

The Importance of Sire Selection

Dan W. Moser, Kansas State University

Bull selection presents an important opportunity to enhance the profitability of the beef production enterprise. For several reasons, bull selection is one of the most important producer decisions and, as such, requires advance preparation and effort to be successful. To effectively select sires, producers must not only be well versed in the use of Expected Progeny Differences (EPD) and understand breed differences, but they must also accurately and objectively assess their current genetics, resources, and management. Furthermore, recent advances in DNA technology and decision support tools add complexity to selection but will ultimately enhance selection accuracy. Producers who stay up to date on advances in beef cattle genetics should profit from enhanced revenue and reduced production costs, as they best match genetics to their production situation.

Opportunity for Genetic Change

Sire selection represents the greatest opportunity for genetic change. Genetic change in cow-calf operations can occur both through sire selection and through replacement female selection in conjunction with cow culling. However, most producers raise their own replacement heifers, greatly limiting the opportunity for genetic change through female selection. If a sound genetic system is in place, the amount of genetic variation among potential replacement heifers should be relatively small. For this reason, doing a good job of selecting the best of the group creates very little improvement over choosing just an average, random sample. Second, a large proportion of potential replacements must be retained to maintain herd size. Depending on culling rate in the cowherd, usually one-half or more of the replacement heifer candidates are retained at weaning, to allow for further selection at breeding time. So even if the best half of the heifers is retained, some average heifers will be in that group. Finally, the information used to select replacement heifers in commercial herds is limited. Producers may use in-herd ratios along with data on the heifers' dams, but these types of data on females do not reflect genetic differences as well as do the Expected Progeny Differences (EPD) used to select bulls.

In contrast, whether selecting natural service sires for purchase or sires to be used via artificial insemination (AI), the amount of variation available can be almost overwhelming. Producers can find bulls that will increase or decrease nearly any trait of economic importance. Furthermore, since a relatively few bulls will service a large number of cows, producers can select bulls that are fairly elite even when natural mating. Use of AI allows commercial producers to use some of the most outstanding bulls in the world at a reasonable cost, allowing for enormous amounts of genetic change, if desired. Finally, selection of bulls is more accurate than female selection. Seedstock breeders provide genetic information in the form of EPD, which allow for direct comparison of potential sires across herds and environments. Unlike actual measurements, EPD consider the heritability of the trait to accurately predict genetic differences between animals. If AI is used, even greater accuracy is possible. Bulls used in AI may have highly proven EPD, calculated from thousands of progeny measured in many herds and environments.

Permanent and Long-Term Change

Genetic change is permanent change. Among management decisions, genetic selection differs from others in that the effects are not temporary. Feeding a supplement to meet nutritional requirements is beneficial as long as the feeding continues, and health protocols, while important, must be maintained year after year. However, once a genetic change occurs, that change will remain until additional new genetics enter the herd. Whether selecting for growth, carcass traits, or maternal performance, those traits, once established in the herd, are automatically passed on to the next generation.

Sire selection has a long-term impact. Regardless of whether a selected sire has a favorable or unfavorable effect on the herd, if his daughters enter the cowherd, his effects will remain for a considerable period of time. Assuming a sire is used for four years and his daughters are retained, his impact will easily extend into the next decade. And, while each generation dilutes his contribution, his granddaughters and great-granddaughters may remain in the herd a quarter-century after he last sired calves. For this reason, purchases of bulls and semen should be viewed not as a short-term expense but as a long-term investment into the efficiency and adaptability of the beef production enterprise.