



technical brief

“What is the Real Value of a Bull?” Extension Specialist, Bob Freer

One of the mysteries of the beef industry is how a commercial breeder decides the value of a bull at purchase time. Old timers worked on the basis that the value of a bull was equal to a rail truck load of prime bullocks.

This theory doesn't work so well any more.....bullocks aren't trucked by rail any more, partly because bullocks aren't produced much these days and if they were, then the railways don't run much these days anyway. Furthermore, how many bullocks you fitted in the rail truck..... that is if both bullocks and rail trucks were available, depended in what state you loaded them. Clearly, we need a better method to calculate how much a bull is worth paying for.

We need to focus attention on how much a bull is worth, rather than how much the bull may cost – there can be a difference of considerable magnitude if you don't get it right.

The time-honoured method of buying bulls is much like buying cars. Walk around it a few times, kick the hubcaps to show you really know what the job is all about and then try and beat the dealer. At least when buying cars, you are in a position to know the performance specs of the car, you can match that performance profile with your needs and you get the chance to test drive the heap.

Just as buying cars without looking under the bonnet is a fallible skill, so is buying bulls using visual assessment alone. If you don't clearly know whether or not he has the genetics to fix the things you need to fix in your herd, then it becomes a game of chance.

In the early days of Breedplan, the opportunity arose to analyse the objective performance of progeny from bulls that had been purchased into the herd without the prior benefit of objective information on the sires themselves.

The results were surprisingly consistent across all the herds analysed....big herds or small herds, high profile breeders or low profile breeders, the outcome was depressingly similar.

For every four bulls that had been purchased, only one of those four bulls had made a positive contribution to his progeny for the target traits, two of the four bulls maintained the status quo, and one of the four bulls had a negative impact. The end result being that virtually no progress was being made and you had a one in four chance of getting it right.

Next time you visit a surgeon who happens to be a cattle breeder and buys a few bulls, ask him are his surgical skills better than his bull buying skills because you are not prepared to accept a 1:4 chance of him getting it right your time round! Of course we know that surgeons give you better odds than 1:4. Why ?

One surgeon/cattle breeder who was asked to better the odds gave the classic answer. "I have been trained to be a surgeon, I use the latest techniques and update my skills regularly, I get feedback from my clients and insurer and am accountable to a higher authority if I get it wrong. I haven't really been trained to be a bull buyer".

How do we become better bull buyers and get better value for money when buying bulls?

The answer is fairly straight forward...we need to value a bull on the same basis we value a parcel of land, a new tractor or an investment in stocks and shares....return on investment.

There are two dimensions to the value of a bull.

The first dimension is his **salvage value** - what you own at the fall of the hammer, regardless of price paid. That 800kg of bull beef is worth about a \$1 per kg. Your \$5000 purchase is worth around \$800 to you as he stands before you.... and keeps breathing!

Given objective information such as the actual weight of the bull and the schedule price for bull beef, you can fine tune the estimate of his "point of sale" value. He might in fact be worth \$750 or maybe \$850, but the difference won't really get the bank manager off your back.

The second dimension to the value of a bull is his **breeding value** – what he will earn you, through the performance of his progeny. How much more than salvage value he is worth is a function of how much better his breeding value is for the traits that you need to improve are compared to another bull.

Clearly, we don't know the breeding value of a bull that hasn't yet bred any progeny, so we need to estimate his breeding value, which is what we have always tried to do but not necessarily successfully.

How can we estimate a bull's breeding value, with accuracy?

Initially we need to define what it is that will earn us the dollars, then look for genetic traits affecting those objectives that will assist us to make selection decisions.

The breeding value of a bull will be reflected in several ways.

Firstly, the number of progeny that he will sire during his useful life span. The more progeny born, the more calves to sell and the lower the bull's cost per calf.

This is a combination of fertility, largely a function of semen quality; serving ability, largely a function of structural soundness and mobility, and calving ease, a function of birthweight and conformation.

We can objectively assess all of these functional traits. Semen producing ability can be simply evaluated in the field by palpating and measuring the circumference of the scrotum. Research has shown that by avoiding bulls with soft testicles and/or bulls with a scrotal circumference of less than 32 cm significantly reduces your chance of buying a bull of low semen producing ability. To go a step further, bulls can be semen tested, but this is generally not considered a cost effective proposition for young, healthy bulls that have been screened for testicular soundness.

The chance of buying a poor serving bull, or one that is prone to break down at an early age, can be reduced by skilled soundness evaluation, giving particular attention to hind leg structure and straightness, mobility and feet score. To be surer, serving ability can also be objectively assessed by the "Blockey" serving capacity test, which has been shown to have a high correlation between test results and actual paddock performance.

Having assured ourselves that the bull is functionally sound and will produce heaps of calves, the next aspect of assessing the breeding value of a bull is to estimate the relative value of the bull's progeny.

The driving traits here are growth rate, giving us the number of kgs available for sale, and the value per kg. More and more this is becoming a function of meat yield and quality parameters such as tenderness and marbling.

Next, we need to account for the value of the bull's daughters as replacement breeders for the herd. Maternal traits such as milk, weaning weight, calving interval, gestation length and calving ease are important.

However we have a fairly large shopping list and the chance of finding a bull that excels at all those traits is small, and already the animal is most likely out of your price bracket. Compromise now becomes the great leveller.

We need to prioritise traits in order of importance. To do this, you need to know where the production of your herd is falling short of industry benchmarks and market specifications. You need feedback, more feedback, and then some more feedback, something that has been seriously lacking in the Australian beef industry, and the reason why the industry has progressed so slowly in improving carcass quality.

Given useful feedback, you can quickly see the relative value for increasing selection pressure for growth, say as compared to muscling or milk. Without feedback, bull selection has little direction, and will be reflected in the 1:4 outcome as previously mentioned.

Now comes the hard part, estimating the breeding value of a particular bull for the traits that are deemed important.

Again, we need information. If selection decisions are based on differences between individuals, the more we know about those differences, the better will be our decision making.

A problem now emerges..... not all differences that are observed between bulls are inherited by the progeny. Some of the difference is heritable, and is the part that is passed on and some of the difference (usually the larger part) reflects the influence of nutrition or management practices and are not inherited by the progeny.

We need to know how differently the progeny will perform, not how differently their sire's look!

To estimate the breeding value, we have two options.

The first option is to rely on visual assessment, and as already discussed, this is a fallible skill. The other option is to compare bulls on the basis of differences that will be inherited by their progeny.

To do this we need to measure genetic differences by removing environmental influences, adjusting for differences in age and age of dam, and then scaling the result to reflect the heritability of the difference, (some 20-30% for growth traits, around 10% for milk and about 30-40% for most carcass traits) .

By now you have just about run out of puff – too many things to consider, too many unknowns to account for. Or you could look at the Breedplan EBVs for the bull. EBV is an abbreviation for **Estimated Breeding Value**. EBVs are calculated from objective performance information measured on the individual as well as his relatives.

This information is adjusted for differences in age, age of dam, nutrition and management. The information is scaled to reflect the heritability of each trait and is finally expressed in units of product.

If a bull has an EBV for weight at 600 days of +40, that tells us that his breeding value for that trait is 40kg above the breed benchmark. Given that he provides 50% of the genes inherited by his progeny, they are expected to average 20kg more than progeny of a benchmark EBV bull (0).

You can then assign a value to each trait EBV difference between bulls to get an estimate to his relative value.

Sounds easy but when you have up to 17 EBV's for Growth, Fertility, Carcase and Maternal traits to consider, your head gets full before you are part way through the exercise of working out how much emphasis to give to each of the traits.

Fortunately we now have Selection Indexes to make the job easy.

Selection Indexes calculate a single EBV (expressed as dollars earned per cow joined) that calculate the relative emphasis to give each EBV, given the economic value of a unit of improvement for each trait and the genetic value of each trait.

Selection Indexes are breed/market/environment based, so the first thing is to select the Index that best fits your market/environment production system, eg breeding for the Supermarket in a southern temperate environment.

You can then select bulls on the basis of their Supermarket Index value which is an estimate of extra profit/cow joined, you might expect from a bull compared to the breed benchmark.

For more on Shorthorn Selection Indexes, see *Understanding Shorthorn Indexes* or *Key Points – Shorthorn Selection Indexes* on www.shorthorn.com.au .