tax, with details yet to be finalised.

So, where does this leave agriculture? Well, the one piece of legislation that appears likely to pass parliament is the *Carbon Farming Initiative*. This bill proposes to give landholders the opportunity to engage in activities to sequester additional carbon, such as agro-forestry and reduced tillage, that can then be sold as offsets. Some suggestions have been made regarding activities that are potentially creditable.

Applications can be made for other activities, provided they can be measured and verified. For more information see www.climatechange.gov.au/en/government/initiatives/carbon-farming-initative.aspx

Share your views on agriculture's role in carbon policy

During this debate there has been much discussion about the potential effect of these policies on agriculture, but unfortunately most of the discussion has not directly involved landholders.

My PhD research project aims to fill this gap, firstly by looking at the actual trade-offs for landholders in different areas under different policy assumptions, and secondly by actually asking landholders what they think of some of the proposals.

The first round of data collection was done back in 2009 and it was great to see some of the results of that work taken into consideration in the *Garnaut Climate Change Review—Update 2011*. However, we still need more information to really understand what is important to landholders. We also need to make sure that the government doesn't spend millions of dollars implementing a program with proposals that aren't attractive to landholders.

So I am asking any interested landholders to please sign up to participate in a survey on this topic. The survey will take no more than 10 minutes to complete and your answers will be kept strictly confidential.

All you need to do is send an email with the subject 'Carbon Survey 2011' to r.gowen@cqu.edu.au

Thank you for helping out! Everyone who completes the survey will receive a plain English report of the results when available.

Further information:

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