

Simplify Sire Selection



Profit indexes are developed to allow producers a simpler way to multi-trait select sires.

by **Kayla M. Wilkins**

Utilizing multi-trait selection can sometimes be a challenge for today's cattlemen. Taking into account an array of traits to make the best breeding decisions from not only a reproductive standpoint but a profitability standpoint continues to pose a challenge for producers in identifying the best herd sire to reach the goals of their operation.

While making these challenging decisions, it is essential producers are aware of the tools available to assist them in the process. That is where profit indexes come into focus.

"The advantage of EPDs (expected progeny differences) and dollar indexes are to attempt to take the guesswork out of selecting sires and better inform producers about the next generation," says Shane Bedwell, American Hereford Association (AHA) chief operating officer and director of breed improvement.

What are profit indexes?

In 2005 the AHA introduced four profit indexes to assist producers in maximizing profitability, starting with sire selection. AHA has three maternal indexes and one terminal index at every producer's disposal. Ultimately, economically driven indexes are opening the door for cattlemen to select bulls with the most favorable

combination of EPDs to maximize profit, taking into account the producers unique scenarios.

"Profit indexes are a really fantastic tool for commercial cattlemen," says Megan Rolf, Ph.D, assistant professor and researcher at Kansas State University. "They really provide a good way to practice multiple trait selection and balance selection among a variety of traits in a logical way."

In short, profit indexes provide insight when producers are comparing bulls and weigh profit differences between the bulls based upon the desired traits. Weighing traits differently and assessing the economic value in a specific trait in relation to the index and the other favorable traits develop these indexes.

To put it in perspective, Bedwell says the Certified Hereford Beef Index (\$CHB) is the terminal index, so it is developed with the thought of producing calves which thrive in a feedlot scenario. In contrast, a maternal index like the Baldie Maternal Index (\$BMI) is geared toward producers using Hereford bulls on Angus cows and retaining females as well as retaining ownership and selling non-selected animals on a grid.

Oftentimes because of the complexity of multi-trait selection, producers have historically single-trait selected or even selected based upon phenotype alone. With economically driven EPDs, all the legwork and headaches are alleviated.

Randall Raymond, DVM, from Simplot Livestock Co. says in his experience, selecting for more than two traits can be quite the challenge.

"It is really difficult to select for multiple traits at the same time," Raymond says. "We have tried to be really balanced in our genetic selection. No trait singly drives the economics. Once you start selecting for more than two traits it is almost impossible to do that effectively and that is where indexes have helped us the most. We have the ability to weight traits for what they are worth economically and select for multiple traits at the same time."

Similarly, J.D. Russell, ranch manager at the Matador Ranch, says before the ranch's utilization of profit indexes, it was an extensive process to select sires for multiple traits. He says he and his crew used to spend time sorting bulls based upon traits



AHA Director of Breed Improvement Shane Bedwell says though currently underutilized, Baldie Maternal Index (\$BMI) has potential to provide valuable information when producing successful females.

in a computer system that would provide some insight, but not nearly what profit indexes do.

“In the past we would take a set of bulls, make a sort of the EPDs based on a weighted value we had derived for what we considered to be the higher valued traits,” Russell explains. “With the introduction of profit indexes this exercise has already been done. It also allows us to combine evaluations easily. For instance, we can evaluate genetic merit for an individual for maternal characteristics along with carcass quality across several production measures by utilizing these indexes.”

In conjunction with providing convenience for producers, Bedwell says, profit indexes are a great way to select based upon real-world scenarios. Centered upon what the goals are for an operation, he says selection could be solely based on the four indexes alone – the terminal index being \$CHB and the three maternal indexes being the Brahman Influence Index (\$BII), the Calving Ease Index (\$CEZ) and the \$BMI.

Producing baldies

Since breeding Hereford bulls to Angus-based cows is such a widely used cross in the commercial industry, the \$BMI should be on the minds of cattlemen when aiming to produce replacements. Raymond says crossbreeding cattle promotes hybrid vigor and the Hereford-Angus cross produces efficient replacement females that will, in time, increase profitability in a herd.

“One of the biggest benefits we get from using Hereford bulls is inserting some heterosis into our breeding programs,” Raymond says, “so when you have a primarily black and black baldie cow herd that helps us maximize heterosis which drives things like calf vigor, reproductive efficiency and cow longevity.”

To achieve the goals Raymond describes in regard to producing cost-effective females to retain in a commercial herd scenario, Rolf advises that producers take a serious look at the \$BMI.

“If you are a commercial cow-calf producer using Hereford bulls in crossbreeding programs on Angus-based cows and retaining ownership of calves to be marketed on a CHB grid, then you could use the Baldie Maternal Index to practice multiple trait selection without having to try and figure out the appropriate way to balance selection between all those traits yourself using the EPDs directly,” Rolf says.

Although the \$BMI offers much insight in terms of

breeding for females, Bedwell says it is sometimes overlooked in comparison to other indexes. He advises producers to take the index into consideration when selecting bulls, most specifically when looking to enhance longevity in a herd.

“It is underutilized today, but has potential to provide valuable information when producing successful females,” Bedwell says.

Russell adds, “Matador Cattle Co. utilizes Hereford as an integral part of our maternal genetics. Since our larger commercial ranches are in areas that requires a cow to efficiently produce on the limited resources available, we try to balance traits that will allow her to do that. We believe the Baldie Maternal Index does a good job of providing a measure for these traits, and fits with our maternal genetics business plan.”

Like Russell, Raymond stresses the importance of good females in a herd from



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a profitability standpoint. He says in addition to having good females as a vital piece to the puzzle, it is also one of the more complex pieces.

“Selecting for bulls that are going to impact the female population is probably one of the more challenging parts of genetic selection. You deal with those

females for such a long time so it is really important that you make that selection well,” Raymond says.

“Trying to weigh and understand the traits that are important to making that economically viable female is pretty critical. Really the value is identifying what traits are important for making the females and then weighting those traits appropriately and using that equation to select for multiple traits at once.”

Bedwell says the \$BMI is formulated by putting emphasis on Calving Ease - Direct (CE), Weaning Weight (WW), Calving Maternal Ease (CME), Ribeye Area (REA) and Marbling (MARB) and making it heavily weighted on Scrotal Circumference (SC). However, a negative weight is put on Yearling Weight (YW) and Maternal Milk (MM). The reason being, less emphasis on YW and more on WW promotes a more moderate calf that will thrive off less input cost for producers.

He says the negative weight on MM is based upon the same idea. Females who have high MM EPDs require more to sustain themselves in a pasture situation, therefore, decreasing the profit margin for producers looking to retain those females. Additionally, milk is inadvertently taken into account with the weaning weight since cows have to milk well for calves to reach a desirable weaning weight.

He says because of the heavy emphasis on SC along with the other traits, producers are able to select a bull that will produce moderate females which will reach puberty sooner and last longer in a pasture situation with the lowest input cost.

Russell says the Matador Ranch has seen these results firsthand. By using the \$BMI, he is able to capitalize from a profitability standpoint in more ways than one.

He says the emphasis put on calving ease has been correlated

continued on page 26...

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directly back to conception rates on the operation. Because more cows are successfully breeding back, Matador Ranch has had the opportunity to retain fewer females and, ultimately, sell more calves.

Furthermore, he says because of the increased emphasis on weaning weight and less on yearling weight. Their cows have a smaller mature size, thus, requiring less input cost and giving way to a higher potential for profit.

Lastly, Russell says the emphasis placed on ribeye area provides higher profits for calves the Matador Ranch chooses to feedout versus ones retained for reproduction.

Effectively using profit indexes

Rolf says when looking at profit indexes, the most challenging piece is deciding if an index fits the production goals because they can be used just like an EPD to evaluate the expected differences in progeny performance between two animals.

“Balanced multi-trait selection is very important,” Rolf says. “The ability to have one simple number to look at can be really helpful because trying to balance selection on a lot of different EPDs can get a little challenging. An index provides you a single

number you can use to make selection decisions as long as the priorities in the index fit what you are trying to accomplish.”

Producers looking to utilize profit indexes when selecting Hereford sires should first identify the goals for their operation and from there find the index most conducive to their operation.

“Find an index that fits the goals of your operation,” Rolf explains. “Once you have the index identified, be sure to check the percentile break down, which you can find on the Hereford website, to really get an idea where bulls may be falling on that spectrum within the Hereford breed.”

Raymond says meeting the goal of producing cattle that fit their environment is key, and the simplicity of profit indexes has aided greatly in that endeavor.

“For us the advantage is finding cattle that fit the environment and trying to select for things like low energy requirements and reproductive efficiency and longevity,” Raymond says. “Those are things that drive profitability in our system. How long can a cow successfully stay in a herd and produce calves to become feeder cattle? It just gets back to identifying what traits are

important to accomplish that, putting an economic value on them and selecting for those traits, in a simultaneous fashion.”

Bedwell says AHA’s overarching goal is to support cattlemen in producing the highest quality cattle possible with the use of Hereford genetics, and making these indexes available is just another avenue to accomplish that mission. Producers interested in looking at indexes for Hereford bulls can do so by visiting *Hereford.org*. There, any bull can be searched, and a list of his EPDs along with indexes are available.

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Looking ahead

Bedwell says by next spring, the AHA will begin utilizing more traits when developing the \$BMI to shine light on an even better evaluation of these traits from a profitability standpoint.

He says the new traits added into the mix are going to be

Sustained Cow Fertility (SCF), Heifer Calving Rate (HCR) and Dry Matter Intake (DMI). Bedwell adds these are relevant traits that will only aid in the accuracy and efficiency of the \$BMI.

SCF is a percentage given to a sire based upon the number of years his daughters calve annually. Bedwell says when SCF is more than 100, those sires are associated with more success while sires whose SCF is less than 100 percent are associated with more risk in producing females with longevity.

Similarly, HCR is a percentage given to a sire based upon his future daughter’s calving rate. Like the SCF, a higher percentage is associated with favorable genetic potential for calving rate in daughters. Bedwell says with the economic effect of reproductive rate in beef cattle operations, it is crucial to take HCR into consideration.

As feed intake also plays an integral part in profitability, DMI is another key piece in producing the most accurate profit indexes. DMI identifies the pounds of feed per day a sire’s progeny is expected to consume. Bedwell says this trait is vital to determining feed efficiency in future daughters.

Continued advancements in indexes to create a more accurate prediction of progeny for producers are an ongoing effort by AHA. Bedwell says adding these traits to \$BMI will only improve the index.

“The addition of these traits will make a more informative and profitable selection process for producers,” he says. **HW**

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\$CHB

Certified Hereford Beef Index (\$CHB) is the terminal index, so it is developed for producing calves which thrive in a feedlot scenario.



\$BMI

Baldie Maternal Index (\$BMI) is geared toward producers using Hereford bulls on Angus cows and retaining females as well as retaining ownership and selling non-selected animals on a grid.



\$BII

Brahman Influence Index (\$BII) utilizes Hereford bulls in a rotational crossbreeding system with Brahman.



\$CEZ

Calving Ease Index (\$CEZ) is used to select bulls that will be used in a heifer program.

