# Spring heralds calving and branding around the corner

## Get on top of ticks before they become a problem for your operation

WELCOME to CQ BEEF Issue 22.

It's springtime and calving time! Branding is just around the corner, so make it one of your aims to compare your branding rate to your expected calf drop from your pregnancy testing results. Having an idea of the losses from pregnancy testing to branding is valuable information. A difference of more than 10 percent may indicate disease or management problems in your herd.

Springtime is also an opportunity to get on top of ticks as they emerge after winter. Getting on top of ticks now can save you unnecessary treatments and save thousands of dollars on chemical, mustering and labour.

Contact your local Biosecurity officer on 13 25 23 to discuss tick control strategies.

You may also be about to buy your business some bulls. Mackay based DAFF Beef Extension Officer Jim Fletcher goes through some of the tools available to help you select some profit driving bulls on page 33.

Central Queensland has recently hosted Breeding EDGE, Business EDGE and Nutrition EDGE workshops. Meat and Livestock Australia's EDGEnetwork suite of workshops aims to address key profit drivers and opportunities for beef businesses.

Analysing pasture quality through faecal Near Infrared Spectroscopy (NIRS) technology and feeding hay to keep the rumen bugs alive when cattle are left in the yards overnight, are just two of the many things participants from the Emerald Nutrition EDGE course will be doing as a result of attending the workshop.

Understanding lick labels, having an idea of what to ask for when developing supplements and gaining some knowledge of animal nutritional requirements will also give an 'EDGE' to those businesses whose owners or staff participated.

Biloela's Breeding EDGE graduates will be buying better bulls this year, as they now have a much better understanding of how Estimated Breeding Value's (EBV's) work. The group have also identified important breeding objectives and the heritable traits that will help them achieve them.

There has also been some work generated for local vets who will likely be called up to make sure bulls in the paddock pass a Breeding Bull Soundness Evaluation (BBSE) before the breeding season.

– Picture: SARAH COULTON

The Rockhampton Business EDGE workshop in August attracted 24 people. Ian McLean of Bush AgriBusiness ran the workshop and tells me participants left at the end of the two days excited to go home and understand their business and its performance in a new way. The workshop covered key business information, and looked at how some of the key production aspects of the business (covered in other EDGE packages) correspond to the overall business result.

The workshop also covers what is required for beef businesses to be economically sustainable and able to fund the needs of it owners in the future.

The MLA EDGEnetwork branded workshops also includes Grazing Land Management EDGE.

If you're interested in any of the EDGE workshops, please contact me to be added to our 'expressions of interest' list.

If you need help with water infrastructure rebates, freight on fodder rebates or any of the other measures from the Drought Relief Assistance Scheme, your best contacts are Ken Murphy (07 49 236 237) and myself (07 49 837 467).

*Byrony Daniels*
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# Dry season supplementation

## How to carefully manage your feeding regime for cost effective results

IN many areas of central Queensland, seasonal conditions are poor due to low summer rains and severe frosts in July.

The frosts caused a very rapid decline in feed quality and many properties are now feeding large quantities of supplements at considerable cost.

The cost of feeding in recent years has risen sharply due to increases in the cost of products such as molasses, grain, protein meals and whole cottonseed.

Supplementation can be a valuable tool for maintaining cattle condition but it needs to be carefully managed for a cost effective result.

### CATTLE NEED GRASS

Cattle production relies on the ability of cattle to utilise poor quality pasture. Supplying non-protein nitrogen to help cattle utilise poor quality grass is relatively easy and cheap, but supplying large amounts of energy, because pasture is limiting is very expensive and the grazing pressure is detrimental to pastures and land condition (Table 1).

### MANAGE BREEDER BODY CONDITION

The marked increase in nutrient requirements of cows once they calve at the end of the dry season presents an annual nutritional challenge (Table 2). Dry season protein supplements can usually only minimise weight loss on late dry season pastures.

Because supplying large amounts of energy is uneconomic, breeders require body condition reserves breeders to handle the period from late pregnancy to the seasonal break. Breeders need to be in store condition or better (Body condition score 3+) at calving.

Controlled mating is a valuable strategy because it prevents cows calving too soon and enables calves to be weaned before feed quality declines too much. In year round mated herds, the timing of musters is critical to reduce the number of cows lactating in the dry season.

Early weaning is a proven strategy for managing breeder body condition and ensuring future performance as it reduces a breeder's energy requirements by 30-50 per cent.

Feeding large amounts of high cost supplement to lactating cows which could be weaned is costly. Supplying the extra 30 MJ of ME that a lactating 450 kg cow needs using the feeds shown in Table 1 will cost $22-$50 per month.

| Feed | Cost ($/t) | Energy MJ ME/kg | Intake to supply 10 MJ ME/day (kg/day) | Cost to supply 10 MJ ME/day ($/month) |
|---|---|---|---|---|
| M8U | 218 | 8.9 | 1.12 | 7.35 |
| Whole cottonseed | 450 | 14 | 0.71 | 9.64 |
| Copra meal | 750 | 13.5 | 0.74 | 16.67 |

Analysis on an as is basis

TABLE 1 - Cost of supplying 20% of a 450kg dry early pregnant breeder's energy requirements (10 MJ ME per day).

| Month | Pasture crude protein (%) | Pasture digestibility (%) | ME intake (MJ/day) | Protein intake (g/day) |
|---|---|---|---|---|
| Nov | 5 | 50 | 44 | 340 |
| Feb | 9 | 60 | 85 | 900 |
| | | | | |
| Nutrient requirements | | | ME (MJ/day) | Protein (g/day) |
| Dry early pregnant | | | 50 | 390 |
| Lactating with calf to 4 months | | | 80 | 911 |

ME = Metabolisable energy

TABLE 2 - Pasture quality in February and November and nutrient requirements for a 450 kg breeder.

**KEY POINTS**

- Cattle need grass, use supplementary feeding to help them utilise poor quality grass not replace it.
- The energy requirements of breeders lactating late in the dry works are so high they cannot be met with supplements. Breeders require adequate body condition to handle the period from calving to the seasonal break.
- Stocking rates and weaning are the most important tools for managing breeder body condition.
- It is critical to know what different supplements can achieve e.g. dry season protein supplements such as lick, roller drums and commercial liquid mixes can supply protein but minimal energy.
- Supplements can be compared on the basis of intakes and cost to supply a particular level of nutrients e.g. 150 g protein/day or 20 MJ metabolisable energy (ME)/day.
- Palatability and intake management must be considered along with ease of handling when choosing supplements. If intake cannot be controlled an apparently cheap supplement can become very dear.

### WHAT CAN A SUPPLEMENT ACHIEVE

Commonly used dry season supplements eg. roller mixes, commercial liquid supplements, lick and blocks are potentially good protein supplements but contain very little energy (Table 3).

Animals cannot physically consume sufficient to achieve a useful energy intake.

To supply a useful quantity of energy, high energy feeds such as protein meals, whole cottonseed, fortified molasses or high grain mixes are required.

### SUPPLEMENT CHOICE

Factors to be considered in choosing a supplement are:

- Class of animal and target intakes
- Composition and cost of supplement
- Ease of management.

#### Class of animal and target intake

The target protein intake for dry season supplementation of breeders is 150 g/day and for growing cattle 75 g/day.

Where breeders are fed high energy supplements due to poor seasonal conditions, 20 MJ ME/day is an appropriate target.

Weaners under 160 kg require a palatable high energy and true protein supplement such as:

| Feed | CP % | ME MJ/kg |
|---|---|---|
| Roller drum mix (1U:4M:10W) | 21.6 | 2.7 |
| Commercial liquid supplement | 20.0 | 3.8 |
| 30% urea block | 86.0 | 0.0 |
| 30% urea lick | 103.2 | 1.1 |
| Copra meal | 21.0 | 13.5 |
| Whole cottonseed | 24.0 | 14.0 |
| M8U | 25.0 | 8.9 |

CP = Crude Protein ME = Metabolisable energy
Analysis on an as is basis

TABLE 3 - Protein and metabolisable energy content of some common stock feeds.

| PRODUCT | Cost $/t | CP % | ME MJ/kg | Intake g/hd/day | Cost $/hd/mth |
|---|---|---|---|---|---|
| Roller drum mix (1U:4M:10W) | 160 | 21.6 | 2.7 | 694 | 3.33 |
| Commercial liquid supplement | 160 | 20.0 | 3.8 | 750 | 3.60 |
| 30% urea block | 1,456 | 86.0 | 0.0 | 174 | 7.62 |
| 30% urea lick | 800 | 103.2 | 1.1 | 145 | 3.49 |

CP = Crude Protein ME = Metabolisable energy
Analysis on an as is basis

TABLE 4 - Supplement intakes and costs to supply 150 g protein/day.

| | |
|---|---|
| Weaner meals | 500-1000 g/day |
| Protein meals | 500 g/day |
| Fortified molasses | 1000 g/day. |

#### Composition and cost of supplement

The composition and cost of supplements is used in conjunction with the target intake to identify the most cost effective supplement.

Table 4 shows the intakes required for some common supplements and cost to feed 150g protein/day.

However, the practicality of using a particular supplement must also be considered.

Liquid supplements can appear good value but if intakes cannot be controlled costs will be much higher than expected.

Licks with low urea and high levels of protein meal and or grain can also have intake control problems.

In most situations, the composition of mixes can be adjusted to achieve the desired nutrient intakes at reasonable cost.

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# Cattle and tick fever strategies

## Survey information will help better target research and extension activities

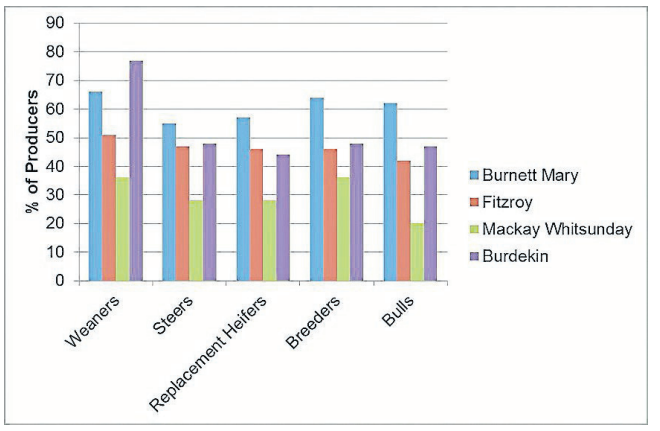


FIGURE 1 - Percentage of producers undertaking tick control in the Burnett Mary, Fitzroy, Mackay Whitsunday and Burdekin regions.

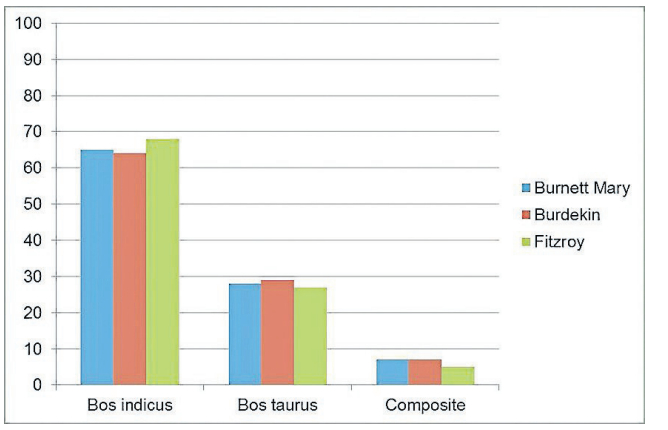


FIGURE 2 - Percentage of producers using Composite, Bos taurus and Bos indicus breed bulls in the Burnett Mary, Fitzroy, Mackay Whitsunday and Burdekin regions.

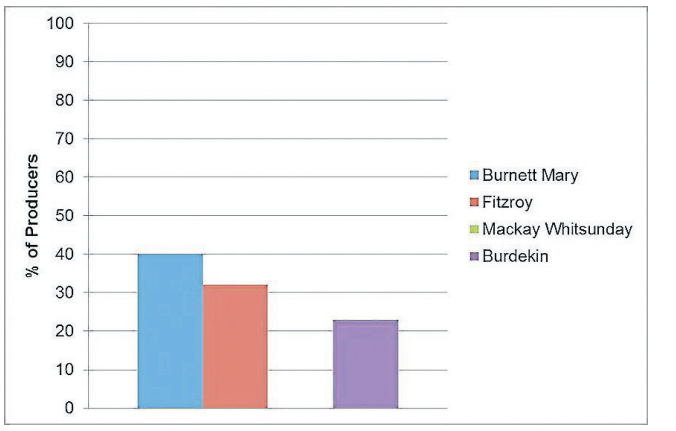


FIGURE 3 - Percentage of producers undertaking key tick fever vaccinations in the Burdekin, Mackay-Whitsunday, Fitzroy and Burnett regions.

TO provide a better understanding of beef industry practices, the Department of Agriculture, Fisheries and Forestry (DAFF) has been surveying beef producers in selected regions. This information will be used to better target research and extension activities. Herd and grazing management information was collected in 2011-2014 from 228 producers in the Burnett Mary, Fitzroy, Mackay-Whitsunday and Burdekin regions. This article covers the cattle tick and tick fever management strategies used by producers.

### CATTLE TICK CONTROL

Survey results showed that tick control treatments were used by a higher proportion of Burnett Mary producers, with 55-65 per cent of producers treating the key classes of livestock (Figure 1). Mackay Whitsunday had the lowest rates of treatment at 20-35pc and Burdekin producers had the highest weaner treatment rate of 77pc. (Figure 1).

Cattle ticks are a serious economic pest of Queensland's cattle industry that can significantly reduce cattle live-weight gain and milk production and can be responsible for transferring Tick Fever. Cattle ticks can be controlled and managed through the use of strategic chemical treatments, tick resistant cattle, pasture spelling or a combination of these. Queensland is divided into three zones to control the movement of cattle to prevent the spread of cattle tick to 'tick free zones' of the state. Under the Stock Act 1915 and the Stock (Cattle Tick) Notice 2005, before entering 'tick free zones' stock must be inspected clean and treated under the supervision of a Biosecurity officer or an approved person.

Queensland's cattle tick endemic (infected) zone includes the coastal areas east of the Great Dividing Range and north of the Great Northern Rail Line. Outbreaks can and do occur in the tick free zones, but are more common in areas adjacent to the endemic zone. Cattle are most at risk of heavy tick infestations when they are first exposed to cattle ticks, but will develop a degree of resistance after repeated exposure. Bos indicus cattle (tropical breeds) and their crosses develop better resistance to cattle tick than do Bos taurus cattle (British and European breeds).

**KEY POINTS**

- 70 per cent of producers were using chemical tick control on cattle.
- Bos indicus breed bulls are still the main breed used but Bos taurus and Composite bulls are a substantial component of the bulls being used.
- With less than 30pc of producers vaccinating their stock for tick fever many herds are at risk of tick fever.

### BEEF BREEDS

The 1970s saw major changes in the composition of the Queensland cattle herd with Bos indicus breeds and crosses replacing British breeds with the change most pronounced in the tick-infested areas of Queensland. European breeds were introduced in the 1970s and have been used extensively in crossbreeding with Bos indicus cattle. The last 10 years has seen many producers reducing the Bos indicus content of their herds by crossing with British and European. This has occurred due to more producers adopting crossbreeding and composite breeding strategies and demands from some store and slaughter cattle markets for lower Bos indicus content cattle. Reduced Bos indicus content will increase the susceptibility of herds to ticks and potentially increase the risk of tick fever.

Survey results showed that Bos indicus bulls are still the predominant breed of bull across all regions (Figure 2). Fitzroy had the highest number of producers using Bos indicus bred bulls at approximately 68pc (Figure 2). Both the Burdekin and Burnett Mary regions also had a significant number of producers using Bos indicus bred bulls in their herds at 64pc and 65pc respectively (Figure 2). The surveys show the substantial use of Bos taurus and Composite bulls in breeding programs across the regions.

### TICK FEVER VACCINE

The survey showed that despite tick fever vaccinations being a long standing recommendation for producers in tick affected regions, less than 40pc of producers were vaccinating the key classes of livestock in the Burnett Mary (Figure 3). The Fitzroy and the Burdekin also had significantly low rates of vaccination at 32pc and 23pc respectively, and Mackay Whitsunday having 0pc (Figure 3).

Calves raised in tick endemic areas that are exposed to tick fever organisms (Babesia bovis, Babesia bigemina and Anaplasma marginale) between three and nine months of age rarely show clinical signs and develop a strong, long-lasting immunity. It is a commonly held belief that cattle born and raised in tick endemic country will be immune to tick fever; and it is common for producers to not vaccinate homebred stock, but only vaccinate introduced stock.

However, the percentage of calves exposed to all three causes of tick fever is generally not high and varies from year to year, so a reasonable proportion of calves may remain susceptible to one or more types of tick fever. This can result in losses if these calves are exposed to tick fever organisms in the future once their calfhood resistance has waned. Most outbreaks occur in non-vaccinated homebred stock and the most common animals affected are those aged 18-36 months, which includes young steers and replacement heifers. In most situations vaccinating young stock with tick fever vaccine will prevent outbreaks and potential stock losses. All cattle raised in tick free areas will be susceptible to tick fever if introduced into tick endemic areas.

Vaccinating (or blooding, as it is also known) stock at weaning will provide lifetime immunity to tick fever. There are 2 forms of tick fever vaccine available: chilled vaccine and frozen vaccine (Combavac 3in1). Both vaccines provide protection against all 3 organisms that cause Tick fever. The chilled vaccine is the most commonly used type for the convenience of having it delivered ready to use. It does however only have a 4 day shelf life and so careful planning is needed before ordering. It can be delivered to most places within 24 hours.

For more remote areas, the frozen vaccine may be a better alternative. It is shipped and stored in a liquid nitrogen tank. It has a long shelf life and can be stored on site until ready to use. This may be preferable where large numbers of animals are to be vaccinated over several days or weeks, and overnight delivery of chilled vaccine is difficult. Frozen vaccine can be thawed out and used as required, but it must be used within 8 hours of thawing.

It is worth mentioning that tick fever vaccination does not mean you can forget about tick control. It is still worth keeping ticks under control to prevent heavy burdens establishing, especially in introduced cattle.

Tick fever vaccines can be ordered through the Tick Fever Centre, your local veterinarian or rural agency by phone or fax.

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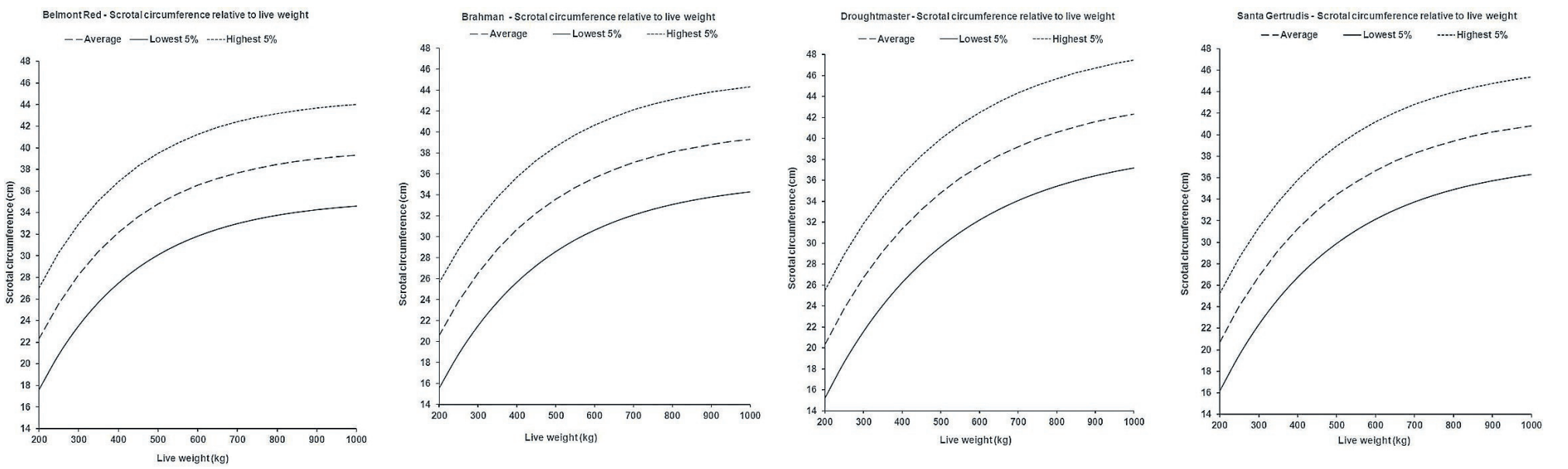
# Bull buying using the tools

## Critical elements to consider when purchasing herd improvers




The normal range for scrotal circumference for the Belmont, Brahman, Droughtmaster and Santa Gertrudas breeds.

IT'S hard to believe that the bull buying season has arrived again. In an article 12 months ago we talked about key findings from the Bullpower and Beef CRC projects.

There are a number of outcomes from these projects that are critical to consider when purchasing herd improvers:

- Sperm morphology of bulls has been shown to be an important premating predictor of calf output of bulls in multiple-sire situations in Bos indicus and Bos indicus cross herds in northern Australia. Per cent normal sperm is heritable and was genetically correlated with lactation anoestrus and the female lifetime reproductive traits in both genotypes. That is, daughters from sires with high per cent normal sperm, cycle sooner after calving and have higher lifetime calving rates.
- Scrotal circumference at 12 months in Brahmans and at six months in Tropical Composites is correlated with heifer age at puberty. That is, larger testicle sires, sire daughters that reach puberty earlier.

The good news is that these elements of bull fertility are able to be identified (measurable), are passed from sire to progeny (heritable) and can contribute significant gains to production (economically important).

The industry now has a suite of useful tools that can help to identify animals that posses these and many other favourable traits.

In this article we will give an overview of just a few of these tools.

### BULL BREEDING SOUNDNESS EVALUATION

Australian Cattle Veterinarians (ACV) developed the Bull Breeding Soundness Evaluation (BBSE), also called the Veterinary Bull Breeding Soundness Evaluation (VBBSE) from the outcomes of the Bullpower project.

The BBSE is not a genetic evaluation of reproductive traits, but an indication of the animal's present reproductive function. The evaluation indicates whether a bull has met a set of standards for key fertility components which indicate whether a bull has a high probability of being fertile. A full BBSE includes a comparison of scrotal size by weight and percentage normal sperm. We can utilize this data to identify bulls at sale and in our own herds that meet the fertility characteristics we require. Utilizing BBSE certified bulls also ensure that we are maximizing calf output per bull for our outlay.

Look for bulls with a sperm morphology test of at least 70 per cent normal sperm to (a) produce more calves from each bull and (b) produce daughters that cycle sooner after calving.

### SCROTAL SIZE GRAPHS

Complementing the BBSE certification is a new list of scrotal size by weight graphs. Contact the authors if you would like copies. Please see example graphs for the Belmont Red, Brahman, Droughtmaster and Santa Gertrudis breeds above.

These graphs give the normal range for scrotal circumference in 13 common breeds of Australian beef bulls. They were established using approximately 260,000 observations of bulls that were mostly within 250-750 kg of live weight and 300-750 days of age.

By combining these graphs with raw sale data we can develop a comparison between bulls for scrotal size that is not impacted by weight or condition.

### BREEDPLAN DATABASE

Breedplan Estimated Breeding Values (EBVs) are the most accurate genetic tool to make long term gain in growth, fertility and carcase traits.

Research has shown female reproduction traits in tropical genotypes are heritable and that genetic progress can be made through selection of sires.

The Breedplan databases that are associated with each breed house a wealth of comparative information on growth, fertility and carcase traits. Below are a couple of extra tools incorporated into the database that can be used to assess potential purchases.

### SALE CATALOGUES

Many breed-specific sales will publish their full sale catalogue on the breedplan database for access by potential buyers. A useful tool to use when looking through these sales data is the sort catalogue option. It allows you to draft animals based on a number of parameters including their origin, sex and poll status but also on a suite of trait descriptors which relate to specific EBVs for growth, fertility and carcase traits. Reducing potentially hundreds of animals available on sale day to the animals that possess the traits you require to meet your breeding objectives.

### DAM HISTORY

Another tool in the toolbox for improving fertility genetics is dam history of any bulls you are considering. An outcome of the Beef CRC is a recommendation to use bulls that are out of dams that have calved by three year old and had at least three calves in a row at the start of their breeding life. Bulls out of dams with lesser calving frequency are likely to sire less fertile progeny.

The calving history of any breed registered bull's dam will be on that breed's database. This is accessible through the online sale catalogues.

If the two year old bull you are looking at is the first calf of a cow, her next calf will be on the breed database. A call or email to the breeder can confirm the dam's pregnancy status for this season's calving. Often this information is in the sale catalogue. This way the dam's three year calving history can be explored. Check what age the dam was when she had her first calf. Bulls from fertile dams are more likely to produce progeny with the fertility genetics we desire.

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