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NORTHERN MUSTER

Information for rural business in North Queensland

IN THIS ISSUE

Editorial

Beef up your breeding at Spyglass

Vet students learn about beef business

Heifer mating—what works in the south spells disaster in the north

QRIDA can help lay foundation for sustainable grazing future

Dedication to genetics pays dividends in local cattle competition

Grazing essentials: Loading ramps, fences, watering points and the Futurebeef website

Repronomics™ update—enabling more accurate selection

Using BREEDPLAN to select better bulls

Buying better bulls

Special beef breeding and genetics edition

NORTH QUEENSLAND
REGISTER

Welcome to Northern muster 47

Welcome to the latest edition of the Northern muster.

Just like that, we are more than half way through 2018! With the start of the new financial year, you may find yourself looking for ways to improve the sustainability of your business. A series of webinars are now available to producers through a FutureBeef and Beef Central partnership, focusing on improving the performance of beef production systems in northern Australia. To register or for more information on these webinars visit: beefcentral.com/production/webinars-to-focus-on-improving-performance-in-northern-beef-production-systems.

End-of-the-year bull sales are fast approaching. Now is the time to cash in old bulls and buy quality bulls to take your herd forward. Did you know that a single bull's genetic influence has the potential to significantly impact the future direction of your herd? Whether you're selecting bulls from an auction, a sale, or from within your own breeding program, it's important to choose wisely. There are some great articles in this issue looking in-depth at some things you need to consider when selecting your next bull. For example, using BREEDPLAN to source a bull that's going to help you reach your breeding objectives,

and how conducting a veterinary bull breeding soundness evaluation (VBBSE) can help ensure that he is going to do the job and get calves out in the paddock for you.

This issue also has a great selection of articles to keep you informed on a variety of other topics including information on the MLA Beef Up Forum at Spyglass Research Station, heifer mating management, Grazing BMP and the Northern Beef Producers Cattle Competition, QRIDA's Sustainability Loan, and an update on the *Repronomics*TM Project at Spyglass and a new phosphorous water supplementation demonstration.

Since the last issue, the Department of Agriculture and Fisheries (DAF) has sadly said goodbye to one of our Northern muster editors,

Melissa Holzwart and Beef Economist, Holly Reid both from the Charters Towers DAF office. For a full list of contact details for extension officers in your area visit futurebeef.com.au/contact-us.

We hope you enjoy issue 47 of the Northern muster. Please do not hesitate to contact the editorial team for further information or feedback. For an electronic copy, subscribe at futurebeef.com.au/resources/newsletters or email northernmuster@daf.qld.gov.au.

For the latest research-based information, tips, tools, events and recorded webinars, visit futurebeef.com.au.

Northern muster editorial team:
Alice Bambling, Rebecca Gunther and Kate Brown



Beef up your breeding at Spyglass

Learn about the latest research and development (R&D) driving genetic change in reproduction at the Meat & Livestock Australia (MLA) Beef Up Forum Friday 7 September at the Spyglass Beef Research Facility.

The forum will focus on providing practical information on the use of genetics, genomics, and associated technologies to improve the profitability of beef businesses.

You can see cattle on display from the internationally-recognised, MLA-supported *Repronomics*TM project for the first time at Spyglass. This is a large collaborative breeding project led by the University of New England's Animal Genetics and Breeding Unit in collaboration with the Department of Agriculture and Fisheries (DAF), the Northern Territory Department of Primary Industries, and Queensland Alliance for Agriculture and Food Innovation—an institute of The University of Queensland, jointly supported by the Queensland Government. The *Repronomics*TM project focuses on female reproduction traits

to improve the development of more accurate breeding values in commercially-available bulls.

QAAFI's Northern Beef Genomics project is also monitoring large numbers of young, female, commercial cattle across northern Australia and conducting DNA sequencing and analysis to produce genomic breeding values.

A local grazing business will also present their experience with using genetics and management to improve the reproductive performance and profit of their business. Some recent technology developments, such as drones and results from R&D projects, will also feature at the forum, along with up-to-date information on pain medication options and animal welfare R&D. A highlight of the day will be the pens of cattle on display demonstrating the effects of genetic variation and how producers can capitalise on this.

Producers will be given the opportunity to contribute to the future direction of R&D in a facilitated consultation session. The North Queensland Beef Research Committee will

use the outcomes of this consultation to shape regional priorities for future MLA R&D investment.

The final session of the day will be led by Ian McLean, a leading beef industry business adviser. He'll discuss findings in the recent Northern Beef Situation Report and provide a business perspective on profitable use of genetic improvement strategies in northern beef herds.

Registration is \$20 per person and includes morning and afternoon tea, lunch and a BBQ dinner. Spyglass Beef Research Facility is 110 km north of Charters Towers on the Lynd highway, and 130 km west of Townsville on the Hervey's Range road. A bus may run from Charters Towers and Townsville to Spyglass and return depending on demand.

For registration details contact Barb Bishop on 0408 999 009 or barbara@barbarabishop.com.au. For program information visit mla.com.au/events or contact the Charters Towers DAF office on (07) 4761 5150.

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Vet students learn about beef business

Veterinary students from James Cook University (JCU) will gain first-hand experience in beef production as part of the Grazing Best Management Practice (BMP) program.

Grazing BMP is a voluntary, industry-led partnership between the Department of Agriculture and Fisheries (DAF), AgForce and Fitzroy Basin Association, which helps graziers identify practices that improve the long-term profitability and sustainability of their enterprise. It was first developed in Queensland in 2010.

DAF Grazing BMP Coordinator Jo Gangemi said 90 fifth year vet students would complete animal production modules from the program as part of their training.

“Grazing BMP is a voluntary assessment process designed to give beef producers the opportunity to look at best practice and to measure themselves against industry benchmarks,” said Ms Gangemi.

“By taking part in this program, JCU vet students will gain a better understanding of the issues that graziers face and where their advice can best fit into an extensive beef production business model.

“It’s important that future vets consider the measures that producers can take that won’t increase the costs of production and that are viable on a large scale. We are very pleased to be involved with the students and helping them to look at animal health more holistically.”

JCU course coordinator Dr Sarah-Jane Wilson said JCU had developed a new beef program for final year students to enable them to look at beef production from the producer perspective.

“This will allow students to think about their role as a vet and where they can influence or drive practice change to improve the productivity of the enterprise,” Dr Wilson said.

“The students need to consider animal health from an enterprise production view, rather than just from a health or medicine view, therefore bringing the whole system into an integrated mindset.



JCU veterinary students in Townsville.

“By taking part in Grazing BMP, students will be better acquainted with the elements of a beef production system from a producer/practical perspective. And better still, it’s an opportunity for the students to better understand the interactions of the components of a production system that need to be integrated to improve productivity.”

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Department of Agriculture and Fisheries technical officer, Stacey Haulke, and producer, Barney Gordon, on a demonstration site at Minnivale that’s looking at how to improve land condition through sown pastures and legumes.

Heifer mating— what works in the south spells disaster in the north

Heifer management recipes can be problematic, as they should be tailored to the individual business. As an example, it is quite common for those in temperate climates to mate heifers 4-6 weeks earlier than their cow herd. You do this at your peril in the dry tropics.

What is very different between the south and the north is the climate. Most of the north experiences long, severe dry seasons that end in storms arriving anytime over a 5-month period. The wet season peaks usually in January-February. The dry season is a high-risk period. Exposing heifers, the most vulnerable class of stock, to an extra 4-6 weeks of extreme nutritional stress when they need the opposite is madness. If you're not lucky enough to catch an early storm, or you don't happen to have a rare corner of 'safe' nutrition, your business will incur considerable costs recovering the situation. An average of 7 per cent of all females in the northern forest region die annually, without poor advice exacerbating the problem.

Young female cattle with their growing skeletons have specific challenges to deal with. In northern systems, skeletal growth continues until approximately 4.5 years of age. To maintain the same body condition, females need to gain approximately 50 kg between 1.5 and 2.5 years and 35 kg between 2.5 and 3.5 years of age for their skeletal growth. That equates to an entire body condition score.

My advice for dry topics systems is built around the start of mating for maidens being the same as for cows. I also advise not extending mating beyond 3 months if possible. In dry tropical systems, the main objective with timing of mating is to minimise dry season lactation.

Concentration of calving is a secondary outcome if it can be achieved, and this is only usually in country that has productivity of at least 150 kg/year.

The main reason for short seasonal mating of heifers is to keep subsequent input costs under control (i.e. use management to reduce feed need, and supplement only to value-add good management). Another reason is to minimise dystocia and reduce the costs of control and treatment of this problem. Dystocia is common in all breeds of 2-year-old calving females across all regions of northern Australia. Low nutrition in the first half of pregnancy and high nutrition in the second half appear to be primary risk factors, and if combined heifer mortality can exceed 10 per cent as calving is mostly unsupervised.

So, should yearlings be mated or not?

Our research, which has included intensive herd modelling, indicates that unless bulls can be controlled and where at least half of the mob is expected to conceive, you shouldn't mate them. This is because you may well be creating another problem to deal with. Consider that low pregnancy rates are related to heifers being small. Their live weight production in the following year will be similar whether they are left to grow out or produce a calf. Therefore, there is a lot more risk and additional costs of branding, weaning, vaccinations, etc. to consider. Higher pregnancy rates are associated with bigger heifers, closer to maturity that need to pump out calves to sustain achievable live weight production.

For more information contact Dr Geoffrey Fordyce on (07) 4761 5173.



QRIDA can help lay foundation for sustainable grazing future

Properties across the Top End have seen a mixture of drought and rain over the past few months and now is a perfect time to prepare for the upcoming season.

A Sustainability Loan with the Queensland Rural and Industry Development Authority (QRIDA) can help you prepare for improved seasons by furthering your enterprise productivity.

The loan can be used to purchase additional parcels of land, upgrade infrastructure, build herd numbers, or establish additional water points to maximise grazing efficiency and more.

QRIDA Regional Area Manager, Janessa Bidgood, is based in Cloncurry covering the North West and Gulf, and is passionate about helping clients to build sustainable grazing businesses.

"The Sustainability Loan is designed to help producers add value and improve the profitability of their grazing operations," said Janessa.

"It's great to see graziers focussed on the future and improving the productivity of their operation and laying a foundation, not just for the next season, but well into the future of their business, and that is what the Sustainability Loan is all about.

"It can be tough going out here, so the community knows the importance of preparing for the future, and QRIDA is here to assist".

QRIDA has been a proud supporter of Queensland primary producers for more than 20 years and wants to ensure enterprises can continue for generations to come by making them more sustainable.

"We're happy to come to the farm and discuss the application process. Everyone's situation is different, and every business plan has a different focus. The programs we administer here at QRIDA have been built to cater to those points of difference and the most important thing for potential applicants is not to self-assess," said Janessa.

The Sustainability Loan currently features lending limits of up to \$1.3 million, low interest rates and repayment terms of up to 20 years.

In addition to Cloncurry, QRIDA has Regional Area Managers based in Toowoomba, Kingaroy, Bundaberg, Mackay, Innisfail, Emerald (with an office in Longreach) and Roma who can meet you on farm to discuss your individual needs.

To arrange a meeting with your Local Regional Area Manager, contact QRIDA on Freecall 1800 623 946.



Dedication to genetics pays dividends in local cattle competition

The Northern Beef Producers (NBP) Inc. successfully reintroduced a local cattle competition to Charters Towers at the H.M. Clarke Saleyards on Friday 8 June.

Local graziers displayed 422 head of quality, grassfed impressive prime, trade and feeder cattle produced across the region despite challenging seasons. A special sale was held in conjunction with the competition, yielding strong prices. The NBP Inc. introduced a class featuring replacement heifers into the

program. This was a point of difference from other commercial cattle competitions and they were pleased with the vendor support.

Dr. Geoffry Fordyce, a senior research fellow with The University of Queensland, worked with the NBP Inc. committee to develop judging criteria from research outcomes. Judging was based on a series of measures taken from each heifer entered in the class. All attributed to the heifers' ability to perform well reproductively under northern grazing

conditions. The measures included ovarian scanning to determine cyclicity status, body weight, fat depth, body temperature, naval and coat scores, evidence of fly lesions, colour, temperament, polledness and conformation.

The Rea family from Lisgar Station, Home Hill was crowned the 'Most Successful Exhibitor' of the 2018 Commercial Cattle Competition after taking home a swag of ribbon and prizes across many classes. Their success included a second place in Class 12—Pen of five replacement heifer's competition.

The Rea family has concentrated on genetic improvement across its herd for many years with the support of the Department of Agriculture and Fisheries (DAF) extension officers. Recently, the Rea's joined a large new project known as Northern Beef Genomics.

Funded through the Meat & Livestock Australia Donor Company, the project aims to use frontier science to uncover the genomics of breeding cattle in northern Australia, and to accelerate their genetic improvement. The project will provide the Rea's with genomic breeding values for all cattle enrolled, which will be a major asset for them when selecting bulls and females into the future.

The Grazing BMP Program was proud to be the major sponsor of the inaugural event. DAF Grazing BMP coordinator Jo Gangemi said DAF and Grazing BMP were pleased to provide support for a local event.

"The event was an excellent opportunity to highlight the linkages between extension services and production outcomes," Jo said.

"DAF is proud to support NBP events and recognises that events such as these are an integral part of our industry".

Planning is already underway for next year's event to be held in Charters Towers on 7-8 June 2019. The committee is set to introduce a commercial cattle competition into next year's expo. Work will continue over the next 12 months to grow the trade display, and attract new innovative demonstrations and keynote speakers, and once again an impressive line of cattle in the commercial cattle competition. Visit nbpe.com.au to keep up to date with the 2019 Northern Beef Producers Expo plans.



Rea Family, Lisgar with winning pens in Class 1 Pen of 5 bullocks and Class 2 Single Bullock.



Grazing essentials: Loading ramps, fences, watering points and the FutureBeef website

OBE Organic sustainability adviser

Chris Cosgrove is one of the thousands in the Australian grazing industry who use the FutureBeef website as a go-to tool for information.

Chris said companies like OBE Organic, a world leader in supplying organic beef to consumers across the globe, had a commitment to continual improvement and best practice.

The FutureBeef website provides essential information that graziers can apply to boost the performance of their enterprises—creating more jobs, and more opportunities, for regional and rural economies.

“The grazing industry needs to continue to improve its productivity and to meet the expectations of stakeholders at the same time,” Chris said.



Chris Cosgrove, OBE Organic.

Since its inception in 2012, the FutureBeef website has provided Australia's grazing industry with a link to the latest scientific discoveries and research and beef business information. Users can subscribe to a free monthly eBulletin.

There's a calendar of events so graziers can take advantage of field days, workshops and other activities that are occurring in their production area.

FutureBeef is a partnership between the Queensland, Northern Territory and Western Australian governments and MLA. For more information visit futurebeef.com.au.



“The FutureBeef website contains a range of best practice information to do this—from environmental information for grazing land management, to animal welfare, to the people and business aspects of running a successful grazing business.”

Chris has been using the FutureBeef website for more than three years and plans to continue to share the information with OBE's network.

“We use the website to help research best practice, to plan grazier training workshops and, in the future, we want to circulate more information to OBE Organic's producer network by sharing links and fact sheets on OBE's social media platforms,” he said.

Repronomics™ update— enabling more accurate selection

Decisions made when infusing new genetics into a beef cattle herd have long-lasting effects. The ability to accurately select genetics to improve your herd's economically-important traits is essential to increasing productivity and profitability.

The *Repronomics*™ project is a five-year project co-funded by Meat & Livestock Australia (MLA) in northern Australia. The project aims to help breeders produce more suitable bulls, and for buyers to select bulls specific to their breeding objectives. Dr David Johnston from the Animal Genetics and Breeding Unit at the University of New England Armidale leads this large research project.

This collaborative project uses cattle and resources across the Department of Agriculture and Fisheries (DAF) Research Stations at Brian Pastures, Gayndah, and Spyglass in Charters Towers. The Northern Territory Department of Primary Industries Douglas Daly Research Station is also used.

The project measures female reproductive performance traits of specifically-bred animals to provide a broad genetic sample of the three most populous tropically-adapted breeds in northern Australia; Brahman, Droughtmasters and Santa Gertrudis. In order to do this, large artificial breeding programs were undertaken using sires that were extensively used in industry herds.

The emphasis of the data collections was on hard-to-measure female reproduction traits such as heifer age at puberty and lactation anoestrous interval, using real-time ultrasound scanning of the animal's reproductive system. Many other measurements were taken including birth weights, growth and ultrasound carcass traits.

The male progeny are steered and purchased by the Australian Brahman Breeders Association, the Droughtmaster

Stud Breeders Society of Australia and a consortium of Santa Gertrudis breeders. These animals are backgrounded, finished, processed and measured for carcase and meat quality traits including intramuscular fat and shear force.

DNA was extracted and high-density genotyping was undertaken for all project animals and large numbers of industry sires in the three breeds to associate the performance data with the genomic profiles. This combination of actual performance information and the genetic makeup underpins the ability to estimate an animal's genetic breeding value earlier in life i.e. before the animal has any performance data of its own. This allows a more accurate description of their genetic merit for a raft of traits prior to selection.

To date, the project has produced over 5000 progeny from approximately 300 industry sires, building a substantial critical mass of precision phenotypes to help in better describing the genetic component influencing an animal's productivity and performance.

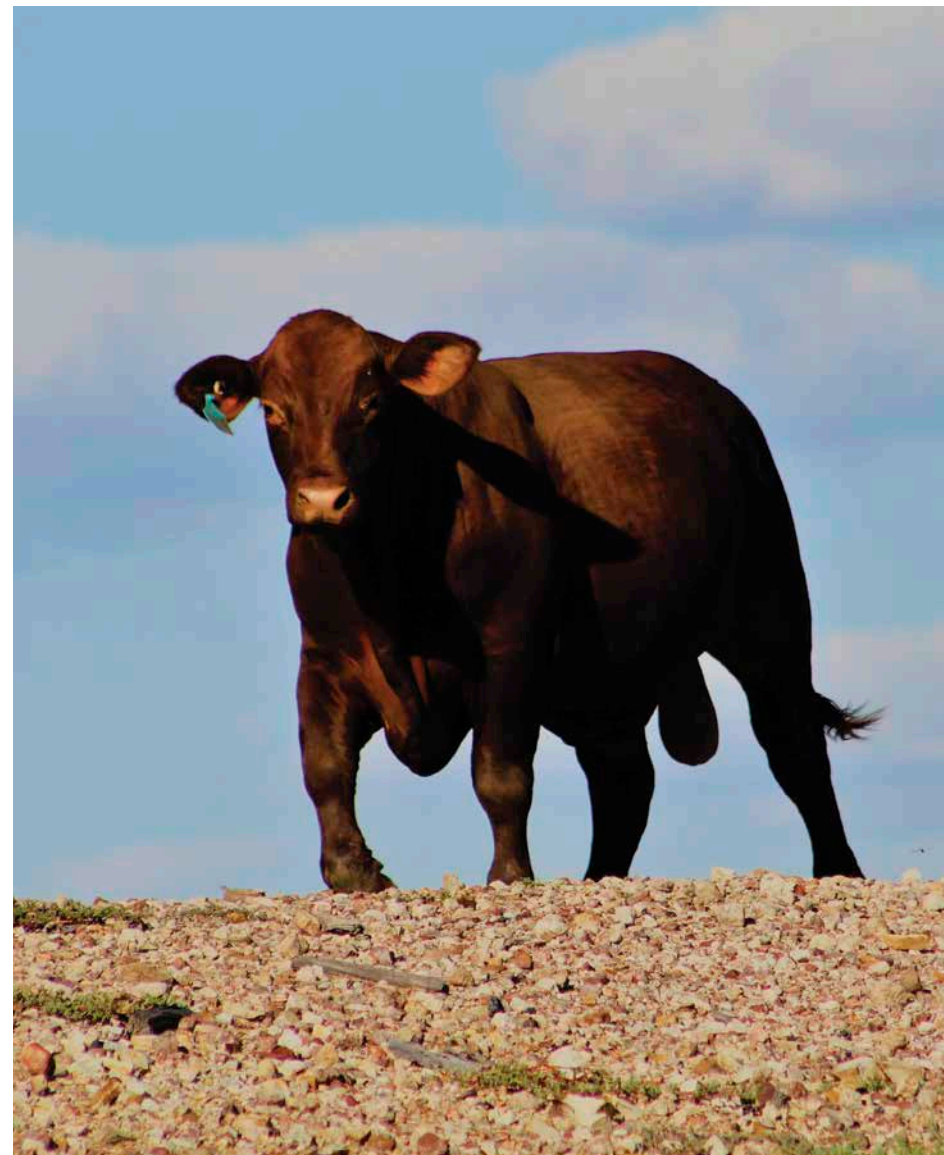
The information generated from this project is being delivered to industry through BREEDPLAN estimated breeding values (EBVs) and is helping to underpin the new genomic analysis known as 'single-step' and will assist in the development of across-breed EBVs.

If you'd like to learn more about the *Repronomics*™ project, come along to the MLA Beef Up Forum at Spyglass on Friday 7 September. For registration details contact Barb Bishop on 0408 999 009 or barbara@barbarabishop.com.au. For program information visit mla.com.au/events or contact the Charters Towers DAF office on (07) 4761 5150.

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Using BREEDPLAN to select better bulls



BREEDPLAN is a genetic evaluation system for beef cattle that provides estimated breeding values (EBVs) for a range of economically important traits such as fertility, weight and carcass.

What exactly is an EBV?

An EBV describes the genetics of an animal independent of the environment, so it's a measure of genetic merit for each trait. EBVs are calculated using pedigree and performance data supplied by beef producers using BREEDPLAN technology. EBVs are expressed as the difference between an individual animal's genetics compared to a historic benchmark group of animals (the base). EBVs can only be compared within a breed, as each breed is genetically evaluated separately and each evaluation compares animals to a separate base.

EBVs are reported in the actual units in which the measurements are taken (e.g. kilograms for weight). The current BREEDPLAN EBVs available are:

- fertility and calving traits—scrotal size, days to calving, gestation length and calving ease
- weight traits—birth weight, 200 day milk, 200/400/600 day growth and mature cow weight
- carcass traits—eye muscle area, rib and rump fat depth, intramuscular fat, carcass weight and retail beef yield
- other traits – docility, flight time, structural soundness and net feed intake.

EBVs can be used to estimate the expected difference in the genetics of two bulls. The expected difference equates to half the difference in the EBVs of the animals, all other things being equal (e.g. they are joined to the same animals). For example, in comparing two bulls, Bull A with an EBV for 600-day weight of

+40 kg and Bull B with an EBV of +10 kg for the same trait, the difference in their EBV is 30 kg. As a result, the progeny of Bull A would be expected to be 15 kg heavier than those of Bull B at 600 days of age (the expected difference is halved as the sire only contributes half the genetics). The EBV should always be compared with the current breed average for that year group.

An accuracy figure is supplied with each EBV on BREEDPLAN. The figure provides an indication of the amount of information that has been used in the calculation of that EBV. The higher the accuracy, the more likely the EBV is to predict the animal's true breeding value. And it lowers the likelihood of change in the animal's EBV as more information is analysed for that animal, its progeny, or its relatives.

BREEDPLAN evaluations are conducted by 27 Australian breed societies. However, not all EBV traits are available for every breed, so check with your breed society.

Why use BREEDPLAN? Some potential benefits include:

- Make accurate genetic selection decisions for your herd by:
 - EBVs adjusting for non-genetic effects that can mask your ability to see an animal's genotype (genetics)
 - EBVs providing an indication of genetics for traits such as fertility, which can't be seen by looking at an animal
 - EBVs taking into account the trait heritability and correlations between traits. Heritability is the extent to which the trait can be passed onto offspring. Correlation describes the interaction between traits (e.g. high growth is correlated with high birth weights, therefore 600 day weight EBVs feed back into birth weight EBVs. Traits can be positively or negatively correlated).
- EBVs allow you to directly compare animals in different herds and environments.
- Benchmark the genetics of your animals against the entire breed and the breed average.

For detailed information on BREEDPLAN and performance recording visit breedplan.une.edu.au. A helpful booklet to download is *BREEDPLAN: A guide to getting started*.

Tropical Beef Technology Services tbt.une.edu.au provides free advice and has webinars explaining BREEDPLAN on YouTube. Visit youtube.com and search for 'sbtstbts'.

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Buying better bulls

Choosing your bull is an important task, with many things to consider before purchasing one. A single bull's genetics has the ability to influence the long-term performance of your herd with more than 80 per cent of potential improvement in commercial herds coming from the bull in comparison to the female.

The appearance and performance of a bull is a combination of its genetics plus a range of non-genetic influences. Whether you are selecting bulls from an auction, a sale, or from within your own breeding program, there are a number of things to consider such as:

- the environment in which the bull has been raised
- whether the bull has been supplementary fed
- how the bull has been managed
- the bull's health and vaccination status
- whether the bull has previously been sick or injured
- the age of the bull
- whether the bull was reared by a mature cow or a maiden heifer
- whether the bull has been fighting excessively or has been bullied
- whether the bull has been previously joined.

It's important to develop a clearly defined plan of what you want to achieve by setting clear breeding objectives before considering decisions regarding bull selection. You should consider aspects such as the relative economic importance of different traits, future customer/market requirements, future herd production targets, current herd performance and breed suitability for your country type.

You want a bull that's going to lift current herd performance and in line with your breeding goals and selection criteria.

Some studs will have estimated breeding values (EBVs) available for their bulls on the breeds BREEDPLAN database. EBVs are calculated using the animal's own performance, the performance of known relatives, the heritability of each trait, and the relationship between the different traits. EBVs are a useful tool for determining the genetic



John Bertram and Alan Laing collecting semen for testing.

potential of a bull and can be used to reach your breeding objectives faster.

It's also important that all bulls used within a breeding program are sound and capable of getting their allocation of cows in calf within a given time frame. It's important to focus on components that will adversely affect the function of the bull, and avoid the distraction of aesthetic features, when evaluating bulls for soundness.

The recommended procedure for evaluating bulls is the Veterinary Bull Breeding Soundness Evaluation (VBBSE) as developed by the Australian Cattle Veterinarians. When buying a bull it's important to be familiar with, and seek, the Australian Cattle Veterinarians (ACV) BULLCHECK® Certificate of approval.

A full VBBSE assessment of an animal provides an indication of likely fertility and potential soundness in a normal mating situation. It involves assessment by a veterinarian of each of the following components:

- Checking a bull's overall structure including legs, feet, and external reproductive organs that are free from defects.

- Assessing the sheath, scrotum and testicles.
- Measuring and recording scrotal circumference to ensure it is within the acceptable limits.
- Palpating of the testicles to check for normal tone, size and function.
- Collecting a semen sample for microscopic examination to assess the quality and percentage of normal sperm.
- Laboratory examination of sperm morphology.

Always ask for semen morphology data. While most bull breeders will now provide you with motility data, unless the semen is normal (morphology) and can fertilise the egg, motility is of little use. As a guide, it is best to purchase animals with a per cent normal of 70 per cent or above to ensure optimal fertility in both the bull and subsequent progeny.

It's recommended a VBBSE of all breeding bulls is conducted each year to identify any that may have developed conditions that could affect their ability to produce calves. This should be carried out 6-8 weeks prior

to mating or before the main breeding season to allow enough time for bulls with low semen quality to be re-tested and/or replacement bulls to be found.

The failure of a bull to reproduce can be an expensive exercise because of production losses. The BullPower project found the most frequent problem was sub-fertility where 58 per cent of bulls sired less than 10 per cent of calves. This meant the majority of bulls did not contribute significantly to the herd reproductive rate. Therefore, it pays to know what your bulls are capable of before they go out into the paddock.

Use a combination of visual appraisal and data to make your bull selection where possible as using one or the other alone is undesirable.

For more information on bull selection and fertility head to the FutureBeef website: futurebeef.com.au/knowledge-centre/breeding-and-genetics.

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