Handle on HEALTH

Increase Profits with a Shorter Calving Season

Utilize estrus synchronization with natural service.

by ***Todd Bilby, Ph.D.***

Reaping the benefits of a breeding season and subsequent calving season lasting no longer than 60 days, in bull-bred herds, remains a glaring opportunity for more than half of the nation's beef cow-calf producers.

Consider that 54.4% of all beef operations had calving seasons lasting more than three months in 2017, according to USDA's National Animal Health Monitoring Service (NAHMS). NAHMS Beef 2017[1] also reported that 76.8% of beef heifers and 92.9% of beef cows were bred only through natural service, with no artificial insemination (AI) prior to turnout.

Benefits of a short calving season

Breeding all cows and heifers to calve within a relatively short period of 45 to 60 days, and getting more of them to calve within the first 21 days of the calving season leads to:

- Increased weaning weights – if a calf is gaining 2.5 pounds per day, then each 21-day delay in conception results in more than a 50 pound loss in weaning weight.
- Improved calf crop uniformity.
- When heifers and cows calve early in the season, they are more likely to be cycling at the start of the next breeding season. Benefits include more calves born in the first 21 days of the subsequent calving season and reduced culling of cows due to breeding failure.
- Other advantages include a more focused period of monitoring cows for dystocia and calves for early health problems (e.g. neonatal diarrhea).

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How to shorten calving distribution

Cow-calf producers who do not use AI and rely solely on bulls can still utilize estrus synchronization to get cows pregnant quickly and reduce calving distribution. Here are two simple strategies.

1. Prostaglandin (PG) injection five days after bull turnout:

This method allows bulls to breed approximately 20-25% of cycling females before the PG injection is administered to all females. Using PG five days after bull turnout on all females will not cause pregnancy loss in cows bred prior to PG administration because they still have a developing corpus luteum (CL) that is not yet responsive to PG. After PG is administered, nearly all of the remaining cyclic females should get bred within two to five days, with peak estrous activity occurring on the third day after PG injection.

2. PG injection on the day of bull turnout:

Giving the PG injection to all females the day of bull turnout will not get them as tightly synchronized as waiting until five days after bull turnout, but it is an effective alternative.

Approximately 75% of females receiving PG should be in heat within two to five days. The difference between this strategy and the first one is that the 25% of females that were in heat during the preceding five days will not yet be responsive to PG (as outlined above) and will therefore cycle back 16 to 21 days later.

Bull numbers stay the same

Assuming you utilize a breeding soundness examination to ensure your bulls are ready for the breeding season and your bull-to-female ratio is near the recommended ratio of one bull per 25 breeding females (1:25), your bull power will not change.

In a comparison of bull-to-heifer ratios ranging from 1:16 to 1:50 with heifers synchronized using a melengestrol acetate (MGA)-PG protocol and then immediately exposed to bulls, the optimal bull-to-heifer ratio was 1:25 based on both biological and economic criteria[2]. This ratio is the same as the recommended bull-to-female ratio utilized as an industry standard without synchronization.

Females must be cycling

Whether using the protocols described above, any estrus synchronization protocol, or simply turning females out with a bull, they only work if females are cycling. PG simply causes the CL to regress, leading to a cascade of hormonal events, which results in the female coming into heat. But a female must be cycling to have a CL to regress.

Cows that calved during the 30 days prior to the start of the breeding season generally have not yet begun to cycle and are therefore unlikely to respond to synchronization. Postpartum anestrus typically averages 20 days longer for first-calf heifers than mature cows. Ensuring body condition score (BCS) at the time of calving is adequate in both heifers (BCS ≥ 6) and cows (BCS ≥ 5) is vital to improving cyclicity and increasing conception rates.

Implementation of estrus synchronization in bull-bred herds, coupled with culling cows that fail to conceive will result in compounding benefits each year. As the calving window gets tighter, more cows will have more time to resume cyclicity by the start of the breeding season. More pregnant cows and more calves born earlier in the calving season will result in more dollars in your wallet. HW

Editor's Note: Todd Bilby, Ph.D. is Associate Director of Merck Animal Health Cattle Technical Services.

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[1]USDA. NAHMS Beef 2017: Beef Cow-calf Management Practices in the United States, 2017 - Report 1.

[2]Healy et al. Investigating optimal bull:heifer ratios required for estrus-synchronized heifers. Journal of Animal Science 1993;71:291-297.