Introducing $F, $G and $B

The American Angus Association unveils a new program designed to simplify genetic selection for feedlot performance and carcass merit.

Story by
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Trying to sort through the myriad of expected progeny differences (EPDs) and performance records on a set of yearling bulls is enough to give a cowboy a headache. It's easy enough to exclude from consideration bulls with too much birth weight, bulls with too much or too little milk for the environment, and/or bulls with poor hoof structure. But how do you decide between the leaner bull with a higher percent retail product EPD and the faster-growing bull with a better marbling EPD?

Commercial cattlemen have been telling their Angus seedstock sources that they are overwhelmed by the amount of data with which they have to contend to make bull selections, explains Bill Bowman, director of performance programs for the American Angus Association. "We took that as a challenge to us to develop programs that could help make this selection a little simpler, a little easier."

In September, the American Angus Association Board of Directors approved the release of three indexes to help simplify multitrait comparisons. The *Spring 2004 Sire Evaluation Report*, now available online, includes the first in a series of Dollar Value ($Value) Indexes designed to evaluate trade-offs for producers based on real-world economics. Feedlot Value ($F), Grid Value ($G) and Beef Value ($B) are the first indexes in a series of bioeconomic values, expressed in dollars per head, to assist commercial beef producers in genetic selection.

An index is simply a combination and a weighting of multiple traits combined into one value that can be used to rank animals, Bowman explains. These $Value Indexes incorporate economic values and EPDs into a function expressed in dollars. While they may be very complex to develop, these indexes actually offer simplicity in their use and can ease the process of making directional change in multiple traits at one time.

Feedlot, Grid $Values

Sally Dolezal, director of genetic research for the Association, explains that the $Values are based on three major components: 1) EPDs, 2) industry-based economic values, and 3) a system of equations to tie the genetic and economic values together.

$F (pronounced "dollar F") is the expected difference, in dollars per head, in progeny performance in the feedlot. For example, if Bull A has a $F of $22.85 and Bull B has a $F of $10.35, and these two bulls were randomly mated to comparable cows, Bull A would be expected to sire calves that, on average, would generate $12.50 per head more value in the feedlot.

As you would expect, key components of $F are weaning weight and yearling weight EPDs, and the relationship between those two traits, Dolezal explains. The system of equations used to calculate the index includes a projected average daily gain (ADG), a projected consumption, a value of gain and a cost to achieve that gain.

Economic assumptions used for creating $F include 160 days on feed, a ration cost of $150 per ton and a fed-market value of $75 per hundredweight (cwt.), Dolezal explains.

$G is the expected difference in carcass grid value, expressed in dollars per head, for progeny sold on a typical grid. So, if Bull A has a $G of $19.33 and Bull B has a $G of $11.57, when randomly mated to comparable cows, Bull A would be expected to sire calves that, on average, receive $7.76 more than calves of Bull B when sold on a typical packer grid.

"The key components for it won't surprise you either," Dolezal says. Carcass EPDs, ultrasound body composition EPDs or both, when available, are used to establish an individual's $G.

The index uses a quality grade schedule and a yield grade schedule typical of a grid on which Angus and Angus-type cattle would be sold (see Table 1). The grid assumes an average carcass weight of 816 pounds (lb.), with a heavyweight discount of $20 per cwt.

The industry values used to calculate the indexes are based on three-year rolling averages. While they may not reflect current market values, three-year averages have historically provided a more stable, accurate prediction of future prices. They also provide continuity from one evaluation to the next.

To have a $F, individual animals would have to have at least a weaning weight EPD and a yearling weight EPD, Dolezal says. To have a $G, individuals would have to have either ultrasound body-composition EPDs, carcass EPDs or both.

Combined value

"The final value will tie together the postweaning performance merit and the carcass value into a terminal-type snapshot," Dolezal says. "$B is a prediction of how future progeny are expected to perform in this terminal-type, postweaning phase — feedlot performance and carcass value — expressed in a dollars-per-head difference."

$B incorporates $F and $G, but it is not a sum of the two, she says. Adjustments are made to prevent weight from being double-counted in the final value.

Below is an example of how the new values may appear.

	$F	$G	$B
Bull A	**$22.85**	**$19.33**	**$37.12**
Bull B	**10.35**	**11.57**	**21.59**

Like EPDs, the $Values are meant to show differences among bulls. In this case, compared to Bull B, when randomly mated to comparable cows, Bull A would be expected to sire calves that would generate $12.50 per head more value in the feedlot and $7.76 more on the rail, or $15.53 more value from the feedlot to the rail, based on the Association's standard formulas.

The *Spring 2004 Sire Evaluation Report* includes $F values for 20,634 current sires and $G and $B values for 17,312 current sires. Breed averages for these current sires (sires for which a calf was registered within the last two years) were $11.68 for $F, $12.23 for $G and $23.79 for $B (see Table 2).

The percentile breakdowns for current sires in the spring 2004 evaluation are shown in Table 3. As an example of how to read this table, only 1% of bulls in the current sires list would have a $F of $39.30 or higher. So, theoretically, only 206 of the 20,634 current sires would have a $F value of $39.30 or higher. Half the bulls in the current-sire database would have a $F of $12.00 or higher, and 90% of the bulls would have a $F of –$2.57 or higher.

Access the information

By the time this information is published, the $Values calculated for the spring 2004 sire evaluation will be available online at *www.angus.org*.

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Table 1: Assumptions* used in formulating $F, $G and $B values

**These assumptions are based on three-year rolling averages.*

Feedlot assumptions for $F:	
Time on feed, days	160
Ration cost, $ per dry ton	150
Fed market, $ per cwt. live	75
Grid assumptions for $G:	
Quality components	
Prime, $ above Choice	6.00
CAB® $ above Choice	3.00
Choice-Select spread, $	10.00
Standard discount, $	–15.00
Yield components	
YG 1 premium, $	3.00
YG 2 premium, $	1.50
YG 3 discount, $	0.00
YG 4 and 5 discount, $	–25.00
Avg. carcass wt., lb.	816
Heavyweight discount, $	–20.00

Table 2: Averages, minimums and maximums for $Values, spring 2004 current sires, American Angus Association

	$F	$G	$B
No. sires	20,634	17,312	17,312
Mean	11.68	12.23	23.79
Standard deviation	11.75	5.93	10.21
Minimum	–49.53	–27.05	–46.00
Maximum	66.47	40.70	61.21
Range	116.00	67.75	107.21

Table 3: Percentile breakdowns for $Values, spring 2004 current sires, American Angus Association

	$F	$G	$B
1%	39.30	28.30	45.48
20%	20.79	16.69	31.85
50%	12.00	12.02	24.34
70%	6.54	9.31	19.62
90%	–2.57	5.16	11.46
100%	–49.53	–27.05	–46.00

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A registered animal lookup will allow producers to enter up to 12 registration numbers to generate a report containing those individuals' EPDs and $Values, Bowman explains. Any value that shows up in red is a link. Click on it to access more detailed information. By clicking on the $G for an individual animal, you can access a screen that shows the calculations used to arrive at the figure.

The $Value Indexes will also be included in the sortable sire search available online. "With that, you have the ability to actually go out and sort those bulls on any of the three new values, $F, $G or $B," Bowman says.

Further enhancements to the $Value Indexes will include an interactive Web site where users can define postweaning and carcass parameters to create tailored $Values for their given scenarios, Bowman says. This would allow, for example, producers selling on a specific grid to incorporate that grid's premiums and discounts into the formula to calculate a custom $G value.

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Don't forget reproductive efficiency

The beef value indexes are meant to be only the beginning in a suite of indexes designed to ease genetic decision making for the commercial cattleman.

"When you think about the profitability of a commercial or a seedstock operation, you have to consider the mother cow and the reproductive complex," says Sally Dolezal, genetic research director for the American Angus Association. "Also, we have not accounted for preweaned calf value."

The Association is looking at reproductive measures to assess their feasibility as part of a reproductive efficiency index. But, frankly, it isn't an easy process. Reproductive traits are of low heritability, meaning it's harder to find the indicator traits that show adequate genetic variation to select for those traits and make directional change. The Association is adamant about not releasing values until it has genetic predictions in which cattlemen can be confident.

Hard doesn't mean impossible, and the Association is currently challenging its members to submit breeding information and measures of reproductive efficiency that could allow the development of a reproductive efficiency index. The end goal is to have a suite of indexes that would include reproductive efficiency, preweaning performance and end-product merit in a net-merit index.

In the meantime, the Angus Beef Records Service (BRS) provides a means for you to monitor your within-herd cow efficiencies. For more information about BRS, visit *www.beefrecords.com*. Also, Angus Productions Inc. (API) has published several stories in the *Angus Beef Bulletin* featuring the BRS program, including "Beef Record Service — It Can Work For You" on page 1 of the September 2003 issue. A back-issue search for "BRS" at *www.angusbeefbulletin.com* will provide a summary of and links to other useful articles.