FutureBeef

CQ Beef

Information for rural business in Central Queensland

Issue 19 December 2013

In this edition

Breeding workshops help deliver the edge	24
Graeme Elphinstone set to retire after half-century	24
Grazing BMP drives success	25
What is my green day?	26
Focus on selection is key to better breeding	27
SELM symposium dedicated to precision management	28
Breeding EDGE workshop information	29
Spelling strategies for recovering pasture condition	30 & 31
Breaking the big challenges into more achievable goals	32 & 33
FutureBeef workshops	34

Queensland Government

QUEENSLAND Country Life

Guests at the Wycarbah breeder management day take in the technical information during one of the presentations.

Breeding workshops help deliver the edge

Producers given the tools to help them meet their objectives

FOLLOWING the success of our Emerald Breeding EDGE workshop we will be offering workshops in Taroom, Biloela and Emerald in February-March 2014. See page 29 for details and who to contact to register.

The Emerald participants now possess information and tools that will help them meet their breeding objectives. Green dates and the best time for our calves to drop were much discussed topics at the workshop.

We have followed up with an article on green dates from climate scientist David McCrae. Paul Williams from Tropical Beef Technology Services has also contributed an article on one of the workshop's hot topics – lactation anoestrous.

We ran another breeder management field day at Wycarbah recently.

If you are looking for a copy of the handout, you can download the booklet from www.cdn.futurebeef.com.au/wp-content/uploads/Oaklands-Breeder-Management-Field-Day-Booklet.pdf.

> If there is a topic you would like covered in the next edition of CQ BEEF, please complete a feedback sheet (found on the back page of CQ BEEF) and fax, post or email it back as directed on the form.

The past six months has seen a large number of Grazing BMP project activities across the Fitzroy and Burdekin regions. DAFF, FBA and AgForce thank producers for the strong support for this program.

Grazing BMP has generated tremendous interest in further activities that can help producers develop their businesses. A recent example is the cattle nutrition day run at Calliope on December 9. It is important to acknowledge the enormous effort put in by staff from FBA and its sub-regions, DAFF, AgForce and NQDT in delivering such a large number and range of activities.

If you want to keep abreast of our field days, workshops and activities, there is no better way to do it than to sign up for the online version of CQ BEEF and for our free eBulletins or by checking out our online calendar. You can do so by visiting our website, www.futurebeef.com.au/resources/newsletters/

This is the 19th issue of CQ BEEF. We hope you enjoy the read and we wish our readers a very happy New Year with green pastures, fat cattle and improved prices.

Byrony Daniels , CQ BEEF editor and beef extension officer (FutureBeef), Queensland Department of Agriculture Fisheries and Forestry.

Half-century of beef industry service comes to a close

HE IS a legend in south-east Queensland beef circles, but when Graeme Elphinstone officially retired his beef extension officer position in November, he ensured his legacy continues.

Not only is Graeme (pictured) a well-known and respected beef extension officer, he is also an inspirational figure to younger colleagues. Over a long and distinguished career, he always made the effort to mentor the up-and-coming beef extension officers, ensuring they benefit from his decades of experience.

The early years of Graeme's career were spent in Toowoomba where he started with DPI in 1962 as a cadet /field assistant (agronomy) before going on to Brisbane, Beaudesert and Miles, finally landing in Gympie in 1976 – where he stayed. He has mainly worked in pastures and cropping, with the beef industry and sustainable production systems being very strong themes.

"Graeme has worked tirelessly all his life to assist, inspire and coach the south-east Queensland beef industry to develop best practice land and production management systems to ensure sustainable production and profitability. From his base in Gympie he has worked with producers from the border to Rockhampton," Department of Agriculture, Fisheries and Forestry Animal Science general manager Peter Johnston said.

"Major projects have included giant rats tail grass management, buffalo fly management, trapping and dung beetles, and grazing land management structured learning workshops. His passion is for sustainability of agricultural production and his commitment to his clients is unwavering and total.

"He is an acknowledged expert and somewhat of a legend in his profession and his community. Graeme is a smart worker who constantly upgraded his knowledge through continuous learning habits and encouraged his clients to do the same. He is a very positive and friendly person with a can-do attitude to providing solutions to industry problems.

"In recent years he was heavily involved in Reef Rescue projects, working in partnership with the Mary River Catchment Coordinating Committee (MRCCC), assisting producers with on-ground projects to improve land management practices and enterprise sustainability."

We wish Graeme all the very best in his retirement and thank him for a remarkable 51-year commitment to the beef industry and the impact he made across Queensland and in particular in south-east Queensland.

Grazing BMP drives success

Improving productivity, profitability and sustainability in the grazing industry

THE key driver of productivity within a breeding operation is herd performance. Improving herd performance relies on effective genetic selection, coupled with sound breeder management and maintenance of breeder body condition. Participation in the Grazing BMP program provided the motivation for one central Queensland breeding operation to seek further skills and training in order to improve their herd performance.

George and Kim Sypher manage Karamarra, a 7230ha property north east of Dingo on the Mackenzie River. Owned by Charlie and Kaye Wilson, Karamarra is a mixed farming (both dryland and irrigation) and grazing operation. Running a herd of Brahman/Santa cross cows, joined to Droughtmaster and Brangus bulls. The business turns off finished animals, targeting the MSA market, and is currently in conversion to becoming organic. Both leucaena and forage crops are used to finish and fatten, helping the business meet market specifications at an early age.

Self assessment of their production practices through the Grazing BMP program prompted George and Kim to seek opportunities for further training, in the area of herd performance. Similar interest from other producers in their district resulted in the delivery of a Breeding EDGE Workshop in Emerald. Run over three days at the end of October, the workshop was delivered by John Bertram and Alan Laing.

The Breeding EDGE workshop has been designed to assist producers to develop a breeding program, or improve their existing one. It uses reproductive and genetic knowledge and technologies to help grazing businesses achieve desired production targets.

The Breeding EDGE package is customised for producers in northern Australia and comprises six modules:

- Examining your current operation.
- Reproduction issues.
- Genetics.
- Breeding objectives.
- Selection.
- Herd management.

George and Kim felt the workshop was an excellent training opportunity, providing them with the knowledge, skills and motivation to make worthwhile changes to their management practices.

"It was an invaluable three-day workshop which provided key information and effective tools for us to question and evaluate our current breeding performance, more confidently – which in turn will allow us to implement efficient changes."

The most immediate change the Syphers will begin implementing is adjusting their breeding calendar to tighten up their calving window. The long-term goal is to improve the probability of achieving sufficient breeder body score condition for the joining period. The planned follow-up meeting for next year is a vital aspect of the Breeding EDGE package.

George Sypher and daughters Grace, Laura and Gabby.

WORKSHOP GUIDE CHANGES

- Participation in the Grazing BMP program prompted George and Kim Sypher to attend Breeding EDGE.
- Breeding EDGE is designed to assist producers develop or improve their breeding programs.
- The Syphers intend to make changes to their breeding calendar to achieve a shorter calving period.
- The follow-up to the workshop is an important aspect of the Breeding EDGE package.
- Three more Breeding EDGE workshops will be conducted early next year.
- For information on Grazing BMP, visit www.bmpgrazing.com.au

"Planned follow up is important, because it encourages you to commit to action," says Kim Sypher.

"I'm looking forward to seeing how we all went in implementing the changes to our breeding programs – it will be good to share what worked and what didn't."

Directing producers into training opportunities that will be beneficial to their business, (such as Breeding EDGE) is a planned outcome of Grazing BMP.

Through the process of self-assessment, graziers identify areas in their business that may be improved through the change of practice.

Having been exposed to both the Cotton and Grains BMP programs, George saw Grazing BMP as a logical benchmarking tool for their beef enterprise.

"The strength of BMP is that it highlights facets of the operation that aren't necessarily in the forefront of daily business activities," George said.

The Syphers are not the only producers to identify a need for further training as a result of attending a Grazing BMP workshop.

Across the Fitzroy, 57 businesses have expressed an interest in Breeding EDGE.

As a result ,there are three workshops planned for the Fitzroy catchment in the new year:

- **February 4-6, Wandoan** – contact Tim Emery 0408 707 155.
- **March 4-6, Biloela** – contact Jo Gangemi 0477 345 843.
- **March 18-20, Emerald** – contact Laura Devlin 0467 801 673.

Please contact the above if you are interested in attending.

Jo Gangemi, beef extension officer, DAFF, 0477 345 843.

What is my 'green day'?

Timing depends on location and realistic expectations of 'normal' rainfall

MANY producers like to use their "green day" for the timing of joining and calving in a controlled mated herd. Ideally, calving will begin six weeks before there is a reliable chance of a seasonal break.

However, it is important to recognise that the timing of your green day depends on both your definition of what a green day is and your location.

When defining your green day, it is also important to have a realistic expectation of what your "normal" rainfall is.

For example, St Lawrence has an average wet season rainfall (October to April) of 840mm.

However, the median rainfall for those months (that is, what happens 50 percent of the time) is lower at 770mm.

Therefore, those producers using the long-term wet season average of 840mm as a benchmark figure for setting long-term stocking rates and feed budgeting have an unrealistic expectation of their rainfall.

In this case, they will only get their average spring/summer rainfall in around four years out of 10.

EXPECTED GREEN DAY BASED ON WHAT OCCURS IN 70 PERCENT OF YEARS

Location	30mm rainfall event	50mm rainfall
Emerald	15 December	15 January
Alpha	25 December	1 February
Duaringa	1 December	1 January
Biloela	1 December	1 January
Calliope	1 December	20 December
St Lawrence	1 December	1 January
Clermont	15 December	20 January
Mackay	1 December	20 December
Springsure	15 December	15 January

Source: Rainman

Therefore, in around six years out of 10 they will get lower rainfall than expected.

The same applies when determining your green day.

For example, using 50mm of rainfall within a consecutive three-day period as your definition of a green day will give you a later green day than using 30mm within a consecutive three-day period.

At Emerald, for example, the median date of a 50mm rainfall event during October to March within a consecutive three-day period is December 28.

This compares to a median date of November 15 for a 30mm rainfall event.

For producers trying to reduce their rainfall risk, it is worth considering selecting a green day based on what occurs in seven years out of 10.

Using this as a benchmark, at Emerald it is not until mid-January that it is realistic to expect a 50mm rainfall event. This compares to mid-December for a 30mm rainfall event.

What you select as your definition of a green day will depend on a number of factors including the type of country, its ability to respond to rainfall and existing pasture condition.

Grazing land in a good condition (pasture score A or B) responds to less rainfall more quickly than heavily grazed pasture with limited ground cover (for example, less than 1500kg/ha dry matter).

The table left highlights the green day for a number of central Queensland locations.

The dates are based on what occurs in seven years out of 10 during October to April for both a 30mm and a 50mm rainfall event within a consecutive three-day period.

Dave McRae, DSITIA, Toowoomba, (07) 4529 1343, david.mcrae@science.dsitia.qld.gov.au

Is your supplement putting your cattle at risk of sulphur toxicity?

AS THE drought continues to bite, inevitably we come across the problem of cattle over-consuming supplements and look for ways to control their intake.

Salt is well-known as an intake regulator, however, because it is not seen as adding nutritional value to the diet, many people have trouble justifying the expense of feeding a lick that contains a high concentration of salt.

Sulphate of ammonia or granulated ammonium sulphate are included in urea-based licks primarily added to supply sulphur to balance up the nitrogen supplied by the urea.

In addition, sulphate of ammonia has a crude protein equivalent of 126 percent, so for every gram you feed, you get 1.26g of equivalent crude protein.

Sulphur is an essential nutrient that is important for rumen microbial growth.

It is a component of essential amino acids such as methionine and cysteine and is involved in protein synthesis and metabolism, and fat and carbohydrate metabolism. It is found in the structure of some vitamins and hormones and in milk and muscle.

For rumen microorganisms to effectively utilise the nitrogen supplied by urea supplements, sulphur must be included.

> Sulphur is a component of essential amino acids such as methionine and cysteine and is involved in protein synthesis and metabolism, and fat and carbohydrate metabolism.

The ideal nitrogen:sulphur (N:S) ratio is 10:1 although slightly lower levels are quite acceptable. To achieve this ratio, the general rule of thumb is to use urea and sulphate of ammonia at a ratio of 5:1. This means that as urea is increased in a lick, the level of sulphur should also be increased.

Sulphate ammonia has the added benefit of being quite bitter, therefore it is often included in licks at higher levels to assist with controlling intake.

When are cattle at risk of sulphur toxicity?

When urea-based dry lick intakes are high, the level of sulphate of ammonia is often increased to reduce palatability and hence, intake.

Sulphate of ammonia levels of 10-25pc are not uncommon and these result in a significant decrease in the N:S ratio, down from the ideal ratio of 10:1 to as low as 3:1.

Feeding high levels of sulphur in supplements can result in sulphur toxicity, particularly if the overall sulphur level in the diet (that is, the total sulphur consumed from pasture, lick and drinking water) exceeds the maximum tolerable level of 0.4pc.

Furthermore, where sulphur in the form of sulphates (for example, sulphate of ammonia), is combined with highly fermentable feeds, the amount of sulphur required to cause toxicity is reduced.

There have been documented incidences of cattle deaths resulting from sulphate ammonia being fed in fortified molasses mixes in an attempt to reduce intake of molasses. This is a very dangerous combination because molasses is rich in sulphur so the overall sulphur content of the mix is high, and when fortified molasses is fed, animals consume large quantities so the molasses mix makes up a large proportion of the overall diet.

High sulphur intake has been associated with a reduced dry matter intake as well as decreased milk production. High sulphur levels in the diet also interfere with copper and selenium absorption, as well as affecting the metabolism of other minerals. Very high levels of sulphur intake can cause polioencephalomacia.

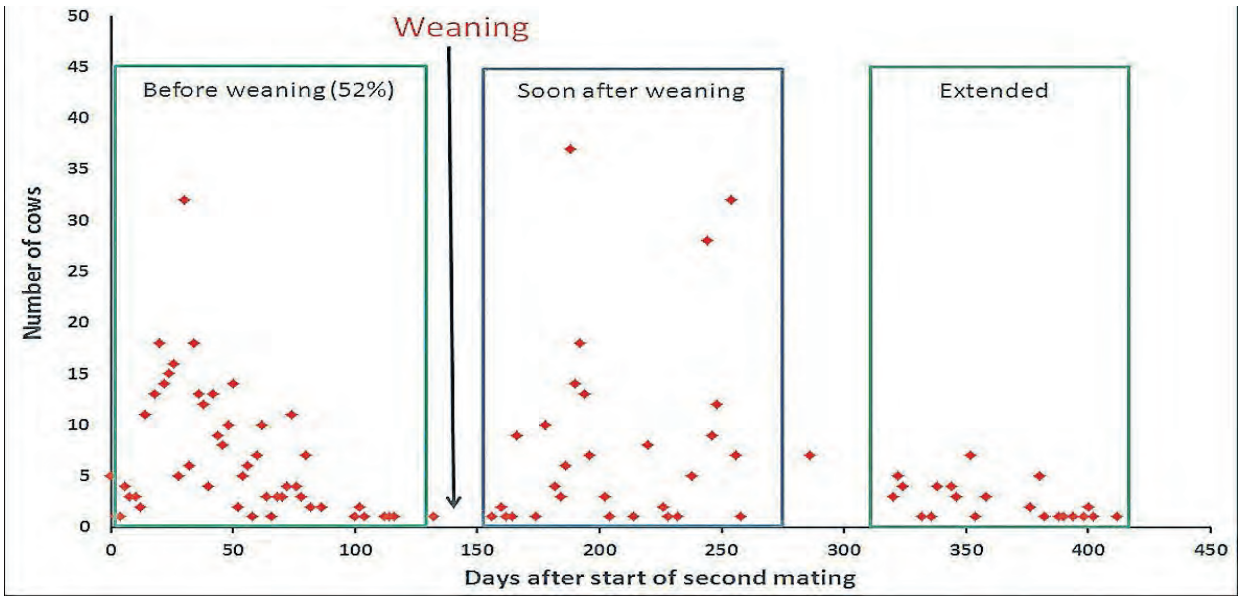
For further information and advice, contact your local beef extension officer.

Désirée Jackson, scientist (beef), DAFF Longreach, (07) 4650 1223.

KEY POINTS ON SULPHUR

SIGNS and symptoms of sulphur toxicity include:
- A decline in feed intake
- Scouring
- Restlessness, muscle twitching and in coordination
- Ill-thrift and gaunt appearance.

WHEN determining how much sulphur to include in a lick, it is important to consider:
1. The type of country the cattle are running on – on some country such as basalt and mulga, animals must be fed higher levels of sulphur due to the low dietary sulphur levels.
2. The amount of sulphur in the drinking water.
3. The type of supplement being fed – under no circumstances should sulphur be added to fortified molasses licks.
4. The protein level in the diet – higher levels of sulphur can be tolerated when the dietary protein level is higher. It is important to calculate the N:S (nitrogen:sulphur) ratio of the diet to ensure nitrogen and sulphur are in balance.



Brahman sires

LANCEFIELD 4999M	-3.3
MR V8 797/3	-3.1
TARTRUS 3886	-2.9
CONA CREEK 2722	-2.3
NEWCASTLE WATERS TOBY	-2.1
LANCEFIELD 4461	-2.0
McKELLAR RICARDO	-1.9
TARTRUS ABEL MANSO	-1.8
TARTRUS 2415	+1.9
TARTRUS 3292	+2.0
JDH DENVER DE MANSO	+2.1
LANCEFIELD AMBITION	+2.1
LYNDHURST 1660/7	+2.4
WAVERLEY SUPREME DE MANSO	+2.6
TARTRUS MR MANSO 025	+3.8
BELMONT 79/96	+5.6

Lactation anoestrus interval
EBV (days)
(Wet 1st calf cow)

4.4 month difference in time
1st calf daughters to resume cycling

ABOVE: Table 1 – Difference in lactation anoestrus between top and bottom Brahman sires in months.
LEFT: Figure 1 – Resumption of cycling in wet first-calf CRC Brahman cows.

Focus on selection is key to better breeding

Variation in lactation anoestrus in first calf cows of tropical cattle

A MAJOR research project in the Cooperative Research Centre for Beef Genetic Technologies (Beef CRC) has provided very useful information about lifetime production in Brahmans and Tropical Composites in northern Australia.

One of the primary objectives of this Beef CRC project was to investigate what effect genetics had on post-partum anoestrus (period between calving and a return to cycling) in first calf cows and consequently what opportunities may exist to improve fertility rates in northern Australia through genetic improvement.

PROJECT DESIGN

A total of 2137 cows were involved in the project (1020 Brahmans and 1117 Tropical Composites (TC)). The cows (also used in the age of puberty studies) were bred on seven cooperating properties (four Brahman and three TC) and at Belmont Research Station, which breeds both Brahman and TC.

Genetic linkage (across property of origin, and year within genotype) was generated using artificial insemination (AI).

The cows were generated over four and three years for Brahmans and TC respectively.

At weaning the cows were allocated according to genotype, property of origin and sire to one of four properties – Toorak (Julia Creek), Belmont (Rockhampton), Swans Lagoon (Ayr) and Brian Pastures (Gayndah). Belmont and Toorak ran Brahman and TC, Brian Pastures had TC and Swans Lagoon with the harsher environment had Brahmans.

The project continued until all the cows were about eight-and-a-half years of age and given the opportunity to have six calves and mated for the seventh time.

The cows remained in the project unless they failed to wean a calf in two consecutive years or were culled for management reasons (for example, temperament, udder, etc).

The cows were naturally mated for a 12-week period and were ovarian/pregnancy scanned at four-week intervals from joining using real time ultrasound by an experienced operator.

The cows were scanned a further four times between mating and calving. These were halfway between mating and weaning, at weaning, halfway between weaning and pre-calving and about three weeks before calving.

Other data collected at each scan included liveweight, condition score and a P8 fat depth.

RESULTS

The research showed that 52pc of the Brahman cows had cycled by weaning compared to 80pc of the Tropical Composites.

The 20pc of TC that did not cycle before weaning cycled within 100 days post weaning.

Of the 48pc of Brahman cows that did not cycle before weaning, most had cycled within 100 days post weaning.

There were cows that did not cycle until the beginning of the wet season following weaning or later as shown in Figure 1. It must be mentioned that 40pc of the Brahmans were run in a harsh environment at Swans Lagoon.

Genetic effects: One of the key outcomes of the Beef CRC research was the lactation anoestrous interval in three-year-old first calf cows was shown to be under moderate to high genetic control in both the Brahmans and the TC.

The heritability estimates for lactation anoestrous interval in three-year-old first calf cows were 0.51 for Brahmans and 0.26 for TC.

Further analysis revealed there was a difference due to genetics of 4.4 months in lactation anoestrus between the top and bottom Brahman sire included in the research trial (Table 1).

Although not as high, there was a 2.8 month difference in lactation anoestrus between the top and bottom sire in the TC group.

This had a major effect on the ability of daughters from bulls with the increased post-partum anoetrus to conceive during the joining period as first calf cows.

This was illustrated with only five out 37 daughters of Belmont 79/96 reconceiving as first calf cows.

CONCLUSION

These results emphasise the substantial opportunity that exists to improve conception rates in tropical beef cattle breeds by focusing recording and selection on "early in life" female reproduction traits, particularly in the Brahman breed for traits associated with lactation anoestrus.

Culling first calf cows that do not conceive or not retaining replacement progeny from those animals will have a positive impact in the improvement of conception rates.

The results show these cows are more likely to produce progeny that will not conceive as first calf cows as well.

Significant improvement can also be made by including selection for improved reproduction into a breeding program.

This can be best achieved by recording female reproductive performance information with BREEDPLAN for the calculation of Days to Calving EBV (particularly reproductive information for maiden heifers and first calf cows), and careful consideration of the Days to Calving EBV when selecting sires and dams to use in a breeding program.

Paul Williams, technical officer, Tropical Beef Technology Services, Rockhampton, paul@tbts.une.edu.au, (07) 4927 6066

Spatially enabled stock management

SELM dedicated to precision management in livestock

THE Spatially Enabled Livestock Management (SELM) symposium is the sole conference in Australia dedicated to precision management in the livestock industries. SELM 2013 was held in September in Camden, NSW. The symposium attracted representatives from agriculture departments, research organisations, universities, private organisations and livestock producers from Australia, New Zealand,the US, Canada, Argentina, Uruguay and Ireland.

The conference delivered outcomes from 25 recently completed, or near-completed, research projects. Almost half (43 percent) of the presented research has been conducted in the dairy industry, one quarter (24pc) in the beef industry, 18pc in the sheep industries and 15pc across grazing industries.

KEY MESSAGE

A key learning I took away from SELM 2013 is that most technologies currently used in livestock industries have been developed in other industries for different purposes. For example, dairy researchers are currently developing robots to perform farm duties such as milking and herding. The first commercial robot was developed in 1961 to handle hot metal in a car manufacturing plant. Similarly, beef researchers are using Global Positioning System (GPS) to autonomously monitor livestock behaviour. GPS was originally developed in the 1970s for US defence navigation during the Cold War.

Today, many industries, including defence, transport, manufacturing and mining make substantial investments into research and development of technologies that can save time, reduce labour, cut costs and improve production efficiency for these industries. Researchers, funders and producers need to look to other industries, including other livestock industries, to identify practicable technologies that can be adapted for on-farm use to provide livestock industries with similar benefits.

A brief overview of current technologies being used across the livestock industries follows.

DAIRY RESEARCH

In 2009 and 2010, FutureDairy co-developed the world's first robotic rotary, which is now available as a commercial unit under the name of Automated Milking Rotary (AMR).

> A key learning I took away from SELM 2013 is that most technologies currently used in livestock industries have been developed in other industries for different purposes.

The AMR has the capability to robotically perform all milking duties including teat washing and drying, applying the milking cups, cup removal, teat disinfectant and cup flushing. The AMR can conduct 1500-1600 milkings/day and allows farmers to reduce the time spent milking and the cost of milk production. A video demonstration of the AMR can be viewed at the following link:
www.youtube.com/watch?v=tJALtSsGVnA

Recently, researchers have been trialling ways to automate the rest of the milking process including fetching cows to and from the milking unit. The University of Sydney has successfully developed and trialled a remote controlled unmanned ground vehicle (UGV) for this purpose.

The UGV, 'Shrimp', is able to fetch cows from a grazing allocation and manoeuvre them through a gate without human intervention.

A video demonstration of 'Shrimp' herding can be viewed at the following link:
www.youtube.com/watch?v=tJALtSsGVnA

BEEF RESEARCH

A joint project between CSIRO, QDAFF and James Cook University is currently collecting data from a number of technologies installed on a property north of Charters Towers , Qld.

Technologies being used include walk over weigh scales, remote weather stations, water telemetry system, soil moisture probes, Active Optical Sensors (AOS) and GPS cattle collars. This project aims to determine the benefits of the collaborative information collected by these technologies to inform management decisions and improve enterprise efficiency.

The University of New England (UNE) is conducting a similar project at its farm in Armidale, NSW. A description of the technology they have installed can be viewed at the following link:
www.youtube.com/watch?v=A1X0R9w9txM.

SHEEP RESEARCH

The University of Sydney is currently trialling the use of GPS devices to develop an alert system for sheep producers.

Current projects are analysing the behaviour of animals during period of dystocia during lambing, predation and oestrus in ewes.

Charles Sturt University is using proximity logger technology to better understand resource use by sheep and implications on their welfare. The use of water and shade by sheep is being monitored as well as factors that may influence resource use such as weather conditions and age of the sheep.

GRAZING RESEARCH

NSW DPI researchers are currently using AOS to better understand the spatial and temporal variability of grazing land. They are identifying pasture species, measuring pasture quality, predicting pasture biomass and measuring changes over time. For producers, this information has enormous benefit to inform forage budgeting decisions and pasture management. A number of private organisations are in the early stages of developing a variable rate fertiliser applicator (VRA) suitable for use on heterogeneous grass paddocks. A VRA for graziers will improve pasture production, reduce input costs and reduce environmental impact.

A full summary of conference presentations can be found at http://sydney.edu.au/agriculture/documents/2013/Complete_SELM_Proceedings_4th_Conference_Camden_2013.pdf

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Timely tips for summer stock

- BULLS should be out with the breeders at this time, so minimising disturbances is recommended. When this cannot be avoided, eg, branding musters, allow plenty of time for animals to settle throughout the activity.
- Every effort should be made to reduce stress to animals and people. Shady and watered yards can help. This is important to prevent mis-mothering of calves also.
- Branding, dehorning and castration are best done in the cooler parts of the day to reduce the stress on calves
- Remember to keep vaccines out of the sun and in an esky with cooler bricks. Vaccines that get hot are simply a waste of money, as they will be ineffective.

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'Big head' grazing tropical grasses

BIG head is a calcium deficiency of horses and donkeys grazing introduced tropical grass pastures. It is caused by soluble oxalates in the leaf combining with calcium to form insoluble oxalate crystals. This prevents the horse from absorbing enough calcium. To compensate for low blood calcium levels, bone calcium is mobilised. Over time, the bones lose so much calcium that they become soft and misshapen.

The disease can develop within two months of horses being put on hazardous pastures, but commonly takes six to eight months. Cattle and sheep are not normally affected as rumen bacteria break down oxalates.

Horses are most at risk if the dominant pasture species are introduced tropical grasses. It is seen mostly in horses grazing pure buffel grass in western Queensland, and is less common where a wider range of pasture species is available.

Algae control crucial to health

ALGAE can build up in troughs, tanks and dams. It can affect the taste and smell of water, block pipes and corrode metal. Heavy infestations can de-oxygenate water and kill fish, while some algae produce toxins during decomposition which are poisonous to stock.

Algal growth is promoted by light, nutrients and warmth. The three major types of algae are: free floating single celled; filamentous which may be either free floating or attached; and bottom attached types. The bottom attached types are generally short and cause little trouble if left alone.

They can sometimes prevent more troublesome plants from becoming established, but they may impart an unpleasant taste should the water be used for drinking purposes.

Some species of algae are poisonous to animals and humans. The most poisonous species are the blue-green algae which form toxic blooms.

> Some species of algae are poisonous to animals and humans. The most poisonous species are the blue-green algae which form toxic blooms.

PREVENTION

Eliminating sunlight will reduce algal growth though is impractical in most cases.

Nutrients such as nitrogen and phosphorus which are present in fertilisers and manure will promote growth of algae and should be kept out of the catchment area.

If possible, fence stock and divert stockyard runoff away from dams.

Reducing the nutrient and organic matter input into the dam is the long term key to control of algae.

If the nutrient level of water remains high, algae will continue to be a problem in spite of other control methods. In tanks, cleaning out as much algae as possible and covering the surface will solve the problem. Algae cannot grow without sunlight.

Covering a tank also prevents water pollution, reduces the need to clean the tank and prevents evaporation.

Where it is not practical to cover the water, various algaecides are available.

CONTROL

For an existing algae problem, chemical control is often the most practical and effective method. Before you treat algae, make sure you know what type it is. Treating blue-green algae with chemicals may cause a sudden release of toxin which can be dangerous for up to two weeks. The least expensive and most widely used chemical is copper sulphate (bluestone).

COPPER SULPHATE (BLUESTONE)

Copper sulphate can be applied at any stage of algal growth but is most effective at an early stage. To treat the water, you need to work out the volume. Recommended rates range from 0.5 to 4g of copper sulphate per 1000L. Four grams per 1000L is the maximum where the water is for human and stock consumption. Up to 8g of copper sulphate per 1000L of water may be applied to water which is to be used solely for irrigation.

Generally, 1g of copper sulphate per 1000L should work. At this rate, an 800L trough needs 0.8g of copper sulphate.

A 1ML dam needs 1kg (costing several dollars per dose). The volume to be treated should be calculated on the basis of the top 2m of storage since algae generally do not grow at depths greater than 2m.

Mix the copper sulphate in a small amount of water and then sprinkle or spray it evenly over the water surface.

● Continued p34

Some spelling strategies for recovering pasture condition

SUMMARY

THE spelling strategies research project now has three years of information from the Monteagle site, and 12 months from the Wambiana site.

Despite two years of very good rainfall at Monteagle and then a very dry year, key pasture parameters have not been improved by spelling, when compared to continuous grazing at a moderate stocking rate. Monitoring on a commercial rotation at Monteagle, and a demonstration site at Oaklands, Duaringa, have given a similar result.

The Monteagle site was destocked over the 2012-13 summer following a wildfire through the trial paddock in November 2012 and very dry conditions. At Wambiana, the research is conducted under a moderate or a high stocking rate, and there are no significant spelling effects as yet. Improvement in land condition can take many years and/or be episodic and difficult to detect because of a large natural variation.

Paul Jones and Carly Harris pasture sampling at Wambiana.

BACKGROUND

Wet season spelling of grazing land is a key recommendation for improving land condition. However, there is little reliable and relevant information on which to guide the design of cost-effective and practical regimes of wet season spelling. This project is improving the evidence base and modelling capacity underpinning recommendations for use of wet season spelling to recover poor condition grazing land and design more reliable and cost-effective spelling options for producers.

On-property research at Monteagle generating important pasture data to drive these outcomes include small plots treated with a range of spelling strategies – early wet season and full wet season spelling annually or biennially, one-off spells to determine the impacts of seasons, and continuous grazing.

At Wambiana, similar treatments are applied under a moderate or high stocking rate. Funding is acknowledged from MLA and DAFF.

RESULTS SO FAR

MONTEAGLE

Monteagle has had variable rainfall over the previous decade with predominantly dry or very dry conditions. Good growing conditions, prior to and during the first summer, and for the second summer of recordings resulted in high pasture yields and crown cover. The third year of the trial was very dry with a wildfire in November 2012 and subsequent destocking of the trial site.

The pasture yield increased across all treatments through the first two wet years of the trial (Figure 1a). The increase was driven by growth of the key plants desert bluegrass (*Bothriochloa ewartiana*) and wiregrass (*Aristida spp.*).

The burn and dry summer of 2012-13 significantly reduced standing pasture yield. Spelling strategies have not affected pasture yield. Overall, pasture composition has not varied greatly with treatments or recording dates; however, desert bluegrass

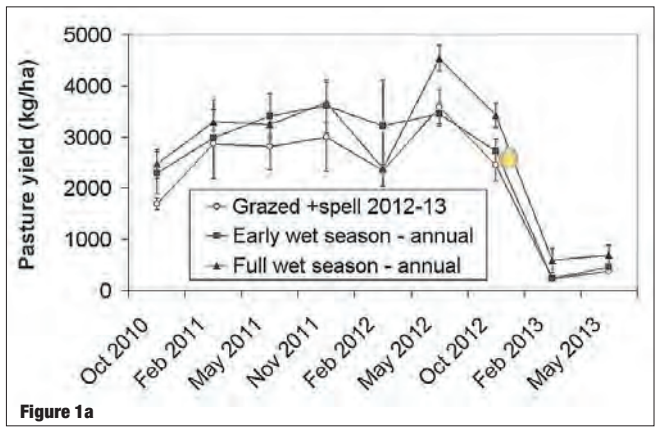


Figure 1a

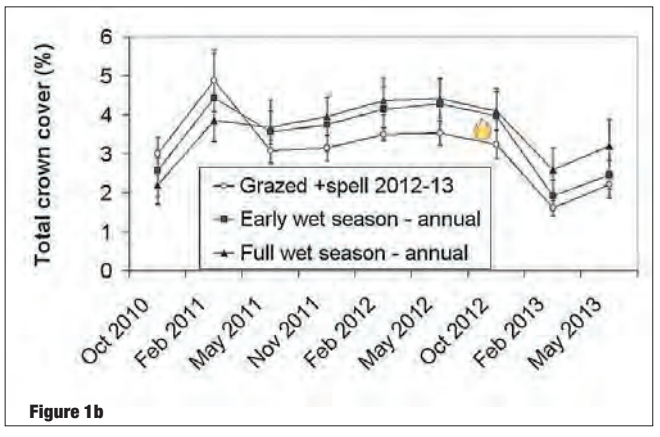


Figure 1b

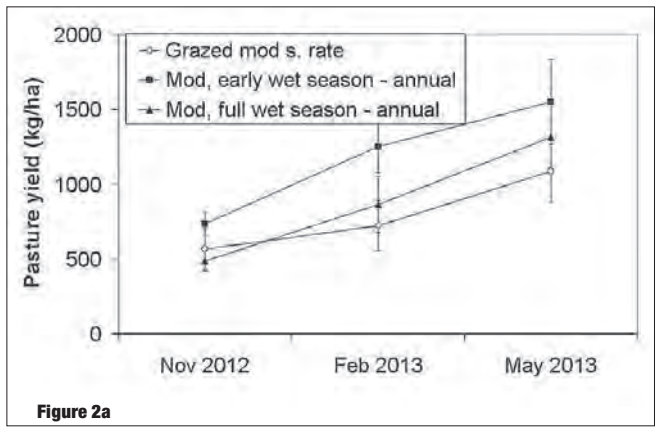


Figure 2a

Figure 1. The effect of spelling strategies at Monteagle on (a) Pasture yield, and (b) Total crown cover . The site was destocked in November 2012 for six months following a wildfire (orange flame).

Site trials provide evidence for research into wet season spelling

> Wet season spelling of grazing land is a key recommendation for improving land condition.

has increased noticeably since the fire.

Crown cover has varied with seasonal conditions across all treatments (Figure 1b). Desert bluegrass and wiregrass contribute equally and make up the majority of the crown cover. The burn and dry summer in 2012-13 decreased total crown cover due to a decrease in the wiregrass while the desert bluegrass crown cover was stable.

WAMBIANA

The 14 years prior to trial establishment in 2012 included runs of very wet years and very dry years. The three years immediately prior to trial establishment (2009-10, 2010-11 and 2011-12) had well above average rainfall and good growing conditions. The 2012-13 year had an average rainfall and growing conditions after a wet July.

Total pasture yields were relatively low and there has been a small overall increase over time at both the moderate and high stocking rates. Treatment effects are not apparent under moderate stocking rate, however, the full wet season spell appears to have significantly increased pasture yield in the high stocking rate paddock (Figure 2a and b).

Total crown cover has increased under the moderate stocking rate and has been stable under high stocking rate. Spelling treatments have not affected total crown cover (Figure 2c and 2d). Similarly, desert bluegrass and wiregrass species crown cover has been stable regardless of spelling treatment.

DISCUSSION

Seasonal conditions appear to have had the overriding influence on pasture parameters for the first three years of the spelling strategies trial at Monteagle. Good seasonal conditions for the first two years combined with a conservative stocking rate ensured utilisation levels were very low whether grazed or not. Land condition has improved slightly across all treatments during this period and has not been affected by wet season spelling.

The first two years of the trial were exceedingly wet. Quite likely the pasture growth has been more limited by soil nutrition than by soil moisture and thereby limited the potential of the desert bluegrass to demonstrate enhanced growth compared to the wiregrass. The third year of the trial included a wildfire and dry conditions so that any potential lag effects of the spelling were not likely to be recognised. Total crown cover was reduced by the burn and dry conditions in 2012-13, however, the contribution from desert bluegrass to crown cover and pasture composition may have improved by a small amount over that contributed by wiregrass.

Desert bluegrass has been observed as being slow to improve pasture composition under favourable management and good growing conditions. Its expansion appears to be restricted by a small, viable seedbank and therefore slow to change density.

However, it will be interesting to watch the changes as the trial progresses, particularly the effect of the burn on the apparent improved contribution to crown cover and composition of desert bluegrass. The wiregrasses are known to decrease in density during dry periods. The longer-lived desert bluegrass may then be able to improve its level of contribution to the pasture.

Desert bluegrass and wiregrass make a significant contribution to composition at both sites. Land condition ratings are very similar at both sites. At Wambiana, the spelling treatments have not affected pasture parameters at either moderate or high stocking rate after one summer. There was a management burn in November 2011, which does not appear to have affected perennial grass density or crown cover.

Many ecological studies have shown a sensitivity of perennial grasses to grazing during the early wet season growth period. There is still much to learn about the interactions of seasonal conditions, land condition improvement and grazing management.

Improvement in land condition can take many years and/or be episodic and difficult to detect because of a large natural variation. It may be more affected by seasonal conditions than grazing management and dependent on the amount of patches with bare ground compared to those with a presence of 3P grasses. The Toorak grazing study at Julia Creek showed Mitchell grass recovery of crown cover following high grazing pressure was dependent on good summer rainfall more than the number of years spelling.

> Land condition and pasture composition have been stable whether spelled or grazed so far.

However, low stocking rates (no spelling) were very important for crown cover increase following good seasons. For each study, seven years was necessary for a significant improvement in crown cover.

The Pigeon Hole and Mt Sanford grazing study in the Victoria River District (NT) recorded no improvement in land condition from any of the grazing pressures or methods, or over time, for the four years of the project. The Pigeon Hole site was predominantly C land condition, and remained that way despite average to above average rainfall. Similarly, the Mt Sanford site was predominantly B land condition, and stayed that way through the trial.

A recovery study at the Galloway Plains grazing trial at Calliope studied pastures under four years of exclosure following a high stocking rate treatment. Even with some good seasons, pasture composition and yield did not recover to the same level as the light stocking rate treatment.

Exclosures were established at six sites throughout central Queensland following severe drought in 2002, and monitored for up to 21 months. There was little recovery of the pastures and the authors concluded that pasture condition will not improve following drought simply by excluding livestock for short periods, especially during winter, and particularly when rainfall is only average or below.

The Virginia Park water cycle study at Charters Towers documented an improvement from C to B land condition over 10 years with improving seasonal conditions and annual wet season spelling. The Ecograze study at Charters Towers demonstrated an improvement in land condition over eight years with low utilisation, or medium utilisation with early wet season spelling on native pasture sites with low fertility, that started with either good or poor land condition.

The study was conducted through four years of severe drought and then four years of above average rainfall. Both of these studies concluded that patches with good ground cover and proportion of desirable perennial grasses have the best regeneration potential, especially with good growing conditions.

Patches with a high proportion of bare ground have the highest risk of continuing to degrade and the crown cover of perennial grasses has been found to be a useful predictor of future pasture performance. Previous research on spelling or exclosing from grazing has given inconsistent results and there are no clear trends to explain the lack of response to spelling at Monteagle and Wambiana. Seasonal conditions appear to have had the overriding influence on pasture parameters for the first three years at Monteagle.

Desert bluegrass is the key 3P grass at both sites. Its expansion appears to be limited by a small, viable seedbank and is therefore slow to change density. Land condition improvement at Monteagle and Wambiana may well take a number of years and will be affected by either, or combinations of soil fertility, current land condition, past grazing history, crown cover and seasonal conditions.

KEY POINTS

- Land condition and pasture composition have been stable whether spelled or grazed so far.
- There has been very little effect of spelling under moderate or high stocking rate.
- Land condition change can take several years and be affected by any, or a combination of factors.

– Paul Jones, senior scientist, QDAFF Emerald, (07) 4983 7415.

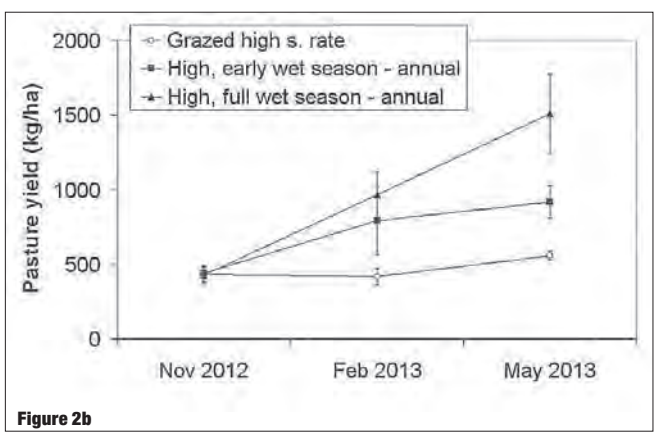


Figure 2b

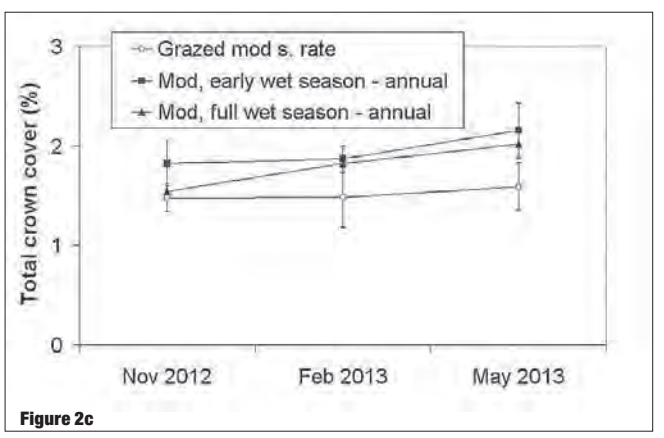


Figure 2c

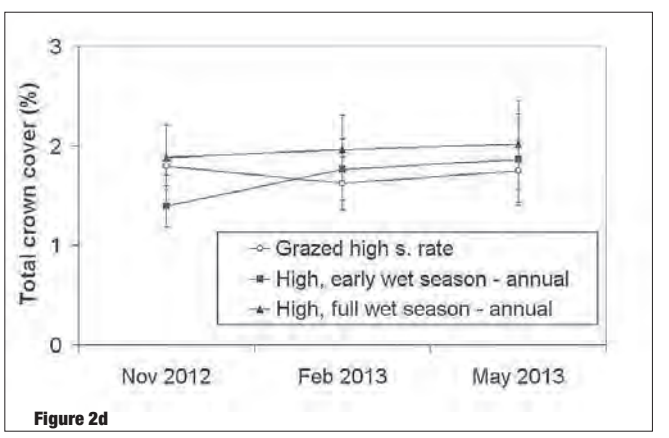
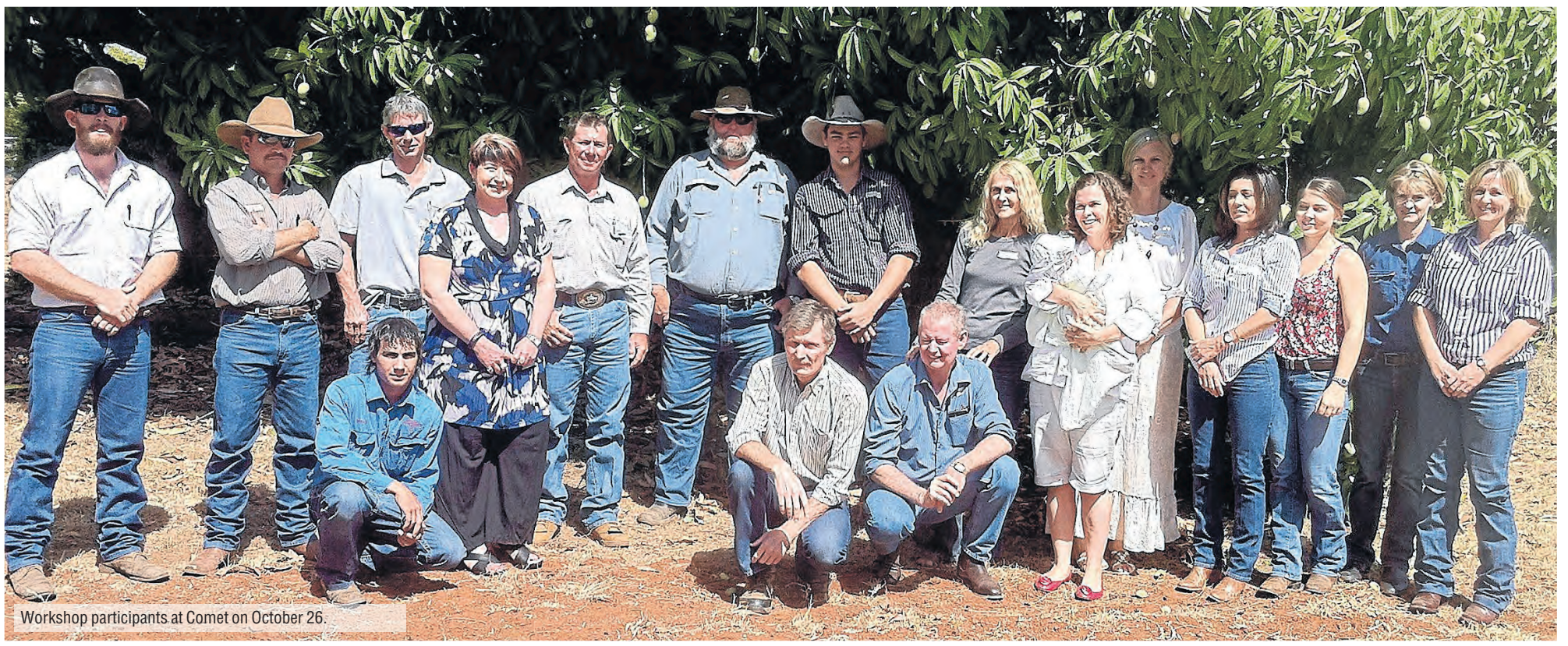


Figure 2d

Figure 2. The effect of spelling strategies at Wambiana under moderate or high stocking rate on (a) and (b) Pasture yield, and (c) and (d) Total crown cover.

Breaking the big challenges into more achievable goals


Workshop participants at Comet on October 26.

THERE is no denying that making a buck in the grazing game is getting more and more difficult. Low returns and high input costs leave little room for error. One program that is helping graziers refocus their efforts on the things within their control is Grazing Best Management Practice – a joint initiative of the Queensland Government, AgForce and the Fitzroy Basin Association (FBA).

Funding support from the Department of Environment and Heritage Protection (DEHP) has seen the program go from strength to strength over the last six months. Since July 1 this year, 59 workshops have been delivered across the Fitzroy to 529 participants. The feedback collated from these workshops has been very positive. When asked to rate the usefulness of the workshops out of seven (with seven being the highest score), over 90pc of workshop participants gave a rating of five or above.

> Field officers have a unique opportunity to provide tailored support to the graziers in their area.

Grazing BMP is designed to help graziers identify areas within their business where a change of practice may be beneficial for productivity, profitability and long-term sustainability. This change of practice may be as simple as accessing information to allow more informed decisions to be made. More than 80pc of participants indicated that attending a BMP workshop had helped them to identify areas in their business where improvements could be made.

Efforts by field officers from FBA's sub-regional groups have been instrumental in achieving the high levels of participation at the various workshops. Being closely connected to the communities in which they work, the field officers have a unique opportunity to provide tailored support to the graziers in their area.

One such novel example is that of field officer Sara Cue, from the Dawson Catchment Coordinating Association Inc (DCCA). Sara was keen to involve a group of switched-on young mums, who would normally find attending a training day difficult. By combining the delivery of a BMP workshop with a regular playgroup day, Sara was able to provide the opportunity, even though it took her a few days to recover!

AGFORCE · Queensland Government · FITZROY BASIN ASSOCIATION · GRAZING BMP BEST MANAGEMENT PRACTICES

SOME OF THE COMMENTS FROM THOSE THAT ATTENDED THE DAY

"Sara had the initiative to invite the playgroup ladies to attend a Grazing BMP workshop. Although I am lucky to be hands-on in our business, it was a great opportunity to attend an industry workshop.

"The workshop was very informative and interesting and I really enjoyed the open discussions around the room regarding current practices and why we do what we do. I enjoyed the presentation and discussion on the sometimes tender or controversial topics of pain and cruelty in the treatment of our animals and what that means for practices such as dehorning, castration and branding. It was food for thought.

"Sara organised a safe and secure environment to play, eat and entertain our

> Self-assessment by participants ... has helped increase awareness of key management issues.

next generation of Australian graziers. She gave us 'peace of mind' while we had the opportunity to learn and interact, not only as a mature group, but also to discuss specific topics affecting our personal businesses, one-on-one with knowledgeable speakers.

"I learnt a lot about bull selection and our need to be more critical and analytical in our approach to this. I also learned that I need to employ better record management across all areas of our grazing practice.

"While I felt that in most things we were doing the right thing at industry level, we were really let down by the fact that our record keeping was not up to scratch. If the opportunity arises to attend more workshops, then I would be most interested in being a part of it and sincerely look forward to the next one."

The Grazing BMP livestock modules (Animal production and Animal health and welfare) are delivered by FutureBeef extension officers Matt Brown (Rockhampton) and Jo Gangemi (Biloela). A variety of guest speakers have also presented at a number of the workshops, providing up-to-date information on topics covered within the modules. A regular speaker is Steve Banney (Steve Banney Agribusiness). Steve is a private consultant with a background in managing corporate and family-owned cattle businesses in northern and Western Australia. As a coordinator for MLA's on-farm animal welfare program, Steve's informed presentation highlights the changing community expectations towards animal welfare and how these changes might affect the operations of a cattle business in Queensland.

Self-assessment by participants of their practices within the livestock modules has helped increase awareness of key management issues. Within the Animal production module, the standards for managing heifers, assessing bull soundness and selecting bulls for genetic improvement have increased awareness of "best practice" for more than 65pc of the workshop participants.

Within the Animal health and welfare module, the standards for biosecurity planning, animal welfare responsibilities and implementing a health management program have increased awareness of what is "best practice" for more than 65pc of the workshop participants.

The use of Near Infrared Reflectance Spectroscopy (NIRS), commonly known as faecal or dung sampling, to determine pasture quality and possible nutritional deficiencies has been widely discussed at workshops. Participants at the Dingo and Comet workshops on October 24 and 25, appreciated the step-by-step sample preparation demonstration as Jim Fletcher (extension officer, FutureBeef) discussed the pros and cons of dung sampling.

A key outcome of the Grazing BMP program is the provision of targeted extension for workshop participants who identify that training or the acquisition of new skills as beneficial to their business. As a result, a number of field days and training opportunities have already been delivered within the Fitzroy, including soil field days, nutrition days, breeder management days and the MLA Breeding EDGE package.

Jim Fletcher demonstrates NIRS faecal sampling.

Grazing BMP gives agencies such as FBA and FutureBeef (through Queensland's Department of Agriculture Fisheries and Forestry – DAFF) the ability to respond to producers' self-identified needs, making the program extremely valuable for the grazing industry.

For information on upcoming events visit www.bmpgrazing.com.au.

Jo Gangemi, beef extension officer (FutureBeef), DAFF Biloela, (07) 4992 9178.

Dry weather plus introduced feeds equals weeds

ALL beef producers will be counting on a decent wet season for relief after this dry period.

With rain the pasture will grow, but so will the weeds – including new weeds that may have been introduced with drought feed.

To minimise potential weed problems:

1. Try to feed stock in designated areas away from watercourses.
2. Quarantine introduced stock in yards for 5 to 8 days to reduce the possibility of weed seeds spreading through the paddocks in their dung.
3. Monitor areas where fodder has been fed and inspect for weeds.
4. Ask feed suppliers for information on the source of fodder.
5. Consider using and asking for a weed hygiene declaration which covers feed and animals and machinery. More details at http://bit.ly/17mwdpQ.
6. Keep records of purchased fodder, including origin.
7. Keep a lookout on local roadsides for weeds that may have been dropped by traffic.

Identifying weeds early is important to help stop their spread.

You may be able to identify your weed by visiting online weed identification tools or weed photo guides that are available on the DAFF website.

If you still can't find the weed you're looking for, you can submit a good-quality photograph through DAFF's identify plant pests form that can be found at http://bit.ly/19EKbQP.

Regional weed spotter coordinators can also help identify weeds, visit http://bit.ly/I3Mx5R to contact your local coordinator.

Alternatively any unusual or unknown plants can be left at your local DAFF office for identification or sent to the Queensland Herbarium for positive identification.

To help identify a plant you'll need to supply sufficient material.

This includes leaves and stems and, whenever possible, flowers, fruit and/or seeds.

Also describe the environment and soil type where the plant was growing, and how large the plant is (if it's too large to bring in a complete sample).

If you suspect it is a declared plant, secure the sample carefully in a bag to prevent seed spread.

A sample being sent to the herbarium should be dried under a weight between sheets of newspaper over several days.

The paper will need changing to prevent mould. Once dried the sample can be sent to the herbarium. Plastic bags should not be used.

Potential problem weeds identified in small numbers are far easier and cheaper to control than weeds rampaging over large areas.

Damien O'Sullivan, DAFF, Kingaroy
Phone: (07) 4160 0717
Email: damien.o'sullivan@dpi.qld.gov.au

FutureBeef CQ BEEF feedback

Please spend a minute to let us know your thoughts on CQ Beef as a way of keeping you up to date on current issues in the beef industry.

Do you find the CQ Beef useful? ❑ Yes ❑ No

Why did you give this answer?

.....

.....

.....

.....

What would you like to see in future issues?

.....

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.....

.....

Name (optional).....

Which of the following best describes you?

Beef producer ❑ Education ❑

Agribusiness ❑ Other ❑

SUBSCRIBE TO CQ BEEF ONLINE

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Department of Agriculture, Fisheries & Forestry
LMB 6
Emerald QLD 4720

Algae control vital to livestock health

Algaecide chemicals are available to help solve the problem

● From page 29

IT is important to mix it well into the treated water to avoid concentrated pockets.

In dams, this can be done by dragging a branch through the water or putting the undissolved copper sulphate in a hessian bag which is tied to a central float in the storage or towed through the water.

Frequency of treatment depends on the conditions for algal growth and on water hardness. In hard water the copper sulphate becomes bound to minerals so more frequent treatments may be necessary. Sometimes treatment needs to be repeated every two weeks.

Alternatively, slow dissolving copper sulphate blocks are available for troughs. You simply place them in the water and they last for about two to three weeks (in an 800L trough).

PRECAUTIONS

- Use gloves to handle the copper sulphate concentrate as it may damage skin. The concentrated copper sulphate is corrosive to galvanised iron and aluminium, but is relatively non-corrosive in water at the recommended concentrations. It is safe to use with brass.
- Although copper sulphate applied at rates of up to 4g per 1000L of water is safe for drinking purposes, treatments should not be continued for long periods because prolonged exposure to low doses may be injurious.
- If you are growing fish or crustaceans in your dam check with a fisheries advisor before undertaking treatment since some species may be affected by copper sulphate treatment.
- Copper toxicity should not be a risk for cattle unless they are already suffering from liver damage or receiving supplementary copper. Sheep, under some circumstances are particularly susceptible.
- For non-toxic algae, it is best to withhold water from stock and domestic use for a few days after treatment because algae can impart an unpleasant odour and taste to the water.
- Large quantities of decomposing algae can deoxygenate the water which in turn may kill fish. Decomposing algae may also continue to block pipes. If possible remove dead algae.
- Water treated with copper sulphate presents no risks to crops and there are no problems with soil residues at the recommended rates.

CHELATED COPPER

COPTROL® is an example of a chelated copper product. The advantages of liquid chelated copper are:

- each treatment lasts longer
- it is less affected by water hardness
- it does not corrode metals
- you don't have to withhold treated water from stock use - provided the algae is not blue-green algae.

Use the recommended rate for the particular product. Chelated copper should be diluted in a small amount of water and sprayed evenly over the affected storage (as for copper sulphate).

OTHER CHEMICALS

Other algaecide chemicals include simazine, calcium hypochlorite and ferric alum blocks. These products are marketed at various strengths and under a variety of trade names. Not all algaecides are safe for human or stock consumption or for aquatic life. Some are very corrosive to metals. If you decide to use an algaecide, be sure the product you choose is safe. Read the label and follow the directions carefully.

REFERENCES

- Algae in stock waters can be controlled using chemicals, Department of Primary Industry and Fisheries Northern Territory, 1997. Download from http://bit.ly/17kqpKe
- Livestock water supplies, Primary Industries and Resources South Australia, 2008. Download from http://bit.ly/19fp1ly

Roger Sneath, DAFF, Toowoomba
Phone: (07) 4688 1244
Email: (07) roger.sneath@daff.qld.gov.au

Science webinars for ag production and management

THE Department of Science, Information Technology, Innovation and the Arts (DSITIA) run a monthly webinar to showcase some of the science and products produced by the Science Delivery Division.

So far the topics have included remote sensing and ground cover, scientific capability in grazing land systems, a national grass production model (AussieGRASS), climate risk assessment and forecasting, learning from history in climate and grazing management, accessing climate data (SILO), soils food security and environment, and more.

The live webinars are recorded and placed on the LongPaddock website http://www.longpaddock.qld.gov.au/products/webinars.html.

If you would like to go onto the email list to get invites to the webinars (one per month) please contact David Cobon on 07 4529 1240 or david.cobon@science.dsitia.qld.gov.au.

Tick fever centre Christmas closure

THE Tick Fever Centre will be closed from Wednesday 25 December 2013 to Wednesday 1 January 2014. Please note that:

- The last vaccine despatch will be on Thursday 19 December 2013.
- The first vaccine despatch for 2014 will be on Tuesday 7 January, with orders required by 4pm Monday 6 January.

All the staff at the Tick Fever Centre wish all our clients a happy and safe Christmas/New Year period and look forward to supplying you again in 2014.

Tick Fever Centre
Phone: 13 25 23 (local call) or (07) 3898 9655
Website: http://bit.ly/1iwglA9

FutureBeef

FutureBeef Workshops & Information Events

Complete this form to express interest in the following events for your area.
To view scheduled workshops, field days and industry events visit
www.futurebeef.com.au/events/

ANIMAL HUSBANDRY AND MANAGEMENT — TICK THE BOX

- Artificial Insemination (QATC) – artificial insemination training ☐
- Breeding EDGE (DAFF) – breeding and genetics workshop ☐
- Bull Selection (DAFF) – practical bull selection and evaluation ☐
- Heifer Selection (DAFF) – practical heifer selection and evaluation ☐
- Nutrition EDGE (DAFF) – workshop covering all aspects of animal nutrition ☐
- Pregnancy Diagnosis (QATC) – training to manually test for pregnancy ☐
- Breeding for Profit (DAFF) - evaluate breeding programs and market options for profit ☐

GRAZING LAND MANAGEMENT

- Fire Management (DAFF) – information on fire as a land management tool ☐
- Grazing Land Management EDGE (DAFF) – improve productivity and sustainability of land ☐
- Pasture Rundown (DAFF) – pasture management strategies to retain improved pastures ☐
- StockTake: balancing supply and demand (DAFF) – land monitoring and forage budgeting ☐

BUSINESS MANAGEMENT AND MARKETS

- BusinessEDGE (Bush AgriBusiness) – financial and business management skills to improve profitability ☐
- Confident Livestock Marketing (MLA) – apply market information in business decisions NEW ☐
- Grazing Best Management Practice (DAFF) - identify practices that can help improve the long term enterprise profitability NEW ☐
- Better decisions in the business of beef: Breed Cow & Dynama (DAFF) – comprehensive analysis of herd structure and performance to develop and test management strategies ☐

ON DEMAND

- Beyond the Gate Tour (MLA) – educational tour through the local meat supply chain ☐
- MSA and EU Market Access (MLA) – how to supply MSA/EU cattle and optimise consignments ☐

ONE ON ONE ENGAGEMENT

- BREEDPLAN (DAFF) - genetic evaluation system for breeders to produce Estimated Breeding Values (EBVs) of recorded cattle for a range of important production traits (e.g. weight, carcase, fertility) ☐

Please return to Lauren Williams at Lauren.Williams@daff.qld.gov.au or fax (07) 4951 4509.

NOMINATE YOUR OWN IDEA

NAME:.....

.....

PROPERTY NAME:.....

.....

PHONE NUMBER:.....

.....

EMAIL ADDRESS (WE WILL USE THIS TO NOTIFY YOU OF UPCOMING EVENTS):

.....