



Grazing BMP self-assessment

Animal production



Self-assessment – Animal production

Good management of animal production is a vital part of managing a grazing enterprise. It is the area of the business that determines the type and number of animals that will be sold thus providing the income for the business. It cannot be managed in isolation from other key areas of grazing land management, business management, soil health, and animal health and welfare.

As with grazing land management, animal production starts with an understanding of your land, its inherent capabilities and its current condition. This will allow you to determine the growth and reproduction levels you can reliably expect from your property. You can then determine the best market/s to aim for and so manage

your whole production system to achieve these targets.

As we all know seasonal conditions have a major bearing on animal production and this may result in us not achieving our target production. Constant monitoring of production, be it growth or reproduction, allows plans to be put in place early to manage any predicted change in production. Whether production is predicted to come in above or below targets, decisions need to be made on how best to manage this change. The decision could be not to make any change but equally it could be to improve nutrition via supplementation to lift growth or reproduction or sell to another market that requires a heavier or lighter animal than your original target market.

Droving bullocks to trucking yards



source S O'Connor

Key area 1 – Land capability and condition

- Understanding land types
- Understanding land capability
- Assessing land condition
- Grazing management

Key area 2 – Markets and marketing

- Market specifications
- Marketing strategy
- Managing production
- Food safety and livestock traceability

Key area 3 – Managing reproduction

- Heifer segregation
- Heifer mating weight
- Breeder body condition
- Breeder herd performance
- Breeder culling
- Bull management
- Fertility diseases

Key area 4 – Managing weaning and weaners

- Weaning facilities
- Weaning preparations
- Weaner segregation
- Weaner nutrition
- Weaner training
- Weaner health
- Post-weaning management

Key area 5 – Managing nutrition

- Production targets
- Understanding nutritional requirements
- Assessing feed supply
- Assessing feed quality
- Managing feed supply
- Monitoring livestock growth
- Managing production

Key area 6 – Genetics

- Breeding objectives
- Breed selection
- Breeding system
- Objective selection
- Avoiding inbreeding
- Breeding program review

Key area 1 – Land capability and condition



Monitoring land condition is critical for animal performance

Understanding land types

With a good understanding of the land types on your property you can assess the level of production you can reasonably expect from each land type. The combination of land types will determine the production system/s the property can sustain.



Land condition will determine the quantity and quality of forage produced

Understanding land capability and land condition

The inherent soil fertility and the current condition of the land within each land type will determine the quantity and nutritional value of the forage the land will produce, and consequently the level of production that can be expected. More information on soils is provided in the Soil Health Module.

Grazing management

Each land type responds differently to seasonal conditions and grazing and this is a critical consideration in grazing and livestock management. Managing land types separately (and where practical fencing to land type) provides greater control and management advantages.

More information on identifying and managing land types is provided in the Grazing Land Management module.

Self-assessment – Land capability and condition

Below industry standard	Industry standard	Above industry standard	Desired standard	Steps required to improve
Understanding land types				
Understanding of the range of land types on your property is limited.	Land types on your property are identified and understood. Mineral deficiencies associated with certain land types that could affect livestock production have been determined.	Industry standard plus: Land types on your property are identified, understood and accurately mapped at the paddock scale.	Industry standard <input type="checkbox"/> Above industry standard <input type="checkbox"/>	1. 2. 3.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Below industry standard	Industry standard	Above industry standard	Desired standard	Steps required to improve
Understanding land capability				
<p>The capability of each land type is not considered in grazing management.</p> <p><input type="checkbox"/></p>	<p>The capability of each land type is considered in grazing management and property development planning.</p> <p><input type="checkbox"/></p>	<p>Industry standard plus: Land capability across the property has been assessed and accurately mapped at the paddock scale.</p> <p><input type="checkbox"/></p>	<p>Industry standard</p> <p><input type="checkbox"/></p> <p>Above industry standard</p> <p><input type="checkbox"/></p>	<p>1.</p> <p>2.</p> <p>3.</p>
Assessing land condition				
<p>Land condition has not been assessed.</p> <p><input type="checkbox"/></p>	<p>Land condition in grazing paddocks is assessed annually. Findings and management history are recorded.</p> <p><input type="checkbox"/></p>	<p>Land condition in grazing paddocks is assessed annually using photo monitoring sites and documented for all major land types.</p> <p>Where available and appropriate remote sensing technology is used to monitor long term trends in ground cover.</p> <p><input type="checkbox"/></p>	<p>Industry standard</p> <p><input type="checkbox"/></p> <p>Above industry standard</p> <p><input type="checkbox"/></p>	<p>1.</p> <p>2.</p> <p>3.</p>
Grazing management				
<p>Land type or land condition are not considered in grazing management.</p> <p><input type="checkbox"/></p>	<p>Land type and condition are taken into consideration when planning grazing management.</p> <p><input type="checkbox"/></p>	<p>Where practical paddocks are fenced to land type and a specific management plan has been set up for each paddock.</p> <p>The land condition in each paddock is a major consideration in planning grazing management.</p> <p><input type="checkbox"/></p>	<p>Industry standard</p> <p><input type="checkbox"/></p> <p>Above industry standard</p> <p><input type="checkbox"/></p>	<p>1.</p> <p>2.</p> <p>3.</p>

Key area 2 – Markets and marketing



Japanese Ox bullock



Domestic trade heifers

Targeting the highest price for cattle does not always equate to maximum business profitability.

Determining the market/s that will give you the best return requires an understanding of:

- the production capability of your property
- the specifications of markets available to you
- the selling options available
- the potential net return from each market, including the variability in returns over a year and from year to year
- the sustainability of each market, such as whether it is a long term market or a short term opportunity.

Market specifications

Markets usually set a tight range of specifications on the carcasses they will accept or for which a premium price will be paid. Even within a market, say for the Japanese Ox trade, specifications can vary between processors.

Market specifications usually cover age, weight (live or carcass), fat cover and sex. They may also include breed, feeding and use of hormonal growth promotants.

Marketing strategy

Cattle are principally sold directly to the purchaser or through the auction system, either in the saleyards or via computer. Selling costs vary considerably between systems and need to be taken into account when deciding how to sell your cattle.

For slaughter cattle, the net return is usually better when selling direct to the processor, but the auction system often provides the best return for store cattle. The returns for particular classes of cattle can vary considerably between saleyards.

Managing production

Once you have determined the market/s you plan to target, the production system will need to be tailored to produce cattle that have the best opportunity of meeting the required specifications.

Sale information will indicate how well your cattle are meeting the target specifications. If a high percentage of animals are not meeting target specifications you may have to change the production system or consider targeting a more appropriate market.

Even under the best management some animals will not meet target specifications. Often the cost associated with trying to make all animals reach target specification is greater than the extra returns achieved.

Food safety and livestock traceability

Livestock traceability is critical to the integrity of Australian red meat products in the market place. The Livestock Production Assurance (LPA) program is the Australian livestock industry's on-farm food safety program.

LPA covers on-farm practices in five key areas:

1. Property risk assessments to minimise the risk of livestock being exposed to persistent chemicals.
2. Safe and responsible animal treatments to minimise the risks of chemical residues and physical hazards.
3. Stock foods, fodder crops, grain and pasture treatments to minimise exposure of livestock to foods containing unacceptable chemical contamination and guarantee livestock are not fed animal products.
4. Preparation for dispatch of livestock to ensure livestock are fit for transport and minimise the risk of stress and contamination of livestock during assembly and transport.
5. Livestock transactions and movements to ensure traceability with respect to treatments or exposure to food safety hazards for all livestock movements.

The *LPA National Vendor Declaration (LPA NVD)* is the main document behind Australia's meat and livestock food safety reputation. When an LPA NVD is signed, the

producer is sharing information on livestock history and declaring compliance with all LPA requirements. It enables important information regarding livestock history to be transferred through the supply chain.

The *National Livestock Identification System (NLIS)* is Australia's system for identification and traceability of livestock. LPA and NLIS work together to provide assurance to customers and consumers.

To comply with NLIS requirements, all cattle owners need to:

1. Register their property as a place where cattle are kept. This will result in a Property Identification Code (PIC).
2. Create an account on the NLIS database, linked to their PIC or PICs.
3. Identify any cattle with an NLIS device prior to moving them from that PIC to any other PIC.
4. Ensure that any cattle received onto their PIC/s are transferred on the database.

Self-assessment – Markets and marketing

Below industry standard	Industry standard	Above industry standard	Desired standard	Steps required to improve
Market specifications are not understood or considered.	Market specifications are understood and considered in making marketing decisions.	Industry standard plus: Sales data is analysed to assess compliance with market specifications.	Industry standard	1.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2.
			Above industry standard	3.
			<input type="checkbox"/>	

Below industry standard	Industry standard	Above industry standard	Desired standard	Steps required to improve
Marketing strategy				
The same selling method (and location) is used every year without consideration of other options.	The potential returns and selling costs for a range of markets and selling options are considered prior to each sale.	Industry standard plus: Returns and selling costs are reviewed after each sale and considered when planning future sales.	Industry standard <input type="checkbox"/>	1.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Above industry standard <input type="checkbox"/>	2.
				3.
Managing production				
Production is not managed to meet identified market specifications.	Production decisions are guided by the specifications of target market/s.	Market compliance and sales returns data is used to guide production management decisions.	Industry standard <input type="checkbox"/>	1.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Above industry standard <input type="checkbox"/>	2.
				3.
Food safety and livestock traceability				
LPA and NLIS requirements are not known and/or complied with.	LPA and NLIS requirements are known and complied with.		Industry standard <input type="checkbox"/>	1.
<input type="checkbox"/>	<input type="checkbox"/>		Above industry standard <input type="checkbox"/>	2.
				3.

Key area 3 – Reproduction



Breeder performance is the key driver of profitability in a livestock breeding enterprise



Cows need to consistently calve each year



Heifers mated at a suitable mating weight will conceive early in the mating season

Reproduction is the key driver of profitability in a livestock breeding enterprise. To achieve high reproductive rates:

- Determine the best time of the year for cows to calve and manage your herd so that most calves are born during this period. This will usually be when pastures are most nutritious.
- Manage heifers from weaning so they grow well enough to conceive early at their first mating.
- Manage body condition of cows so they are in condition score 3 or better at calving to give them the best opportunity of producing a calf every year. Grazing management and time of weaning are the most important factors in managing cow condition.
- Manage sires so that (so far as possible) they are fertile and capable of mating.
- Know about the fertility diseases that can affect breeder performance in your area and implement appropriate preventative measures.
- Implement culling strategies based on performance and age to optimise productivity and sale returns and to reduce mortality.

Heifer management

The age of first mating will vary according to the type of country. Yearling mating (12 to 16 months) is practical on country where high growth rates allow the heifers to achieve a suitable mating weight by this age and

continue to grow well enough to conceive again at their second mating. The factors that determine whether yearling mating is viable are the number of calves weaned by the time the heifers are 3 years old and the losses of both cows and calves.

Heifers mated at a suitable mating weight should conceive early in the mating season. Those that conceive late are less fertile, will be poor breeders for the rest of their lives, and will produce calves with lower fertility. For this reason many producers mate heifers for a shorter time than the older breeding herd to identify the more fertile animals from the start. Allowing maiden heifers 'a second chance' is not recommended because it means less fertile animals are being retained.

Dystocia (calving difficulty) can be a significant problem in heifers. Nutrition and genetics, which influence dystocia occurrence, should be taken into account when selecting and managing heifers.

Heifer segregation

Replacement females that receive targeted management will have the best opportunity to conceive early in their first and second matings. In most breeding herds, cows at their second mating have the lowest conception rates of the age groups. Segregating maiden heifers and running them as a separate mob until after their second mating allows them to be managed so they have the best opportunity to conceive.



Cow body condition is the single most important factor determining conception rates

Heifer growth rates required to achieve a target mating weight of 300 kg, for both yearling and two year old mating, with a range of weaning weights.

The effect of breeder body condition at the end of the dry season on subsequent pregnancy rates of lactating cows.

Heifer mating weight

Breed and post-weaning nutrition influence the weight at which heifers reach puberty. The optimum mating weight is generally between 300 and 340 kg.

Weaning weight 1 May (kg)	Weight gain to reach 300 kg (kg)	Average daily gain required to reach 300 kg (kg/hd/day)	
		Yearling mating 1 Dec (214 days post weaning)	Two year old mating 1 Dec (579 days post weaning)
100	200	0.94	0.35
140	160	0.75	0.28
180	120	0.56	0.21
220	80	0.37	0.14
260	40	0.19	0.07

Breeder body condition

Cow body condition is the single most important factor determining conception rates. Research shows that cows managed to be in body condition 3 or better at calving generally achieve acceptable reconception rates.

Cow body condition at the end of dry season		Expected pregnancy rate in next mating*
BCS (1-5 scale)	Description	
1	Poor	0-25%
2	Backward store	25-50%
3	Store	50-80%
4	Forward store	80-90%
5	Fat	90-95%

* This assumes good nutritional conditions during mating. Rates will be lower under poor seasonal conditions.



Cows with bottle teats should be culled from the herd

Breeder herd performance

The number of calves weaned for the number of cows mated to produce those calves is the best indicator of breeder herd performance. The time between mating and weaning the resultant calf is approximately 18 to 20 months so accurate records need to be kept for this rate to be calculated.

Low weaning rates should be investigated, and again this will be easier to do with accurate and comprehensive records. The stages where losses occur are:

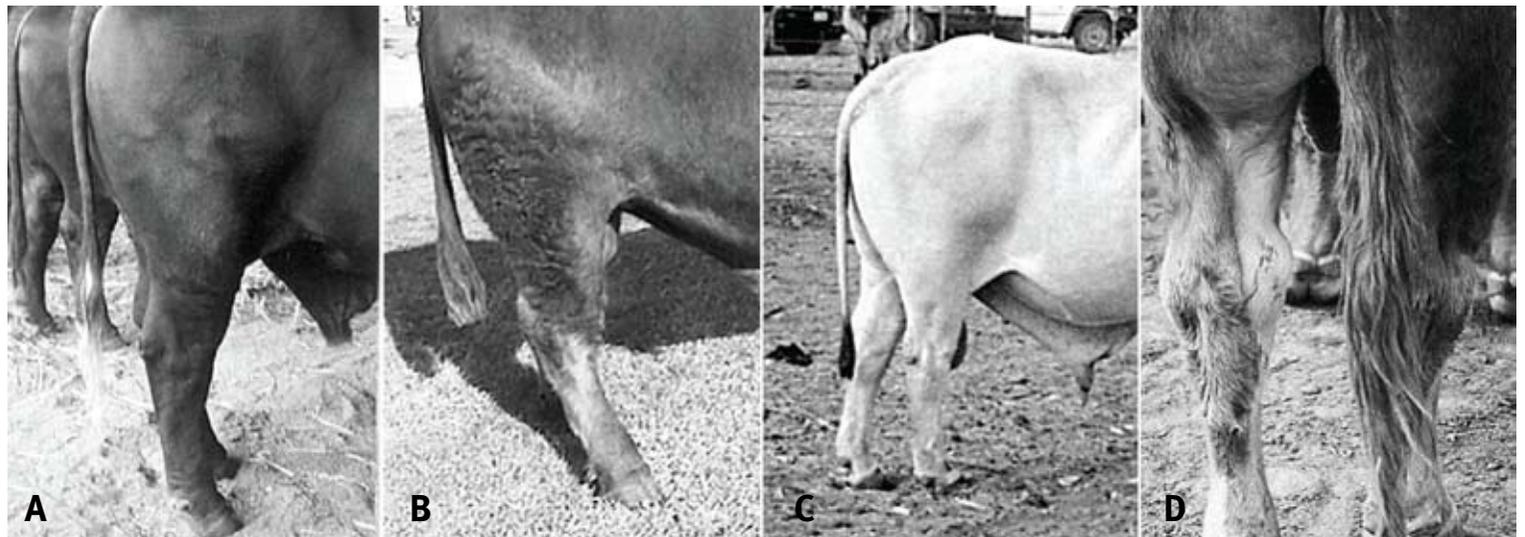
- cow did not conceive
- cow aborted
 - early in the pregnancy
 - late in the pregnancy
- calf died at or near birth
- calf died between birth and branding
- calf died between branding and weaning.

By identifying the stage/s at which losses are occurring, you can identify and target the specific problems contributing to these losses. For example, low conception rates might be being caused by poor cow body condition at joining, whereas abortions might be being caused by fertility diseases.

Breeder culling

Decisions about which breeding females to cull should take into consideration reproductive performance, age, temperament, and soundness. In a herd with good weaning rates, there may be opportunities to cull cows that produce lower quality weaners.

Decisions about culling on age should take into account what the cow is worth, her future earning potential, and her mortality risk. Older cows can be very productive but they are a liability in extended dry seasons and droughts. Mortalities increase significantly in cows



*Hind limb conformation is an essential characteristic that determines the bull's serving ability
A – normal B – sickle hocked C – post leg D – swollen hocks (source Bull selection – Buying better bulls)*

older than 10 years. Also younger females will have the benefit of your recent breeding program and should be genetically superior to older cows. In a drought year, it may be appropriate to reduce the age at which cows are culled to avoid high feeding costs and losses in older cows.

Bull management

The optimal bull percentage for your property will be determined by the size of the mating groups, type of country, and level of supervision during the mating season.

The percentage of bulls to breeders is commonly between 3 and 4%. Research has shown that this percentage can be reduced to 2% if the bulls used have passed a Bull Breeding Soundness Evaluation (BBSE). With fewer bulls needing to be purchased, the budget can be put toward purchasing bulls with superior performance data on desirable traits.

Culling age in bulls will vary according to their physical soundness and the cost of buying replacements. Older bulls are more likely to carry disease, have lower semen quality, and have physical defects which prevent them from mating effectively. Again, due to continuing advances in breeding, younger bulls should be genetically superior to older bulls. It is generally advisable to cull bulls by eight years of age.

Fertility diseases

A range of fertility diseases can infect breeding cattle and reduce weaning rates. Producers need to be aware of the diseases prevalent in your local area, how to recognise the symptoms, and how to manage the herd to reduce the risk or impact of the diseases.

Vibriosis is one of the most common fertility diseases. It is a general recommendation that all bulls be vaccinated against this disease.

Self-assessment –Reproduction

Below industry standard	Industry standard	Above industry standard	Desired standard	Steps required to improve
This key area is not applicable to this property				
<input type="checkbox"/>				
Heifer segregation				
Heifers are not segregated.	Heifers are segregated until after second mating and joined to calve at the optimal time of the year. Replacement heifers are joined for same period as the main breeding herd.	Heifers are segregated until after second mating and joined to calve at the optimal time of the year. Replacement heifers are joined for a shorter period than the main breeder herd so the more fertile animals can be identified.	Industry standard <input type="checkbox"/> Above industry standard <input type="checkbox"/>	1. 2. 3.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Heifer mating weight				
Target weight or age for first mating is not considered.	Replacement heifers are managed to achieve target weight by mating date.	Industry standard plus: Strategic weighing is implemented to monitor heifer growth and guide decisions about grazing management and supplement use.	Industry standard <input type="checkbox"/> Above industry standard <input type="checkbox"/>	1. 2. 3.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Breeder body condition				
Body condition is not assessed or considered.	Grazing management, weaning and supplementation (where cost effective) are used to achieve body condition targets for optimum reproductive performance.		Industry standard <input type="checkbox"/> Above industry standard <input type="checkbox"/>	1. 2. 3.
<input type="checkbox"/>	<input type="checkbox"/>			

Below industry standard	Industry standard	Above industry standard	Desired standard	Steps required to improve
Breeder herd performance				
<p>Breeder herd performance data, i.e. branding/weaning rates, conception rates, and foetal and calf losses, is not accurately measured.</p> <p><input type="checkbox"/></p>	<p>Breeder performance is assessed annually using accurate numbers for cows mated and calves weaned. Accurate conception rates are determined by pregnancy testing. This information is used to guide management decisions.</p> <p><input type="checkbox"/></p>	<p>Industry standard plus: Foetal and calf losses are determined annually using pregnancy test data and weaner numbers. Individual animal performance data is used to guide management decisions.</p> <p><input type="checkbox"/></p>	<p>Industry standard <input type="checkbox"/></p> <p>Above industry standard <input type="checkbox"/></p>	<p>1.</p> <p>2.</p> <p>3.</p>
Breeder culling				
<p>Culling is not done systematically to established criteria.</p> <p><input type="checkbox"/></p>	<p>Breeder culling is based on clear criteria regarding temperament, reproductive performance, age and soundness.</p> <p><input type="checkbox"/></p>	<p>Rigorous culling is based on temperament, reproductive performance, soundness, age and seasonal conditions. Individual animal performance data is used to guide culling decisions.</p> <p><input type="checkbox"/></p>	<p>Industry standard <input type="checkbox"/></p> <p>Above industry standard <input type="checkbox"/></p>	<p>1.</p> <p>2.</p> <p>3.</p>
Bull management				
<p>Breeding soundness, age and body condition are not generally considered when purchasing and managing sires.</p> <p><input type="checkbox"/></p>	<p>Breeding soundness evaluation is used when purchasing replacement sires. No bulls over 7 years old are retained.</p> <p><input type="checkbox"/></p>	<p>Industry standard plus: Where practical annual breeding soundness evaluation testing is conducted.</p> <p><input type="checkbox"/></p>	<p>Industry standard <input type="checkbox"/></p> <p>Above industry standard <input type="checkbox"/></p>	<p>1.</p> <p>2.</p> <p>3.</p>

Below industry standard	Industry standard	Above industry standard	Desired standard	Steps required to improve
Fertility diseases				
<p>Fertility diseases are not considered or tested for. No management strategies have been devised for dealing with fertility diseases and response is ad hoc.</p>	<p>Fertility disease risks are considered and appropriate management strategies are implemented. Investigations are undertaken if pregnancy test results or foetal and calf losses indicate possible disease problems.</p>	<p>Industry standard plus: Pregnancy test results and foetal and calf losses are analysed annually to identify possible disease problems.</p>	<p>Industry standard <input data-bbox="1435 301 1518 368" type="checkbox"/> Above industry standard <input data-bbox="1435 453 1518 520" type="checkbox"/></p>	<p>1. 2. 3.</p>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		



Weaners should be trained in both yards and paddock to ensure they are easy to handle for the rest of their lives.

Key area 4 – Weaning and weaner management

Managing weaning goes hand in hand with managing reproduction. Weaning should be done with the welfare and body condition of the cow in mind coupled with a plan to feed and manage the weaner. Weaning is the most valuable tool available to cattle producers for managing cow condition. Weaning gives the same benefit to a cow as she would get from a supplement of 2 kg of grain or 3 kg of molasses per day.

The age and weight range of calves at weaning will vary according to the inherent fertility of the country and seasonal conditions. On high fertility country calves will usually be over 200 kg and 6 to 8 months old at weaning but on poorer country calves may be regularly weaned down to 100 kg.

In poor seasons calves may be weaned down to 60 kg liveweight. This will reduce the nutritional requirements of the cow and so reduce mortalities and the need for supplementation.

The standard of weaner management must be high if production targets are to be met and the welfare of the calf is not compromised.

Weaning facilities

Adequate facilities in good working order are essential for weaning. These include:

- secure yards with good shade, water and feeding racks and troughs, and adequate space to hold the number of calves to be weaned

- secure weaning paddocks where weaners can be easily monitored following their time in the yard.

Weaning preparation

Good management of the weaning process and the weaners following weaning requires good preparation. Pregnancy testing will enable you to predict the number, age and weight of calves that will be weaned so weaner paddocks can be allocated early and managed to have the best quality pasture available when it is required.

Weaning preparation includes:

- spelling weaner paddocks over summer so that adequate quantities of feed will be available for the weaners
- knowing the number, age and weight range of the calves to be weaned
- determining the quantities of hay and supplements needed and having these on hand when weaning starts
- checking yard and paddock facilities and making any repairs.

Weaner segregation and nutrition

Whereas weaning is done to benefit the cow, the management of the calf following weaning is vitally important for the calf's future production. Provided they are managed well and the available feed is of sufficient quality, calves over 150 kg liveweight can perform satisfactorily with little or no supplementation. However

calves less than 150 kg must be fed and managed well to ensure they gain weight and do not become welfare issues. By drafting calves according to their weight, age and condition, you can manage them appropriately according to their specific nutritional requirements.

Weaner training

As part of the weaning process, weaners should be trained in both yards and paddock to ensure they are easy to handle for the rest of their lives.

Weaner health

Any 'sick' weaners should be treated promptly and appropriately. The stress of weaning can predispose

calves to sickness, particularly coccidiosis. The symptoms of this disease often don't appear for 4 to 6 weeks after weaning by which time damage will be done.

Post-weaning management

Setbacks in the early post-weaning stage can have a bearing on performance for the remainder of the animal's life. Once weaners are put out into the paddock, they should be monitored to verify they are healthy and coming in to water and feed.

Self-assessment – Weaning and weaner management

Below industry standard	Industry standard	Above industry standard	Desired standard	Steps required to improve
This key area is not applicable to this property				
<input type="checkbox"/>				
Weaning facilities				
Facilities required for the effective management of weaners have not been considered or are inadequate.	Appropriate facilities for the efficient management and feeding of the numbers and types (age and weight) of calves to be weaned are available.		Industry standard	1.
No specific paddock is allocated for weaners.	Specific weaner paddocks are nominated and spelled over summer.		<input type="checkbox"/>	2.
	Where necessary, a separate spelled paddock is available for calves weaned later in the year.		Above industry standard	3.
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	

Below industry standard	Industry standard	Above industry standard	Desired standard	Steps required to improve
Weaning preparations				
<p>Planning for weaning, weaner management and nutrition is limited.</p> <p><input type="checkbox"/></p>	<p>Numbers, age and weight range of weaners are assessed prior to weaning.</p> <p>Appropriate plans are put in place for weaning and post weaning management.</p> <p>Supplements and hay are on hand before weaning commences.</p> <p>Yards and equipment are prepared for weaning.</p> <p><input type="checkbox"/></p>	<p>Industry standard plus:</p> <p>Numbers, ages and estimated weight ranges of weaners are assessed using pregnancy testing information.</p> <p><input type="checkbox"/></p>	<p>Industry standard</p> <p><input type="checkbox"/></p> <p>Above industry standard</p> <p><input type="checkbox"/></p>	<p>1.</p> <p>2.</p> <p>3.</p>
Weaner segregation				
<p>Weaners are not drafted, fed and managed according to weight, age and health.</p> <p><input type="checkbox"/></p>	<p>Weaners are drafted, fed and managed according to weight, age and health.</p> <p><input type="checkbox"/></p>	<p>Industry standard plus:</p> <p>Individual identification is used to monitor performance.</p> <p><input type="checkbox"/></p>	<p>Industry standard</p> <p><input type="checkbox"/></p> <p>Above industry standard</p> <p><input type="checkbox"/></p>	<p>1.</p> <p>2.</p> <p>3.</p>
Weaner nutrition				
<p>Understanding of the nutritional requirements of weaners and the consequences of poor nutrition is limited.</p> <p><input type="checkbox"/></p>	<p>Nutritional requirements of different weaner age and size classes are understood and weaners are fed accordingly.</p> <p><input type="checkbox"/></p>	<p>Industry standard plus:</p> <p>Weaner performance and faecal NIRS information is used to guide weaner supplementation and management decisions.</p> <p><input type="checkbox"/></p>	<p>Industry standard</p> <p><input type="checkbox"/></p> <p>Above industry standard</p> <p><input type="checkbox"/></p>	<p>1.</p> <p>2.</p> <p>3.</p>

Below industry standard	Industry standard	Above industry standard	Desired standard	Steps required to improve
Weaning training				
Weaners are not trained in yards and/or paddock. <input type="checkbox"/>	Weaner training program is implemented in yards and paddock. <input type="checkbox"/>		Industry standard <input type="checkbox"/>	1.
			Above industry standard <input type="checkbox"/>	2. 3.
Weaner health				
Weaner health is not systematically planned and managed. <input type="checkbox"/>	Appropriate vaccinations to manage identified disease risks are administered. Treatment for internal parasites is based on visual assessment. Treatment for external parasites is undertaken as appropriate. <input type="checkbox"/>	Industry standard plus: Treatment for internal parasite treatment is based on worm egg count testing. Health issues/treatments are documented as part of a health management program. <input type="checkbox"/>	Industry standard <input type="checkbox"/>	1.
			Above industry standard <input type="checkbox"/>	2. 3.
Post-weaning management				
Monitoring and assessment of weaner performance is limited. <input type="checkbox"/>	Weaner performance (body condition, weight and health) is actively monitored visually. <input type="checkbox"/>	Industry standard plus: Performance and health data are recorded and used for planning and management. Where feasible, weaners are drafted by sex, weight, and breed type into lines for optimum management as growing/finishing animals or replacement breeders. <input type="checkbox"/>	Industry standard <input type="checkbox"/>	1.
			Above industry standard <input type="checkbox"/>	2. 3.

Key area 5 – Nutrition



Understanding the quantity and quality of the feed available is essential for managing land condition and animal production.



Setting production targets allows monitoring progress toward market specifications in terms of weight, fat cover and age.

Production targets

The first step in managing nutrition is to set realistic production targets, and then to set interim targets so that progress can be monitored.

Examples of targets:

- Maiden heifers – a target weight at first mating
- Mature breeders – body condition score of 3 or better at calving
- Sale cattle (steers and cull females) – target market specifications.

Understanding nutritional requirements

To achieve production targets, a working knowledge of the nutritional requirements of different classes of animal for maintenance and various levels of production is needed.

The nutritional requirements for sale cattle will vary according to the growth rate required to meet target market specifications. Lactating breeders and those in late pregnancy have much higher requirements than dry cows in early pregnancy.

Assessing feed supply and quality

A good understanding of the quantity and quality of the pasture available throughout the year is essential for managing pasture condition and animal production. The quantity of feed available at the end of the wet season is generally all that will be available until the season breaks in spring/early summer. It must also be assumed

that the nutritive value of feed will deteriorate as the dry season progresses.

Feed quantity should be assessed at least annually at the end of the growing season so that the number of animals carried through the dry season can be adjusted to match the feed available. This assessment needs to take into consideration a realistic estimate based on long term weather records of when the season will break and phase within the drought cycle.

Feed quality can be estimated accurately by submitting fresh dung from the target group of animals for faecal NIRS (Near Infrared Reflectance Spectroscopy) testing. NIRS results facilitate better decision making than visual assessments of feed quality. SymbioAlliance (<http://205.212.184.33/laboratory-services/customer-services/stockfeed-livestock/2/>) undertakes NIRS testing and reporting for the northern cattle industry.

Managing feed supply

Meeting production targets must be balanced against achieving desired land condition and ground cover targets, and this is managed by adjusting stocking rates to match the quantity of feed available.

By constantly monitoring animal performance and pasture quality and quantity you will be able to determine whether production is on, above or below target, and adjust management – or targets – as needed.

If pasture quantity does not match the demands of the number of stock, stocking rates may need to be adjusted. If pasture quality is below that required for animals to attain production targets, supplementary feeding may be warranted, taking cost effectiveness into consideration.

Monitoring livestock growth

By setting interim production targets, you can monitor progress toward your market specifications in terms of weight, fat cover and age, and make adjustments to nutrition or sale targets early. By using individual growth rates and liveweight of cattle in a mob rather than the mob average, you will be able to select markets for groups within a mob.

Managing production

Effective production management requires an understanding of the variation in the nutritional value of pasture throughout the year and the growth rates that can be reasonably expected during each season of the year.

This information, coupled with constant monitoring of animal performance and pasture quantity and quality, will allow you to assess whether animals are on track to meet target production or whether making adjustments to stocking rate, nutrition or target markets will provide a better outcome for your business.

Hormonal growth promotants (HGP) can be used to boost growth rates by 15–20%. However some markets prohibit their use.

Steer growth rates required to achieve target weights 12 months after weaning

Weaning weight (kg)	320 kg target weight		450 kg target weight	
	Gain (kg)	(kg/day)	Gain (kg)	(kg/day)
100	220	0.60	350	0.96
140	180	0.49	310	0.85
180	140	0.38	270	0.74
220	100	0.27	230	0.63
260	60	0.16	190	0.52

Self-assessment – Nutrition

Below industry standard	Industry standard	Above industry standard	Desired standard	Steps required to improve
Production targets				
Production targets are poorly defined and are not considered in livestock management.	Specific, annual production targets are set.	Seasonal production targets are set. Production targets and plans for achieving targets are documented.	Industry standard	1.
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	2.
			Above industry standard	3.
			<input type="checkbox"/>	

Below industry standard	Industry standard	Above industry standard	Desired standard	Steps required to improve
Understanding nutritional requirements				
<p>Nutritional requirements for different animal types and desired performance are not understood.</p> <p>Nutritional deficiencies are not recognised and managed.</p> <p><input type="checkbox"/></p>	<p>Nutritional requirements for different animal types and desired performance are understood and considered in grazing and livestock management.</p> <p>Nutritional deficiencies are understood and supplementation and other strategies are implemented where appropriate.</p> <p><input type="checkbox"/></p>	<p>Industry standard plus:</p> <p>Animal destination (i.e. growing/finishing or replacement breeders) and production targets are considered when assessing nutritional requirements.</p> <p><input type="checkbox"/></p>	<p>Industry standard</p> <p><input type="checkbox"/></p> <p>Above industry standard</p> <p><input type="checkbox"/></p>	<p>1.</p> <p>2.</p> <p>3.</p>
Assessing feed supply				
<p>Feed supply is assessed only to a limited extent.</p> <p><input type="checkbox"/></p>	<p>Feed supply is assessed visually at the end of the growing season. This assessment and ongoing monitoring are used to guide management.</p> <p><input type="checkbox"/></p>	<p>Forage budgets and/or grazing charts are used to monitor feed supply.</p> <p><input type="checkbox"/></p>	<p>Industry standard</p> <p><input type="checkbox"/></p> <p>Above industry standard</p> <p><input type="checkbox"/></p>	<p>1.</p> <p>2.</p> <p>3.</p>
Assessing feed quality				
<p>Feed quality is assessed only to a limited extent.</p> <p><input type="checkbox"/></p>	<p>Feed quality is assessed using faecal NIRS testing at the end of the growing season and the results are used to guide management decisions.</p> <p><input type="checkbox"/></p>	<p>Strategic faecal NIRS testing is used to monitor feed quality throughout the dry season and the results are used to guide management decisions.</p> <p><input type="checkbox"/></p>	<p>Industry standard</p> <p><input type="checkbox"/></p> <p>Above industry standard</p> <p><input type="checkbox"/></p>	<p>1.</p> <p>2.</p> <p>3.</p>

Below industry standard	Industry standard	Above industry standard	Desired standard	Steps required to improve
Managing feed supply				
<p>Stocking rates are generally not adjusted to available feed and ground cover.</p> <p><input type="checkbox"/></p>	<p>Stocking rates are adjusted to match animal numbers and requirements to feed supply, and to maintain desired ground cover and pasture residue.</p> <p><input type="checkbox"/></p>	<p>Forage budgets and/or grazing charts are used to adjust stock numbers and/or implement other strategies to manage livestock performance and pastures.</p> <p><input type="checkbox"/></p>	<p>Industry standard</p> <p><input type="checkbox"/></p> <p>Above industry standard</p> <p><input type="checkbox"/></p>	<p>1.</p> <p>2.</p> <p>3.</p>
Monitoring livestock growth				
<p>Livestock performance is only assessed visually.</p> <p><input type="checkbox"/></p>	<p>Mob or herd-based performance data are collected and used to guide management decisions.</p> <p><input type="checkbox"/></p>	<p>Individual animal performance data are recorded and used to guide management decisions.</p> <p><input type="checkbox"/></p>	<p>Industry standard</p> <p><input type="checkbox"/></p> <p>Above industry standard</p> <p><input type="checkbox"/></p>	<p>1.</p> <p>2.</p> <p>3.</p>
Managing production				
<p>Management is adjusted only when major seasonal, production or market problems occur.</p> <p><input type="checkbox"/></p>	<p>Action is taken to optimise returns when animal performance is found to be above or below target.</p> <p><input type="checkbox"/></p>	<p>Animal performance is reviewed seasonally and action is taken to optimise returns when animal performance is found to be above or below target.</p> <p><input type="checkbox"/></p>	<p>Industry standard</p> <p><input type="checkbox"/></p> <p>Above industry standard</p> <p><input type="checkbox"/></p>	<p>1.</p> <p>2.</p> <p>3.</p>

Key area 6 – Genetics

Breeding objectives

The first step in planning a balanced breeding program is to establish a clear set of breeding objectives. Breeding objectives are a documented set of targets for what you wish to achieve in your herd, including targets for reproduction, growth and meeting market requirements. Defining the breeding objectives requires a clear measure of the current herd performance (reproduction, growth and carcass) and comparing this with market requirements and the desired levels of performance. Key steps are

- identifying traits of economic importance
- identifying market requirements
- establishing herd production targets
- measure the current herd performance
- identifying breeding goals i.e. traits requiring particular emphasis

Sires have the greatest impact on herd genetics



- developing selection criteria
- prioritising the selection criteria.

To achieve breeding objectives, balanced selection is critical. Consequently a range of Estimated Breeding Values (EBVs) need to be considered to address fertility, growth and carcass traits. BreedObject is a tool for formalising breeding objectives and developing \$Indexes that can help you breed more profitable cattle. BreedObject draws together the BREEDPLAN estimated breeding value (EBV) figures on bulls into a single \$Index, which describes how well bulls suit a particular purpose.

A number of breeds have \$Indexes for market production systems of general relevance to their breed. If you are interested in more than one type of production system, you will be interested in more than one \$Index. Producers can use BreedObject to develop customised \$Indexes for their production system.

More information on BREEDPLAN and BreedObject is available from beef extension officers, consultants and the websites for BREEDPLAN (www.breedplan.une.edu.au) and BreedObject (www.breedobject.com).

Breed selection

A critical consideration is the suitability of the current breed for the environment, production system and target markets. In general the genetic variation within breeds is large and will allow many breeds to compete in a range of markets. The decision about whether to change breeds or crossbreed will be based on an



The benefits of crossbreeding should be considered before embarking on a crossbreeding program.

assessment of whether the changes needed in the current herd traits are so great that it will take too long to achieve by simply selecting better bulls within the existing breed.

It is important to assess the costs and effort required to change breed and identify what risks may arise e.g. reduced adaptability, ease of finishing.

Breeding system

The breeding system impacts on overall property management and its success depends on compatibility with the property and its overall management. Breeding systems can be classified as;

- Straightbreeding where the genotype remains constant
- Crossbreeding
- Composite breeding which involves development of a composite genotype from two or more existing breeds.

Crossbreeding and composite breeding offer improved performance through hybrid vigour and other advantages but their application requires consideration of:

- additional herd management
- cattle control required for management of mating groups
- suitability of crossbred females as replacement breeders
- impact of variation in type and maturity pattern on marketing
- time and cost required to bring the herd into 'equilibrium'.

Objective selection

Regardless of the breed and breeding system used genetic progress relies largely on selection of replacement bulls. Sires impact on herd genetics for up to 15 years. The purchased bulls, or semen need to provide the best value for the financial outlay.

Tools such as BREEDPLAN EBVs and BreedObject provide accurate information on the various production traits of potential sires which will allow you to purchase sires that will improve your herd's performance toward your objectives. EBVs are the best estimate of the genetic potential for a trait. Accuracies that accompany the EBV value indicate how much information has been recorded for a particular animal for the reported trait. As more information is collected the accuracies improve.

Selection of females should follow the same principles as selection of bulls however because we need to select relatively more females the selection pressure applied to females is much less and therefore doesn't have the same influence on genetic improvement. However, selection of productive females is critical for herd performance. For example, selecting heifers that calve early will introduce heifers into the herd that are more likely to be high producers for the rest of their lives i.e. the next 8–10 years.



source G Fletcher
Ensure breeding objectives are determined when introducing new genetics

Avoiding inbreeding

For large herds using a relatively large number of bulls, inbreeding should not be a problem. Using many bulls over a large number of cows reduces the chance of many calves having common ancestors.

Smaller herds can encounter more problems with inbreeding due to the smaller number of sires and dams being used. However, smaller herds may be able to more easily monitor the sire lines being used.

With extensive use of AI and embryo transfer and the popularity of some sires, some breeds are finding that there is a prevalence of a few popular sires. It is wise

when considering bull purchases to review the pedigree of earlier purchases and avoid too many new bulls from the same sire line. Purchasing from more than one seedstock breeder may assist in avoiding inbreeding.

Breeding program review

It is important to regularly review the breeding program and herd performance to identify if changes are required in selection strategies and the breeding program.

Examples of where changes might be required are:

- changes in target markets or market specifications
- managing calving difficulty
- managing mature cow size.

Self-assessment – Genetics

Below industry standard	Industry standard	Above industry standard	Desired standard	Steps required to improve
This key area is not applicable to this property				
<input type="checkbox"/>				
Breeding objectives				
Breeding program and bull selection is not based on clear objectives.	Breeding objectives have been developed using current herd performance and production targets and documented.	Breeding objectives developed using <i>BreedObject</i> or similar software and important traits are recorded.	Industry standard	1.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2.
			Above industry standard	3.
			<input type="checkbox"/>	

Below industry standard	Industry standard	Above industry standard	Desired standard	Steps required to improve
Breed selection				
<p>Breed is chosen on historic or aesthetic preference.</p> <p><input type="checkbox"/></p>	<p>Breeding objectives drive choice of breed or breeds.</p> <p><input type="checkbox"/></p>	<p>Herd performance and market feedback data is used to review herd genetics and guide changes. Specialist advice sought as required.</p> <p><input type="checkbox"/></p>	<p>Industry standard</p> <p><input type="checkbox"/></p> <p>Above industry standard</p> <p><input type="checkbox"/></p>	<p>1.</p> <p>2.</p> <p>3.</p>
Breeding system				
<p>Breeding system i.e. straight breeding, cross breeding not based on clear objectives.</p> <p><input type="checkbox"/></p>	<p>Breeding system i.e. straight breeding, cross breeding developed to meet clear breeding objectives.</p> <p><input type="checkbox"/></p>	<p>Performance of breeding system is reviewed on basis of herd performance and market feedback.</p> <p><input type="checkbox"/></p>	<p>Industry standard</p> <p><input type="checkbox"/></p> <p>Above industry standard</p> <p><input type="checkbox"/></p>	<p>1.</p> <p>2.</p> <p>3.</p>
Objective selection				
<p>Bulls selected on visual appeal.</p> <p><input type="checkbox"/></p>	<p>Bulls selected using appropriate published breed indexes. Where breed indexes are not available a range of EBVs covering the breeding objectives are used.</p> <p><input type="checkbox"/></p>	<p>Bulls chosen using personalised index developed using <i>BreedObject</i> or similar software.</p> <p><input type="checkbox"/></p>	<p>Industry standard</p> <p><input type="checkbox"/></p> <p>Above industry standard</p> <p><input type="checkbox"/></p>	<p>1.</p> <p>2.</p> <p>3.</p>

Below industry standard	Industry standard	Above industry standard	Desired standard	Steps required to improve
Avoiding inbreeding				
No consideration is given to inbreeding.	Risk of inbreeding is considered. If necessary risk is managed by choosing new sire lines or alternating studs.	Records and animal identification are used to identify sire lines. Mating groups are designed with knowledge of sire lines to avoid inbreeding.	Industry standard <input type="checkbox"/>	1.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Above industry standard <input type="checkbox"/>	2.
				3.
Breeding program review				
Breeding program is not reviewed using herd performance data and market feedback.	Herd performance data and market feedback is used to review and refine genetics and breeding strategies used in herd.	Feedback is compared to a 'benchmark' and formally used to review breeding program. Breeding objectives may be reviewed using BreedObject.	Industry standard <input type="checkbox"/>	1.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Above industry standard <input type="checkbox"/>	2.
				3.

References and further reading

Websites

Queensland Department of Agriculture, Fisheries and Forestry: www.daff.qld.gov.au

Department of Agriculture & Food, Western Australia: www.agric.wa.gov.au

New South Wales Department of Primary Industries: <http://www.dpi.nsw.gov.au/>

Meat and Livestock Australia: www.mla.com.au

University of New England, Animal Genetics and Breeding Unit: <http://agbu.une.edu.au/>

Key area 1 – Land capability and condition

Chilcott CR, Sandral CJ, Aisthorpe JL, Paton CJ and McCallum BS (2005) EDGEnetwork Grazing Land Management – Fitzroy Basin Version. Meat and Livestock Australia, Sydney.

Coughlin T, O'Reagain P, Nelson B, Butler B and Burrows D (2008) *Managing for water quality within grazing lands of the Burdekin Catchment – Guidelines for Land Managers*. Burdekin Solutions Ltd. Townsville.

Department of Primary Industries and Fisheries (2008) *Land types of Queensland*. Version 1.2. Prepared by the Grazing Land Management Workshop Team, Department of Primary Industries and Fisheries, Brisbane.

Queensland Department of Primary Industries and Fisheries (2004) *Stocktake: Balancing supply and demand*. Queensland Government, Department of Primary Industries and Fisheries, Brisbane.

Quirk M, McIvor J (2003) *Grazing Land Management: Technical Manual*. Meat and Livestock Australia, Sydney.

Collected references on grazing land management. www.futurebeef.com.au/topics/grazing-land-management/

Key area 2 – Markets and marketing

Tips & Tools The European Union Cattle Accreditation Scheme (EUCAS). Available via: www.mla.com.au/Publications-tools-and-events/Publication-details?pubid=5487

Tips & Tools Meat Standards Australia beef information kit (2011). Available via: www.mla.com.au/Publications-tools-and-events/Publication-details?pubid=6009

www.futurebeef.com.au/topics/markets-and-marketing/

More Beef from Pastures – Module 8: Meeting market specifications. Meat & Livestock Australia. Available via: www.mla.com.au/research-and-development/extension-and-training/more-beef-from-pastures

Livestock Production Assurance Program (LPA)

Risk assessment requirements and process:
[www.mla.com.au/Meat-safety-and-traceability/
Livestock-Production-Assurance/Requirements/
Property-risk-assessments](http://www.mla.com.au/Meat-safety-and-traceability/Livestock-Production-Assurance/Requirements/Property-risk-assessments)

Key area 3 – Reproduction

Heifer management in northern beef herds (2012) T Schatz. Meat & Livestock Australia (MLA), Sydney. Available via: www.mla.com.au/Publications-tools-and-events

Collected references relevant to breeding and genetics.
www.futurebeef.com.au/topics/breeding-and-genetics/

Managing the breeder herd – Practical steps to breeding livestock in northern Australia (2007) MLA. Meat & Livestock Australia (MLA), Sydney. Available via: www.mla.com.au/Publications-tools-and-events

More Beef from Pastures – Module 6: Weaner throughput. Meat & Livestock Australia. Available via: [www.mla.com.au/research-and-development/
extension-and-training/more-beef-from-pastures](http://www.mla.com.au/research-and-development/extension-and-training/more-beef-from-pastures)

Key area 4 – Weaning and weaning management

Weaner management in northern Australia (2012) R Tyler et al.. Meat & Livestock Australia (MLA), Sydney. Available via: www.mla.com.au/Publications-tools-and-events

A guide to best practice husbandry in beef cattle – branding, castration and dehorning (2007) R Newman. Meat & Livestock Australia, Sydney. Available via: www.mla.com.au/Publications-tools-and-events

More Beef from Pastures – Module 6: Weaner throughput. Meat & Livestock Australia. Available via: [www.mla.com.au/research-and-development/
extension-and-training/more-beef-from-pastures](http://www.mla.com.au/research-and-development/extension-and-training/more-beef-from-pastures)

Key area 5 – Nutrition

Collected references relevant to nutrition.
www.futurebeef.com.au/topics/nutrition/

Phosphorus management of beef cattle in northern Australia (2012) D Jackson et.al. Meat & Livestock Australia (MLA), Sydney. Available via: [www.mla.com.
au/Publications-tools-and-events](http://www.mla.com.au/Publications-tools-and-events)

Key area 6 – Genetics

Breeding for profit (1995) J Bertram et al. DPI, Brisbane.

Bull selection (1992) J Bertram et al. DPI, Brisbane.

Beef cattle recording and selection (2000) J Bertram et al. DPI, Brisbane.

Collected references relevant to breeding and genetics.
www.futurebeef.com.au/topics/breeding-and-genetics/

Breedplan: www.breedplan.une.edu.au

BreedObject: www.breedobject.com

More Beef from Pastures – Module 5: Genetics. Meat & Livestock Australia. Available via: [www.mla.com.au/research-and-development/
extension-and-training/more-beef-from-pastures](http://www.mla.com.au/research-and-development/extension-and-training/more-beef-from-pastures)