Outside the Box: The dilemma of heifer selection

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Confronted by an alley full of heifer calves from which must be sorted the next generation of replacement females, I can't help but be amazed by the contrast between the way we choose heifer replacements and herd sires. As a commercial cattleman, bull selection is a relatively straightforward decision — we set numeric criteria, sort through a mound of data to identify a group of bulls that meet our selection standards and then try to buy the number we need within the available budget.

The day that we select replacement heifers with the same precision as sires will be a breakthrough for the industry and one that can't come too soon.

Selection process

Sire candidates are evaluated for soundness and disposition, but our choices are driven by data — all in all, an objective systematic approach that builds our confidence that we are moving our genetic trend in a desired direction.

By comparison, our heifer selection process is considerably less precise. The process looks something like the following:

- Born after the first 45 days of the calving season — cull
- Wild as a March hare — cull
- Too little or too big — cull
- Poor feet and leg structure — cull

At this point, two pens have been created — one that is relatively uniform and a pen that, politely put, "covers a bit more phenotypic territory." With a couple of generations of effective bull selection under our belt, the uniform pen contains approximately 70%-80% of the original number of heifers. To get to the number of heifers to be developed, any daughter of a problem cow (bad udder, poor mothering ability, bad attitude) is moved to the cull pen. Then the final choices to get the replacement group to the target number involve pure, unadulterated subjective evaluation.

To be sure, the source of any true confidence in the process is based on the law of averages and, ultimately, any success is built on the strength of the bull selection effort.

Counting on seedstock supplier

Very few commercial herds will collect the data required to create a database that allows heifer selection to be more precise. The responsibility falls to the seedstock producer to build a maternal performance data set and to then put the resulting analysis to work to build genetically superior cow herds. Commercial cattle producers depend on seedstock herds to effectively utilize expected progeny differences (EPDs) such as calving ease maternal (CEM), calving ease direct (CED), mature weight (MW), and cow energy value ($EN).

For commercial herds, productivity depends on the genetic merit of the sires and their daughters introduced into the herd; optimal nutritional, reproductive and health management;

and effective culling of the cow herd. The great challenge is to create systems that yield the following profitable outcomes in commercial herds:

- Freedom from reproductive disease;
- Females that conceive for the first time between 12-14 months of age;
- Females that rebreed easily with relatively low levels of reproductive failure, especially in the second breeding season;
- Females that calve easily;
- High levels of longevity in the cow herd; and
- Reproductive performance that can be supported by the grazing resource within a specific environment.

Expensive venture

The most expensive aspect of commercial beef production is the process of creating a female that successfully weans a calf as a 2-year-old and again as a 3-year-old. Breeding females as yearlings has become commonplace, and high pregnancy rates during the first mating season are typically achieved. However, the first weaned calf seldom returns enough revenue to cover the cost of developing its mother and thus reproductive failure in the second breeding season is economically devastating. In fact, several research studies suggest that a female doesn't return a profit to the enterprise until her third or fourth calf is sold.

The industry has allocated and focused resources to effectively select for improved performance in growth and carcass traits. The industry has sustained a trend line of adding nearly 6 pounds (lb.) to the average carcass weight per annum for the past several decades, the percent of cattle grading USDA Choice has increased, and average ribeye size has increased. Yet, reproductive performance enhancement has been more elusive; and many commercial breeders have depended on heterosis resulting from planned crossbreeding systems to gain higher levels of performance in percent calf crop weaned and pregnancy rates.

Research dollars directed toward improving reproductive performance have steadily declined over the past few years. Perhaps when feed resources were cheap and calf prices relatively low, seeking new approaches to enhanced genetic merit for reproduction were not as critical. However, in an age when high calf prices provide added incentive to increase the number of calves sold and high feed prices make it contingent upon each replacement female to express profitable levels of fertility, the case for allocating research dollars to improved reproductive performance makes sense.

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