Department of Animal Science

WHAT SHOULD BE CONSIDERED IN BULL SELECTION

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Sire selection is an important decision that is made in cow-calf operations. In a single sire herd, the bull is responsible for one-half of the genetics of the entire calf crop. The last three sires used in the operation will represent almost 87 percent of the genetic makeup of a calf crop in a herd where replacement heifers are retained. One of the first requirements before selecting a new herd sire is to determine your herd's present level of production and decide what traits need improvement. There are a number of considerations that need to be evaluated in sire selection, and they are outlined below.

What Breed Do I Need?

Among the many breeds that are available, select one that has a market demand for their offspring in your marketing area. Also, select a breed that has a performance program and can document the expected performance of future progeny. No one breed exceeds all other breeds in all traits of economic importance. Within the breed of cattle you select make sure that the prospective sire has the genetic potential to make positive changes in economically important traits. If the color of the offspring is an important factor, you need to understand how color in cattle is inherited and the effect your choice will have on market demand.

Do I Save Replacement Heifers?

If heifers are to be retained from within the herd, the bull's EPD for milk needs to be considered. A bull who has a milk EPD that is below his breed's average will most likely sire daughters that do not have a propensity for excellent milk production. If feed resources are limited in a beef operation, selecting a bull that has a milk EPD that is extremely above the average of his breed could drastically affect the future reproduction of his daughters. Higher levels of milk production require higher levels of feed resources in order to retain a high reproductive rate. Consequently,

selecting and using a bull that has a milk EPD that is extremely below the average of his breed could reduce the weaning weight of his daughters' calves. Most breed EPD averages for all traits are not zero. It is important to obtain a recent up-to-date breed sire evaluation report to determine different breeds' average EPDs for different traits. These sire evaluation reports can be obtained by writing to the particular breed association or consulting the Internet.

What if I Do Not Save My Own Replacement Heifers?

If heifers are not saved from within the herd, milk EPD does not have to be considered in the selection process. Emphasis should be given to other traits of importance to your herd.

Do I Need to Increase Weaning Weights?

If weaning weights need to be increased, then a bull that you want to consider selecting should have an EPD for weaning weight that is higher than his breed average. If your previous bull was of the same breed as the bull that you are considering, his weaning weight EPD needs to be greater than the previous bull's EPD. If you are considering changing breeds, then you should select a bull that exceeds his breed's average EPD for weaning weight. EPDs are useful only for comparing prospective bulls of the same breed, not different breeds. There is a positive relationship between increased weaning weight and increased birth weight. As we tend to increase weaning weights and growth, we tend to increase birth weights. Make sure that as you find bulls with high weaning weight EPDs that they do not have excessively high birth weight EPDs.

Will I Use This Bull on Mature Cows and Replacement Heifers?

If you use the same bull on mature cows and first- and second-calf heifers, then you need to consider the bull's birth weight EPD. Dystocia (calving problems) is highly related to birth weight. Larger calves at birth experience more difficulty in the birthing process. The largest amount of calving difficulty occurs in first- and second-calf females. It is important to select a bull that is used on all females in the herd to have a birth weight EPD that is below his breed's average. If replacement females are to be synchronized and artificially inseminated to a low birth weight EPD bull, then more latitude in birth weight EPD for the bull selected for the mature cows is allowed.

Do I Want to Increase the Frame Size of My Calves?

If calves are discounted at the market due to frame size, then the frame size of the bull should be considered in the selection process. Frame size is one of the highest heritable traits (about 45 percent) in beef cattle, so directional changes in frame size can be realized fairly rapidly. Small-framed bulls sire small-framed calves. If you need to increase frame size in your calf crop, a bull with a larger frame size than the present one being used should be selected. Selecting a large-framed bull that is extremely different in frame size than the mature cowherd may present calving problems since there is also a positive relationship between mature size and birth weight. Strict attention must be given to the birth weight EPD of extreme-framed bulls that are considered for selection. In addition, as a selection is made for increased frame size of the calf crop, there tends to be a "frame creep" in the replacement heifers that are retained. You will

eventually increase the mature size of the cowherd, and if feed resources are not available to support larger framed females, then reproduction may suffer.

Does My Percent Calf Crop Weaned Need Improvement?

The single most economically important trait in beef cattle production is reproduction. Many factors have an effect on reproduction and using them as indicator traits may improve percent calf crop weaned. Heavier actual birth weights certainly have a bearing on reproduction because they increase the frequency of calving difficulties. Females experiencing calving difficulty usually require a greater length of time to return to estrus and, if eventually re-bred, calve later in the calving season the following year. Also, females that have difficult births produce calves that are more susceptible to sickness and death, which can drastically affect the percent of calf crop weaned. The consideration of birth weight EPDs can provide a producer a means of protecting against dystocia (calving difficulty). Some breeds now include a calving ease EPD, which is a measure of how easily a particular bull's calves are born to first calf heifers. They are either reported in ratios or absolute figures. The higher numbers (both ratios and absolute figures) are indicators of fewer calving difficulties.

Extremely high milk production levels of a cow herd with limited feed resources also may have a detrimental effect on reproduction rate. Caution should be taken in attempting to maximize milk production levels in replacement females that are expected to be productive on poor forage quality and/or quantity. Utilizing milk EPDs and being aware of the breed average can guard against this problem in the sire selection process.

The prospective herd sire should have passed a Breeding Soundness Examination (BSE) within the last 30 to 45 days prior to selection. This is an exam in which a complete semen and physical evaluation of the male reproductive system is administered. It should be performed by a qualified veterinarian. Scrotal circumference is measured in the exam, and a 12-month-old bull should have a minimum scrotal circumference of 31 centimeters. Some breed association sire evaluation programs have scrotal circumference EPDs. These EPDs should be considered in herds where replacement females are to be saved. Research has indicated that bulls with larger scrotal circumferences sire daughters that reach puberty at earlier ages than those sired by bulls with smaller scrotal circumferences. Selecting prospective herd sires with larger scrotal circumferences and positive scrotal circumference EPDs is an indirect selection procedure for improved reproductive efficiency.

Is the Temperament of the Bull Important?

Temperament in beef cattle is inherited. Some research reports indicate that the heritability for temperament is 40 percent. Cows that are ill-tempered usually produce calves that are ill-tempered. Pay attention to the attitude of the prospective herd sire in order to eliminate more temperament problems within your herd.

Should I Be Concerned About Carcass Traits?

Most cow-calf producers are not concerned about the potential carcass qualities of their calves since they only sell weaning weight. However, given the industry's emphasis on carcass value, carcass predictability will continue to play a more important part in merchandising feeder cattle. This factor would be important if cooperative marketing of feeder cattle was the method of

merchandising your feeders. Many breed association sire evaluation reports provide carcass EPDs on individuals that can be used in designing feeder cattle with carcass predictability.

Where Can I Find a Bull That Will Fit My Needs?

Bulls with documented and predicted performance can be found from many sources. Purebred breeders that maintain performance records on their beef cattle operations and submit those records to their breed associations will have both adjusted performance records and EPDs for all the traits of economic importance. They should be able to help you in deciding what kind of bull will best fit your needs. If they do not have these records and information, then neither you nor the seller will have any idea how that particular bull can benefit or hurt your cowherd's particular needs. He may or may not provide you a means of improving your herd. The fact that a bull is purebred and registered does not necessarily mean that the bull will improve the herd.

Other sources of prospective herd sires include individual breeders' production sales, breed association consignment sales, performance-tested bull sales and central test station sales. Many state and geographical breed associations sponsor sales that have animals consigned with performance records and EPDs.

One thing to keep in mind is that it is sometimes difficult or expensive to find a bull that exceeds breed averages in all traits. Setting priorities is important in determining which traits need the most attention. You may have to sacrifice some trait levels in the first selection and then pay attention to the traits that are sacrificed in your second purchase. Building an excellent genetic base in a herd usually takes more than one generation.

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