

Making Money Out of EBVs

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Some cattle breeders use EBVs as a “safety -first policy”. They want to avoid high birth weights (difficult calvings), low milk, poor growth or unacceptable docility. Many breeders use EBVs to improve growth, fertility and carcass traits.

It is possible to put an economic value on most of these EBVs.

Birth Weight EBVs

Use of a high birth weight sire over heifers could cause 20 percent more calving difficulty resulting in ten percent more calf deaths and five percent more cow deaths. If the calves are valued at \$500 of lost production and the cows at \$750 each, the loss per sire of 25 calves is \$2,187. Plus, there is the delayed re-breeding suffered by females that have calving difficulty even if they and the calf survived.

Knowing the genetics for birth weight or calving ease of a particular bull prior to joining can be worth a lot of money to the commercial breeder.

Growth EBVs

Most slaughter cattle are traded on a liveweight basis so the value of extra liveweight is easily calculated.

The following table shows the value of increased sale weight for a range of differences in 400 day weight EBV and number of calves sired if the yearlings are valued at \$1.75 per kg liveweight.

Table 1 The Value of Extra Growth

EBV Difference	Number of calves sired			
	50	100	150	200
10	437	875	1312	1,750
20	1,312	1,750	2,625	3,500
30	1,750	2,625	3,937	5,250

This simple calculation is for a terminal sire and does not allow for change in the mature size and maintenance cost of retained females. It also assumes there is no increase in calving difficulty.

The differences in returns for two sires with 400 day EBVs different by 30 kgs which sire 200 calves each can be as much as \$5,250.

In a self-replacing herd the superior growth genes are retained by the replacement heifers and passed on. All genetic gains are cumulative and permanent in a self-replacing herd.

Milk EBVs

The increased return for higher milk EBVs in a bull is a little more complex to calculate because the extra returns are not realised until the daughters produce calves.

Only half the difference in sire EBVs for milk is passed on to the daughters. The extra returns for a range of differences in EBVs and daughters retained is shown below. It is assumed the daughters produce three calves on average.

Table 2 The Value of Increased Milk

	Number of Daughters Retained			
	20	40	60	80
EBV Difference				
2	60	120	180	240
5	150	300	450	600
10	300	600	900	1200

This simple analysis assumes that there is no decrease in fertility of the higher milking cows and no change in their slaughter weight as cull cows. The potential increase in returns of up to \$1,200 could be quickly eroded by reduced pregnancy rates of the higher milking cows so selection for increased milk EBVs should be handled very carefully. Depending on the average nutritional environment, moderate or even lower milking ability may be desirable to ensure fertility is maintained.

Intramuscular Fat EBVs

Intramuscular fat levels are strongly correlated with the level of marbling in finished cattle. The level of marbling can have a large influence on the value of a carcass targeted at the Japanese B3 market.

The use of a Murray Grey sire with a marbling EBV of +1.5 (top five percent) compared to a sire with an EBV of 0.0 (breed average) would result in 25 percent more carcasses from steer progeny having a marble score of three compared to a score of two.

At slaughter a B3 carcass is conservatively worth around \$50 more than a B2 carcass and that could be up to \$100 for a B4 carcass. The value increases substantially as you move up through the wholesale levels, and again at retail in Japan. The difference in value of 50 steer carcasses fed for the Japanese B3 market from these two bulls is \$ 2500 to 5000 for the lot-feeder and more for the processor and wholesaler

That is a lot of money and explains why feedlots specializing in the Japanese B3 Market pay significant premiums for steers with high marbling genetics. If a feedlot supplying that market is writing more aggressive contracts based on Marbling Score then premiums will be higher for producers that can supply that potential.

Docility EBVs

The losses from poor docility can be very big especially when cattle are finished in feedlots or if poor temperament causes dark cutting meat.

The difference in growth rate of calm compared to flighty cattle can be as much as 0.4 kg per head over 40 days.

Flighty cattle are also much more susceptible to sickness in the feedlot.

The losses from lower weight gain and costs of treating sick animals can be as much as \$100 per head under feedlot conditions.

Docility as measured by flight time (the time taken to move between two light beams as the animal exits a crush) has also been shown to effect tenderness and therefore eating quality of beef. Under current marketing systems this is not rewarded.

The cost of dark cutting carcasses to the wholesaler is also very high with the worst cases being down graded to mince meat only.

A carcass worth \$800 wholesale may be worth as little as \$400 for manufacturing beef.

EBVs for docility represent a large amount of money for the lot feeder and wholesaler which can be passed back to the breeder by refusing to buy those cattle again.

Summary

Individual EBVs can mean big dollars to commercial breeders but there are often trade offs as occurs for increased growth with calving ease and mature cow size or retail beef yield and marbling.

To maximize the returns from up to 17 different EBVs requires a more sophisticated approach using selection indexes which balance up all of the EBVs according to the production system and the market.