


What is GE, BIO ABC, BIO\$



bio Genetic Score Card

Across Breed Index
Economic Index

| | | | | | |
|--------------|-----------------------|--------------|-------------|---------|------|
| Tattoo | MCRD 13W | Sex | B | BIO Tag | 0033 |
| Name | BLK 7S DICE 13W | | | | |
| Breed | SIMMENTAL | Birth Date | 25 Jan 2009 | | |
| Centre/Group | BULL TEST 1A / 201029 | | | | |
| EOT | 12 Feb 2010 | EOT Age | 383 (days) | | |
| RFID # | | Age Verified | No | | |
| Horn | P | Colour | | | |
| Progeny | 24 | BT/RA | S / S | | |

| | | |
|------|------|-------|
| BIO | ABC% | BIO\$ |
| CE | 76 | 97 |
| BW | 67 | 4859 |
| WG | 96 | 98 |
| Milk | 86 | |
| PWG | 97 | |
| YG | 98 | |
| Fat | 58 | |
| REA | 90 | |
| %IMF | 54 | |
| SC | 79 | |

Genetic Evaluation 14 Oct 2010

| | CE | BW | WG | Milk | PWG | YG | Fat | REA | %IMF | SC |
|--|------|---------|-------|-------|-------|--------|--------|--------|--------|---------|
| ABC, expressed in the same units as expected progeny differences (EPD's) | | | | | | | | | | |
| ABC _{Acc} | 3 32 | -2.3 56 | 53 47 | 28 27 | 51 48 | 104 48 | .18 50 | .53 45 | .03 45 | 1.14 62 |
| %wb | 97 | 96 | 87 | 57 | 98 | 96 | 94 | 88 | 87 | 53 |
| Within Breed Index | | | | | | | | | | |

Herd Evaluation 23 Aug 2009

| Actual measurements | | | | |
|---------------------|----|-----|-----|------|
| CE | BW | AWW | WI | Rank |
| U | 80 | 792 | 109 | 1/7 |

EOT Measurements

| Actual measurements | | | | | | | |
|---------------------|--------|------|------|------|-----|------|--------|
| AYW | EOT Wt | ADG | WPDA | HH | FS | SC | Adj.SC |
| 1433 | 1465 | 4.61 | 3.8 | 53.5 | 7.0 | 37.5 | 36.8 |

Ultrasound Measurements 12 Feb 2010

| Actual measurements | | | | | | | | |
|---------------------|----------|---------------|----------|--------------|------|-----------|------|------------|
| BF (mm) | Rump Fat | REA (sq. in.) | Adj. REA | REA /100 lbs | %IMF | Adj. %IMF | LMY | Est. Grade |
| 6 | 5 | 16.5 | 15.9 | 1.13 | 2.91 | 2.77 | 65.4 | A |

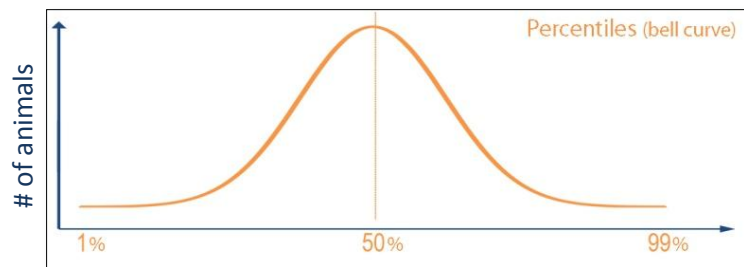
An animal's observed performance for a trait is known as a phenotype. The phenotype (or performance) is influenced by the environment the animal is subjected to or raised in, as well as the genetic contribution of the animal's parents (dam and sire).

$$\text{Phenotype} = \text{Genotype} + \text{Environment}$$

Genetic evaluation(GE) attempts to determine and remove the environmental influence, so genetic potential of the animal can be estimated. It's impossible to determine the environmental influence versus the genetic

influence on the performance of one animal. That is why we evaluate multiple animals of the same age living in the same environment (a contemporary group) to determine the common environmental influence on performance. BIO produces across breed comparisons (ABC's) that are expressed in the same units as expected progeny differences (EPD's).

Across Breed Comparison Percentile (ABC%) BIO calculates percentile ranking for all traits. With percentile rankings, 100 is the best possible rank. For an animal that ranks 95 for a trait, they are in the top 5% for that trait. With ABC's one breed can be compared to another, a purebred can be compared to percentage cattle and percentage cattle can be compared, regardless of their breed composition.



A graph showing the distribution, of the animals in the genetic evaluation system

Within Breed Percentile (% wb) These are calculated within breed for animals greater than 7/8 one breed. With percentile rankings, 100 is the best possible rank for the animal breed. As with ABC%, or %wb of 100 is the best for animals in the breed possible. For an animal that ranks 95 for a trait, they are in the top 5% for that trait. With “% wb” one animal can only be compared to another animal within their breed.

Calving Ease (CE) Calving ease ABC is a prediction of the ease with which a bull's calves are born. This number represents the difference from the average percentage of unassisted births calculated across all beef breeds.

Example: Bull A has a CE of +5% and Bull B has a CE of -0.5%. From this information we predict that 5% more of the calves born to first-calf heifers of off Bull A will be born unassisted than the average from all beef breeds. Bull B would have 0.5% less unassisted births than average. Comparing the two bulls we predict that Bull A will have 5.5% more unassisted births than Bull B.

Average Angus CE 4.1 with an ABC% ranking of 83, Average Simmental CE -1.5 with an ABC% ranking of 23, as of 2012.

Birth Weight (BW) Birth weight ABC is a prediction of the effect a bull will have on the birth weight of its calves. This number represents the difference in the effect on birth weight in lbs from the average birth weight that would be expected across all beef breeds.

Example: Cow A has a BW ABC of -1.0 and Cow B has a BW ABC of +6.0. From this information we predict that Cow A will have calves with birth weights that are 1 lbs less than we would expect on average. We would predict Cow B to have calves with birth weight 6 lbs greater than expected on average. Compared to each other, we would expect Cow B to produce calves that have a birth weight 7 lbs greater on average than Cow A.

Average Angus BW -3.5 with an ABC% ranking of 82, Average Simmental BW 1.8 with an ABC% ranking of 21, as of 2012.

Weaning Gain (WG) Weaning Gain ABC is a prediction of the ability of an animal's calves to grow from birth to weaning. This number represents the difference in gain from birth to weaning from the average expected gain across all beef breeds. WG numbers are expressed in lbs of gain.

Example: Bull A has a WG ABC of +25 and Bull B has a WG ABC of +75. We predict that Bull A will have calves that gain 25lbs more from birth to weaning than we expect across all beef breeds. Bull B will have calves that gain 75lbs more than we expect on average. Compared to each other, Bull B will produce calves that gain 50lbs more than those of Bull A.

Average Angus WG 37.8 with an ABC% ranking of 50, Average Simmental WG 44.2 with an ABC% ranking of 79, as of 2012.

Milk Milk ABC indicate the ability of an animal's daughters to provide their calves with milk and mothering ability as measured by heavier calves than expected on average across breeds. This number is expressed in lbs.

Example: Cow A has a Milk ABC of +50 and Cow B has a Milk ABC of +20. Cow A is predicted to raise calves that are 50lbs heavier than expected on average across all breeds. Cow B is predicted to raise calves that are 20 lbs heavier than average. Compared to each other Cow A will raise calves 30 lbs heavier on average than Cow B.

Average Angus Milk 22.8 with an ABC% ranking of 67, Average Simmental Milk 31.4 with an ABC% ranking of 83, as of 2012.

Post Weaning Gain (PWG) Post weaning gain ABC is a prediction of an animal's calves' ability to grow from weaning to yearling. This number is expressed in lbs and represents the difference in gain expected on average for calves from weaning to yearling across all breeds.

Average Angus PWG 37 with an ABC% ranking of 75, Average Simmental PWG 31.4 with an ABC% ranking of 56, as of 2012.

Yearling Gain (YG) Yearling gain ABC is a prediction of an animal's calves ability to grow from birth to yearling. This number represents the difference in gain in lbs of calves off this animal as compared to the average gain that would be expected from calves across all breeds.

Average Angus YG 74.5 with an ABC% ranking of 66, Average Simmental YG 76.3 with an ABC% ranking of 70, as of 2012.

Fat Thickness (FAT) Fat Thickness ABC is a prediction of the difference in adjusted 365-day 12th rib fat thickness for calves produced by this animal. This number represents the difference in predicted fat cover thickness in mm for calves off this animal than what is expected on average across breeds.

Average Angus FAT 1.1 with an ABC% ranking of 83, Average Simmental FAT -0.3 with an ABC% ranking of 23, as of 2012.

Ribeye Area (REA) Ribeye area ABC is a prediction of the adjusted 365-day rib eye area measured at the 12th rib for calves off this animal. This number represents the difference in ribeye area measured in square inches for progeny from this animal as compared to the average across all breeds.

Average Angus REA -0.25 with an ABC% ranking of 21, Average Simmental REA 0.33 with an ABC% ranking of 73, as of 2012.

Intramuscular Fat (%IMF) %IMF ABC is a prediction of the percentage of the ribeye area that is taken up by intramuscular fat for calves off of this animal. This number represents the percentage of REA that is made up of intramuscular fat (or marbling) in calves from this animal as compared to the %IMF expected on average across all breeds. This measurement reflects marbling which is one consideration used in grading carcasses.

Average Angus %IMF 0.49 with an ABC% ranking of 84, Average Simmental %IMF -0.09 with an ABC% ranking of 31, as of 2012.

Scrotal Circumference (SC) Scrotal circumference ABC is measured in centimeters and adjusted to 365-day of age. This number is used as a measure of fertility since it is related to the bull’s semen quality and quantity and is associated with age at puberty of daughters. A bull with a larger SC ABC than average is expected to sire daughters that reach puberty sooner. Actual SC measurement should be sufficient to ensure breeding ability. **Average Angus SC 0.84 with an ABC% ranking of 64, Average Simmental SC 1.2 with an ABC% ranking of 79, as of 2012.**

The BIO\$ Selection Index Using ABCs to pick your herd sire means you are making an informed decision. But considering all the ABCs at one time can be overwhelming. An easier way to sort out prospective sires is to use the BIO\$ Index. The BIO\$ Index considers the ABCs of the evaluated bulls and calculates the predicted profit based on a production system with a defined market for offspring. The BIO\$ Index is aimed at efficient lean meat production for a market focused on AA carcasses between 775 and 900 lbs. The index predicts the amount of increased return a producer should expect from a particular bull over 2 calving seasons, assuming a herd sire of 30 cows.

| | CE | BW | WG | Milk | PWG | YG | FAT | REA | IMF | SC | BIO\$ Rank |
|-------------|----|------|----|------|-----|-----|-----|-----|------|-----|------------|
| Bull A ABCs | 4 | -3.9 | 56 | 31 | 91 | 147 | .97 | .15 | .46 | .37 | 4900 |
| Bull B ABCs | -2 | 2.8 | 75 | 16 | 88 | 163 | .69 | .79 | -.07 | 1.9 | 4900 |

In the example above, both bulls have very high index values, but they vary a lot between the traits. Bull A has superior calving ease and small birth weights, which may be better suited to smaller framed cows and heifers. Bull B would be better suited to larger frame cows and is more likely to produce leaner carcasses.

Average Angus BIO\$ 3333 with an ABC% ranking of 62, Average Simmental BIO\$ 3059 with an ABC% ranking of 52, as of 2012.

| ABC Average for calves born 2007-2011 | | | | | | | | | | | |
|--|------|------|------|------|------|------|--------|--------|--------|--------|-------|
| Breed | CE | BW | WG | Milk | PWG | YG | Fat | REA | IMF | SC | BIO\$ |
| Angus | 4.1 | -3.5 | 37.8 | 22.8 | 37 | 74.5 | 1.09 | -0.249 | 0.493 | 0.836 | 3333 |
| Blonde | -1.1 | 0.4 | 31.3 | 16.7 | 9.3 | 40.6 | -1.147 | 0.412 | -0.295 | -0.945 | 1988 |
| Charolais | -2.1 | 2.3 | 41.5 | 17.2 | 35.7 | 77 | -0.267 | 0.266 | -0.045 | 0.331 | 3025 |
| Hereford | 0.8 | 0.1 | 37.2 | 11.6 | 20.1 | 57.1 | 0.668 | -0.512 | 0.007 | 0.109 | 1327 |
| Limousin | 1.6 | -1.7 | 31.1 | 15.7 | 10.8 | 41.7 | -0.505 | 0.409 | -0.24 | -1.013 | 2377 |
| Highland | 6 | -5.8 | 5 | 1.7 | -4 | 0.6 | -0.004 | -0.378 | -0.047 | 0.174 | 410 |
| Simmental | -1.5 | 1.8 | 45.2 | 27.4 | 31.4 | 76.3 | -0.301 | 0.333 | -0.088 | 1.171 | 3059 |