The Importance of Sire Selection

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In commercial beef cattle operations, sire selection is the foundation of the genetic potential of the herd. The genetic merit of the herd in conjunction with the environment in which it exists, the management it is subjected to, and the underlying economic factors determine the success of the operation. Sire selection is a critical component of every cow/calf operation; it should not be practiced in isolation but rather in consideration of the other factors involved.

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) (Chapters 5 and 6), but they must accurately and objectively assess their current genetics, resources, and management (Chapter 2). Understanding breed differences (Chapter 10) and knowledge of heterosis and developing a breeding program (Chapter 9) has long been established as one of the most important means to economic success. Furthermore, advances in genomic technology (Chapter 11) have led to EPD with higher accuracy values, particularly in young bulls, which reduces the risk of selection errors due to imprecise genetic merit estimates. Selection indices and decision-support tools have the potential to enhance selection precision by assisting producers to select bulls that have the potential to improve their economic outcome (Chapters 7 and 8). Producers who stay up to date on advances in beef cattle genetics and apply that knowledge to their bull selection decisions should profit from enhanced revenue and reduced production costs.

Opportunity for Genetic Change

Sire selection represents the greatest opportunity for genetic change for several reasons. Genetic change in cow-calf operations can occur both through sire selection and through replacement female selection in conjunction with cow culling. Considering that most producers raise their own replacement heifers rather than purchasing them, a large fraction of the heifer crop is needed for replacements. 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. Even if the best half of the heifers are retained, some average heifers will be in that group. 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 EPD used primarily to select bulls. When selecting replacement heifers from within your herd, remember that the decisions you make today in sire selection will impact the future genetic potential of your cow herd.

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 relatively few bulls will service a large number of cows, producers can select bulls that target their specific needs even when using 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 usually 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 utilize multiple sources of information to give a clearer representation of cattle's genetic potential, and with increased information comes increased accuracy of selection. If AI is used, even greater accuracy is possible when selecting progeny proven bulls. Bulls used in AI may have high accuracy EPD calculated from thousands of progeny measured in many herds and environments.

Long-term Change

Genetic change tends to be slower than most management decisions, but the consequences are longer lasting. 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 generations.

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 contributions 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 his 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.