Breeding for a market

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Buying the right bull

Buying the right bull is a key decision for the future of your beef herd. It's natural to focus on what you can see in the bull, but how important is this for the bottom line?

If you keep your own replacement heifers, buying a bull has very long term implications. What's more, the really important features he contributes are female breeding traits – fertility, calving ease, maternal ability and adaptation to your environment.

Estimated Breeding Values (EBVs) are what they say – estimates of the breeding value of the bull for a range of traits. Some of these are related to what you can see (growth, muscling) but others are even more important but invisible (days to calving, fertility, feed efficiency).

EBVs are not a guarantee of performance, any more than an assessment of two human parents would guarantee the future of their children. Individuals vary, that's biology. But when you average it out, EBVs are very consistent.

The important point is that EBVs are getting more accurate as technology improves.

If your bull works for say three seasons, think of the time span:

- Calves will be born over the next 4-5 years;
- The genetics of your weaners will be 50% influenced by the bull – the first drop at least 18 months away, and the last about 5 years away;
- Your first calvers will be 50% influenced – they start 3-4 years away and will still be entering the herd in 6-7 years;
- The heifers you keep will be cows in your herd for up to 15 years.

Having a clear plan

No-one can predict the future with certainty, but it is important to have a clear plan of where you want your herd to be in the future. Use this plan to guide your bull selection decision.

The plan needs to be based on:

- Market suitability, and
- Low cost, efficient production

Market suitability

Markets will keep changing and it is impossible to know exactly what they will want. Experience tells us that there are some fairly certain common factors:

- A high yield of saleable meat, with minimum waste fat. This means cattle with heavier rather than lighter muscling (avoiding extremes of course). It also means being careful about getting cattle too big and late maturing – they lose versatility and the females may be less efficient.
- Tender meat. Much of the variation in tenderness is determined by how the animals are produced, and how the meat is handled and cooked. For British and European breeds, there is little genetic variation in tenderness so this is a low selection priority. In tropical breeds there is considerable genetic variation, and the technology for improving it has arrived, so selection for tenderness is worth considering.
- A wide range of weight. Markets for beef continually evolve around the availability of livestock, so there will always be a market for your animals. The most economical age and weight to turn off your stock will depend on many factors that need to be assessed locally.
- Feeder cattle. The feedlot industry has been growing steadily and is the major buyer of young stock over most of southern Australia. There are a wide range of feedlot markets looking for cattle with growth potential to grow fast and produce a high yield of saleable meat. Some specialized lines need the ability to marble.
- High quality markets with special requirements (marbling). As Asian markets grow and become more discerning, demand for marbled beef is expected to continue rising. A number of Australian feedlots specialize in these products
- Niche markets with restricted access. In most parts of Australia there are opportunities to supply niche markets at a higher-than-average price. These can be mainstream markets like the European Union (EU), branded products or organic lines. Each has their own requirements for type of cattle, production system and documentation.

Low cost, efficient production

There is plenty of technology to help with breeding decisions. But this technology is not much use unless you know where your herd is now, and where you want it to be. Thinking long term means thinking about future markets and what it will be like in the future for producing breeding cattle and finishing cattle.

Breeding cows will need to be resilient and efficient. Land prices and alternative uses are forcing breeding cattle out of

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the reliable districts into more marginal areas. Climate change may impose extra pressures.

The main ways to cope with this are:

- Crossbreeding, to combine the strengths of two or more breeds. For example a Brahman/British cross cow is much more hardy and productive in marginal conditions in sub tropical areas. This may preclude you from some markets where purebreds are required, but consider the overall gains in productivity.
- Feed efficiency. There are many ways to address this, for example targeting high quality feed to young growing cattle; calving at the best time of year; early weaning; adjusting age and weight of turnoff to use the natural growing season. We now have the EBV technology to identify and select for more feed-efficient cattle within breeds, and this adds another important approach.

Where are you now?

To know exactly what direction to change your herd breeding, it is important to look at the key areas and identify what needs changing. If you sell weaners, how are your calves performing for your customers? Do your cattle produce enough lean meat yield, or marbling, to suit market requirements? Is your herd fertility as good as it can be? How heavy are your yearlings at the end of the growing season?

You can use your own records to analyse some of these areas, but you need market feedback for others. It is vital information for deciding what areas you need to change.

Consider antagonisms

It is well known that improvements in one area can often be at the expense of another. If market feedback indicates you could improve yield by making your steers leaner, be aware that leaner females may not be as hardy and fertile as breeders. The ability to put on fat quickly is an old survival trait, and it is much cheaper if cows store their own energy on their back compared to having to store fodder and feed it out.

A Victorian experiment demonstrated that a cow's ability to store extra fat and use it later in the year was equivalent to half a tonne of grain, or 3 tonnes of silage. If we select for high yielding, leaner steers, we may lose this ability in their sisters.

Many of these antagonisms have been studied and are well known. When BREEDPLAN calculates EBVs, it considers any known relationships between traits. This is also true with the BREEDOBJECT selection index which combines all EBVs into a single dollar value.

The Beef CRC is collating a suite of new information on the relationships between cow body composition and fertility by scanning and recording breeding performance in several large commercial herds.

Crossbreeding

Crossbreeding is far more than utilizing hybrid vigour. By carefully selecting the right breeds and breeding system, you can vastly improve herd efficiency.

For example, it can be used to create moderate sized, feed-efficient cows that rear large, fast-growing progeny. The Brahman/British cross cow on sub-tropical areas is a good example of an efficient, fertile cow that can be joined to a large European or part-European sire to add value to the calves. In this case it is very important to realize that the big heifer calves will look great, but may not be worth keeping as they may be less efficient breeders in your environment compared to their mothers.

An effective crossbreeding program is not as easy to run as straight breeding, but is still quite feasible, even in quite small herds. Some innovative breeders are creating composite breeds for particular situations, with the best combination of breeds already built in. If you have a reliable source of composite bulls, you can enjoy most of the benefits of crossbreeding with the convenience of a single straightbred herd.

Buying bulls

The two main considerations are physical soundness and genetics. The bull is a delivery system for his

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genetics, and he must be sound enough to be able to do so under paddock conditions.

A good way to balance these two vital requirements when looking for a new bull is to get the catalogue before going to the sale and study the EBVs. Use them to develop a short list of bulls that meet your requirements. When you get to the sale, you don't have to check all the bulls for physical soundness and will have more time to relax and socialise.

Visual assessment

Be aware that a bull's physical appearance can mask the true underlying genetics. The heritability of growth rate is moderate at around 30%, but this means that even among groups of young cattle reared together, 70% of the differences you see are due to factors other than genetics. At multi-vendor sales, bulls are often given different preparation, so the problem of deciding how much of the difference is due to genetics is even greater. Remember, the non-genetic factors are not passed on to the progeny.

EBVs are a much better guide to progeny performance, because they estimate the genetic merit of your potential bulls, without the masking effect of the feed and preparation. EBVs also take into account the performance of other relatives, adjusted for how closely related they are. It is a much more powerful piece of knowledge and impossible to replace with a visual judgement. And it's pretty hard to assess the potential productivity of daughters!

Scrotal size is a physical trait that is easy to see in a bull at a sale. Like weight, it will be influenced markedly by nutrition as well as age and breed. EBVs are a much better guide to the true breeding merit.

Crossbreeders often don't worry about using EBVs because the breed effects contributed by each breed, and hybrid vigour, provide the main advantages. If they use EBVs to select more productive bulls in each of the component breeds, they would actually get a much better result. Otherwise, they are missing the opportunity to lift the base by selecting bulls with better performance.

Crossbreeding will give the biggest initial lift in production, but is a one-off event. Buying bulls is part of continuous improvement from wherever you are now.

The quality of EBV information depends on the amount and accuracy of the data as well as accuracy of the BREEDPLAN calculations developed by research. Since BREEDPLAN began, research has used a range of cattle experiments to continually add new traits and improve its accuracy. This remains an on-going process.

Dollar indexes

Once you have decided your breeding objective, and are ready to select your bull, the challenge is to decide which EBVs are relevant and what emphasis to place on each of them. The BREEDOBJECT system has been designed to do this and bring all the EBVs together into a single $ Index Value that represents the combined value of all of them.

The $ Index Value can then be used to pick the bulls that give an overall best combination for your situation. For example, a bull with a $ Index Value of $10 better than another bull would add $5 extra to each of his calves (assuming they were joined to equivalent cows). This advantage includes the value of all traits in both sexes including growth, fertility and carcase, and includes value to all sectors of the supply chain.

To set up an index to match your situation can be quite complicated. But the major breeds have done this for typical herds, markets and production systems in their breed. All you need to do is use the index closest to your production system and your main target market.

Using the index, you can go onto the breed society web site and obtain a list of all the available bulls in order of your preferred index. This is a great way to conduct a preliminary screening of bulls you may consider buying or using by AI.

If the standard indexes are not suitable, you can visit the BREEDOBJECT web site (www.breedobject.com.au) and complete a simple series of questions to design your own index.