

Data Collection Gives Accuracy to Trait Selection in Beef Cattle

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Beef cattle breeding creates many possibilities. Each cell contains 60 chromosomes or trains that need to be running smoothly to have a healthy animal. It is easy to see why such a wide variance exists in traits across and within breeds.

Collecting data can minimize risk when it comes to selecting new herd sires. Perhaps the simplest example of this is in horned or polled cattle. If a bull has horns, for all practical considerations the genetic expression is the same as his genes. The bull carries two copies of the horn gene. However, if a bull is polled, he could sire a horned calf or a polled calf. Just by looking at a polled bull, you do not know.

Once you use the bull on cows, you can develop some confidence if he has one copy or two of the polled gene. If all of his calves are polled, especially when bred to horned cows, we know he carries two copies of the polled gene and no horn gene. If he sires a horned calf, he carries one copy of the polled gene and one copy of the horned gene. You would know this because you recorded the data.

The same process could be used in trait selection like birth weight. A common question is whether a birth weight expected progeny difference (EPD) with the value of one is more reliable than an actual birth weight of 80 pounds. Research shows both are suitable but the EPD appears to be a better indicator. How do I know? Record-keeping software (like CHAPS) and breed associations' base numbers on data collection provide information.

A producer cannot see the master cargo list for the chromosome trains in bulls but the actual birth weight of the animal, his siblings and his parent are indicators of the potential birth weight. These indicators will help a producer determine if the traits sought are loaded up on those chromosomes.

Many producers do not believe a computer number is a better indicator than the actual number. Their main concern is that the bull they buy and cow they have at home will deliver a calf next spring, born without assistance. (Some breed associations have actually developed alternative EPDs to aid in the actual selection for calving ease rather than using birth weight as an indicator.)

EPDs fine-tune the ability of the computer to predict

based on all data available. The wider the spectrum of data collected, the more accurate the outcome--and the greater the likelihood that the chromosomes will be synchronized according to my liking. In other words, I look at all the data available to predict whether the package I want is loaded up on the chromosome train of the bull I'm considering.

This logic may not convert anyone that already does not fully appreciate the value of a computer-predicted number because there is a penchant in the bull business: what I see is what I want. In other words, I can see the bull, he was weighed at birth and he will work.

That's reasonable thinking, but what you see is not what you always get. That is why record-keeping systems try to include more data, ending up with one number to keep the selection process simple, yet predictable.

We would hope we could select a bull (without having to find out for ourselves) that sires calves that will not need assistance at calving time. However, birth weight is like buying a polled bull: You are not sure exactly what the bull will sire. He needs to be tested. Just by looking at a bull's head for horns or looking at his birth weight, you can only guess. But if his ancestors are looked at, at least on paper, plus his other relatives, plus knowing what the bull himself looks like, you can make a better guess about how a bull's chromosome train is loaded and how that load (genetic makeup) will work for you.

The birth weight EPD is the best estimate of a bull's effect on birth weight, or calving ease. Use the numbers and some common sense to predict the chromosome cargo and beat the odds.

Enjoy your bull buying and may you find all your ear tags.

Your comments are always welcome at www.BeefTalk.com. For more information, contact the North Dakota Beef Cattle Improvement Association, 1133 State Avenue, Dickinson, ND 58601 or go to www.CHAPS2000.com on the Internet. In correspondence about this column, refer to BT0130.

Predicting Genetically Polled or Horned Cattle

Gene on 1st Chromosome	Gene on 2nd Chromosome	Calf Predictability
polled	polled	high
polled	horns	low
horns	horns	high