SORTING GATE

EPDs, ratios, $Values ... Oh my!

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When you started in the beef business, did you ever expect to have this much information at your fingertips? By reaching into your pocket and pulling out your phone, you have instant access to mounds of information. As a result, individuals can be on information overload a lot of the time.

This is no different as cattlemen start to prepare to make breeding decisions. From performance weights and ratios to expected progeny differences (EPDs) and dollar value indexes ($Values), the amount of information available to select a single bull can be overwhelming. In this day and age, information and data are power; however, making sure one understands how to harness this power may be the most important of all.

Multi-trait genetic selection, or trying to select several of the right traits at once, is the task producers are faced with every breeding season. What makes this process even more difficult are those pesky antagonistic relationships among traits that work against each other when one trait is selected vs. another.

For example, think gain and feed intake. Both are important, and both affect the bottom line. Increasing gain increases revenues while decreasing feed intake decreases costs; however, in most cases animals that normally gain faster normally eat more. Finding ways to select for profitable genetics can be limited if producers are unable to find the right balancing act between the two.

This is where $Values, or economic selection indexes, come into play. $Values are designed to support producers in choosing the most profitable animals for their operations by properly weighting the traits that affect profit.

While challenging to develop, $Values are simple to use as they limit the number of values producers have to juggle. Each $Value is made up of a subset of the EPDs weighted by their associated cost or revenue.

$Values are normally broken into two main categories: maternal, focusing on profitability preweaning; and terminal, focusing on profitability postweaning.

The American Angus Association currently publishes six different $Value indexes for commercial users of Angus genetics to take advantage of. Backed by the industry's leading breed association database, this lineup includes maternal weaned calf value ($M), weaned calf value ($W), cow energy value ($EN), grid value ($G), feedlot value ($F), and beef value ($B), all of which are built with different goals in mind to target profitability in various segments of the industry.

Table 1 lists the individual EPDs included in each $Value. To be successful in using $Values, producers need to utilize whichever $Value best fits their own operation.

Table 1: EPDs currently included in each individual $Value

EPDs directly incorporated into each individual $Value							
	Maternal			Terminal			
Trait	$M	$W	$EN	$F	$G	$B	$C
Calving ease direct (CED)	✔						✔
Birth wt. (BW)		✔					
Weaning wt. (WW)	✔	✔					✔
Yearling wt. (YW)				✔		✔	✔
Calving ease maternal (CEM)	✔						✔
Maternal milk (Milk)	✔	✔	✔				✔
Mature wt. (MW)	✔	✔	✔				✔
Docility (Doc)	✔						✔
Heifer pregnancy (HP)	✔						✔
Claw set (Claw)	✔						✔
Foot angle (Angle)	✔						✔
Dry-matter intake (DMI)				✔		✔	✔
Carcass wt. (CW)				✔	✔	✔	✔
Ribeye area (RE)					✔	✔	✔
Marbling (Marb)					✔	✔	✔
Backfat thickness (Fat)					✔	✔	✔

SOURCE: American Angus Association, 2019.

Know the goal

$M predicts profitability differences from conception to weaning assuming commercial producers annually replace about 20% of their breeding females with heifers retained from within their herd and market additional calves as feeder cattle. $M is the most maternally driven tool available, focusing on the cost side of the production system. Continued selection on $M will keep weaning weights consistent with today's production standards, decrease overall mature cow size and increase docility, fertility and foot integrity.

However, $M does assume commercial producers get no economic benefit from postweaning growth or carcass traits. Ignoring these postweaning traits would eventually decrease yearling and carcass weights. Therefore, it is best to utilize $M with some continued emphasis on postweaning growth (i.e., yearling weight or carcass weight) to ensure feeder cattle remain profitable for the next segment of the industry.

$W is a preweaning growth index. It assumes producers raise their own replacement females and sell additional steer and heifer progeny as feeders.

Milk is included as both a cost and revenue source. The revenue portion comes from the pounds of calf due to the dam's individual mothering ability, while the cost of milk production is due to the increased feed it will take to maintain a higher-milking female.

Selection on $W will continue to increase weaning weights, maternal milking ability and cow size.

$EN is a cow cost savings index. The higher the number, the more savings per cow due to less input cost (i.e., feed resources). Animals with more milk and mature size, in most cases, cost extra to maintain due to increased net energy requirements to sustain themselves throughout their lifetime. $EN is a tool to fine-tune mature cow size and milking ability in environments

Continued on page 36

with limited availability to feed resources. Continuous selection for the highest $EN sires will decrease overall mature size and milking ability of the cow herd.

$G predicts profitability differences of offspring marketed on a value-based carcass grid. $G assumes producers will get paid on a value-based grid. It therefore aims to predict differences in progeny carcasses for quality and yield grade by increasing marbling, carcass weight and ribeye area while decreasing backfat.

$F predicts profitability differences of progeny in the feedlot. $F assumes producers retain ownership through the feedlot and sell fed cattle on a carcass weight basis with no consideration of premiums or discounts for yield and quality. Over time, selection on $F should increase postweaning growth and feedlot feed efficiency.

$B is a terminal index that predicts profitability differences among offspring postweaning. $B assumes that all progeny, male and female, will be sent to the feedlot where the producer will retain ownership of those cattle that will be marketed on a value-based carcass grid. Quality, yield, and feed efficiency play large roles in $B. Over time $B will continue to drive increased growth and carcass quality that commercial users of Angus genetics have grown to expect.

Producers creating their own replacement females should be advised that $B includes no maternal characteristics and should consider selection pressure on additional EPDs or $Values as necessary to meet their needs.

Looking ahead

In June of 2020, the American Angus Association will officially release the combined value ($C), an economic index that tries to balance the relationship between $M (maternal) and $B (terminal). $C utilizes all EPDs included in $M and $B. It predicts profitability differences from conception to harvest. It assumes commercial producers will replace approximately 20% of their breeding females with retained heifers and market additional progeny on a value-based carcass grid.

$C works to balance selection on growth and mature cow weight. With $C, animals receive all the horsepower from $B, but the index allows producers to keep cow costs in check.

Selection on $C increases postweaning growth and carcass traits at nearly the same rate as $B; however, with the inclusion of $M, cow weight increases by a much slower pace.

It truly is just the combination of the two underlying breeding goals of $M and $B.

Conclusion

All in all, the American Angus Association and producers of registered Angus genetics do everything in their power to provide commercial cattlemen the most optimal resources to make them successful. $Values are another tool added to this toolbox.

Remember, when using $Values, a commercial producer must

- first, set the goal of their operation;
- second, analyze the strengths and weaknesses of their herd; and
- third, use the $Value that best fits their operation.

For more information on $Value indexes, visit *www.angus.org/Nce/ValueIndexes.aspx*.

Editor's note: "Sorting Gate" is a regular *Angus Beef Bulletin* column featuring herd improvement topics for commercial producers using Angus genetics. Authored by staff of Angus Genetics Inc. (AGI), regular contributors include Dan Moser, president; Stephen Miller, director of genetic research; and Kelli Retallick, director of genetic service. For additional information on performance programs available through the American Angus Association and AGI, *visit www.angus.org* and select topics under the "Management" tab.