

A Cowboy's Guide To Estimated Breeding Values

In the past few years the American Angus Assn. has been issuing Performance Pedigrees on cattle within the Angus breed. Estimated Breeding Values for the different traits appear on Performance Pedigrees and on the new Performance Registration Certificates. The EBV, as it is commonly abbreviated, is the most important figure that an individual can look at when making selections for breeding cattle.

Estimated Breeding Value is a mathematical method of measuring genetic potential based on individual performance and productivity of related animals such as the sire, dam and half sibs. A Breeding Value combines in one figure the individual performance measures of an animal and the average performance of relative groups.

Estimated Breeding Values can be calculated on any animal for any traits. They usually are expressed as ratios with an accuracy figure for each trait.

An Estimated Breeding Value is approximately twice the progeny ratio for the particular trait. Therefore, the EBV is always expressed as twice what the animal will transmit. In other words, if we could clone the animal then his true Estimated Breeding Value would be evidenced. But since a

dam. This is the way Estimated Breeding Values are calculated.

After evaluating the individual performance of a bull, an EBV goes back to the sire and dam and starts to figure the value of those particular animals. Bull A's sire has 676 calves at weaning that had an average ratio of 97, and 261 calves at yearling that had an average ratio of 97. His dam has had three calves at weaning with an average ratio of 101 and 1 calf at yearling with a ratio of 107. When the computer takes the data on the bull himself, and also his sire and dam's data, it calculates his Estimated Breeding Values as being 100 for weaning and 103 for yearling. So even though this bull looks quite superior in his own performance traits, due to the fact that his sire is well below average and his dam is average, we are told that within the population he has Estimated Breeding Values of 100 for weaning and 103 for yearling. So he is really an average bull at weaning and probably will only be (at the best) 1.5 ratio points above the herd average at yearling time.

Now when we take a look at the pedigree of Bull B, he is sired by a bull that has 504 calves at weaning with an average ratio of

Estimated Breeding Values	Weaning		Maternal		Yearling	
	EBV	ACC.	EBV	ACC.	EBV	ACC.
	106	.99	103	.97	108	.99

bull will only transmit one half of his genes, to get his estimated transmitting ability you need to divide the Estimated Breeding Value by 2. If a bull has a weaning EBV of 108, you would expect that when he is used within the population his calves will average 104 on weaning weight ratios.

The most important aspect of Estimated Breeding Values is that it gives the best estimate as to what that particular animal is going to do within the population. Let's take two bulls, for example, and look at their weaning and yearling weights and ratios, and then take a look at their Estimated Breeding Values.

Bull A has a birth weight of 82 pounds, a 205-day weight of 625 pounds, with a ratio of 113, 365-day weight of 1,180 pounds with a ratio of 112, a hip height of 51 inches, fat thickness of .4 inches and scrotal size of 37 cm.

Bull B has a birth weight of 80 pounds, a 205-day weight of 622 pounds with a ratio of 115, a 365-day weight of 1,017 pounds and a ratio of 111, a hip height of 49.5 inches, fat thickness of .4 inches and scrotal size of 36 cm.

After analyzing the data on Bull A and Bull B, we would say that they are very similar in their data. Their ratios are very similar and the 365-day weights are similar. However, the thing that we have not looked at on these two particular bulls is their sire and

103 and 167 calves at yearling with an average ratio of 103. His dam has had four calves with an average ratio of 111 at weaning and an average ratio of 106 at yearling. Because of the strength of his sire and dam, when the computer calculates his Estimated Breeding Values, this individual has a Weaning EBV of 108; on the average he will sire calves that are 4% above the average of the population at weaning time. His Yearling EBV is 106; this means that on the average he should sire calves that are at least 3% above the average. This is the way that Estimated Breeding Values for the growth traits are expressed.

Remember, when you analyze the performance data on these two bulls that they look very similar, but because Bull A's pedigree is inferior as far as sire and dam are concerned, his breeding values show him to be a very average bull. Since Bull B has truly superior parents, his breeding value has been increased. Many times when you analyze bulls and females that are being offered for sale, they will look extremely similar from a performance standpoint, but when evaluated from an Estimated Breeding Value standpoint, they are completely different.

There is one other figure that you need to be aware of—the accuracy figure. The accuracy figures tell you how much faith you can have in an Estimated Breeding Value. If

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we only have performance data on a bull, his sire and his dam, accuracies on the growth traits will usually be about .70. However, as we start to add sufficient numbers of progeny from that particular bull, then the accuracy levels move up to .90 to .95.

We know that when we select young bulls with accuracy values of .7 that some of these bulls are going to be better than their Estimated Breeding Values indicate, while others are not going to be as good. On the average, if you progeny tested 100 bulls that had Estimated Breeding Values of 108 for yearling weight, they would average 108 when they got to a .9 accuracy. However, there would be some bulls that would have EBV ratios from 110 to 112 and there would also be some bulls with EBVs of 104.

The other Estimated Breeding Value that is made available to you on the Performance Certificate is the Maternal Breeding Value. This is an estimate of how a bull's daughters are going to be from a milk standpoint. Little has been done in the beef cattle industry as far as improving milk production over the last 100 years. Maternal Breeding Values can help you, as an individual, select cattle that have the best probability of siring daughters that are going to produce calves with high weaning weights.

If you are selecting young bulls to go into either a progeny testing program or into herds of cattle where you want to increase maternal performance, you need to select

bulls that have high Maternal Breeding Values. When you analyze bulls within the breed, they vary on Maternal Breeding Value from a high of about 110 down to the low 90's. A high percentage of the bulls will have Maternal Breeding Values within 1 or 2 percentage points of 100. If you use bulls


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with high Maternal Breeding Values, the daughters of those bulls should be significantly higher in milk production than the daughters of bulls with low Maternal Breeding Values.

In the selection of commercial females, I would utilize bulls with high Maternal Breeding Values and save the daughters of those bulls. If you use bulls that are high on Maternal Breeding Value, you can significantly increase the milk production in your particular herd of cattle. If I was a commercial man and wanted to select bulls

to significantly improve both growth and maternal traits, I would use bulls with EBVs greater than 104 for weaning and yearling and 102 or better for maternal. If you select these kinds of bulls to put into your cow herd you should make maximum genetic improvement.

Even though EBVs are based on very complex formulas, the calculations are done for you and all you have to do as individual breeders is select for the particular traits you are interested in. Find the bulls with the highest Estimated Breeding Values in those particular traits and use them in your herd. You do not need to be worried about how the calculations are made. I accepted Estimated Breeding Values the same way as the biblical story of creation; I don't completely understand how it happened but I believe in it.

After you have selected as many bulls as I have within the industry, then have progeny tested those particular bulls and evaluated them on both growth and maternal traits, you soon understand that in order to end up with highly superior proven bulls, you have to select the young bulls with the highest Estimated Breeding Values in the population—your batting average is much better. And after all, improving the odds in selecting cattle is what we are looking at. If you as an individual utilize cattle that have the highest Estimated Breeding Values, you can make positive genetic improvement within your herd of cattle. 



NEW AT OUR HOUSE

QLC TALENT

9987543 • Calved: 4-10-81 • Bull • Tattoo: 466N

Ken Caryl Mr. Angus 8017	{ Northern Prospector 1125
Fairfield Hi Guy	{ Blkbrd of Ken Caryl 2744
Miss Beauty Maid	{ Glenmarnock Eric 48A
	{ Enchantress Maid of SA
Diamondhd Eston 7B	{ Bndlr Eston GV 14Y
MQ Ann 313F	{ Prd of Diamondhead 61X
Ann 3927 of SL	{ Key Sherley 2 of SL
	{ Keyline Elbar C of SL

Calf champion and grand champion, 1982 Kansas Expo
Member of third place carload (Quirk), Denver 1982
Second to calf champion in class (7), Reno 1982

SEMEN:

\$25 per straw; certificates \$50 each as needed
or two straws and one certificate \$75 plus shipping.

Shoulder height at one year, 50 inches,
hip height 53 inches. 205-day adjusted weight
724 lb., ratio 130.

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