Details Are in the Diet

Grazing experience prior to breeding should be included in a heifer development program.

by ***Kindra Gordon***

Preparing heifers for breeding season often focuses on proper body condition scores, vaccination protocols and reproductive tract scoring. But researchers are finding grazing experience may also be important to a heifer's successful transition during the breeding process.

When preparing replacement heifers for their first breeding season, special consideration should specifically be given to heifers getting grazing experience on pasture before breeding season begins, advises South Dakota State University (SDSU) Extension Cow-Calf Field Specialist Robin Salverson.

She explains grazing experience is important because studies have shown when heifers move from being fed in a drylot to being fed in a pasture, most lose weight before becoming accustomed to their new environment.

Salverson cites one study that found heifers lost on average 56.3 lb. during their first two weeks on pasture — about 4 lb. per day. As well, she says 60% of those heifers were found to become anovular — not ovulating — within 13 to 15 days of the diet change.

Additionally, Salverson and her SDSU colleagues have studied heifers developed in feedlot and pasture situations and have found the heifers developed in a drylot had a higher percentage cycling prior to breeding, but the heifers developed on grass actually had a higher pregnancy success. Salverson attributes the drylot heifers' lower conception rate to a negative energy crash experienced by the feedlot-developed heifers after the transition from the feedlot to grass immediately following breeding.

Salverson says researchers believe this energy crash happens when cattle are introduced to a novel environment. They try new feedstuffs a little at a time before increasing intake. This period of adjustment can result in a negative gain on heifers.

Energy expended

It's not just the diet change that causes the heifers' weight loss. Salverson says foraging behavior is also a factor. She explains when initially put on pasture, heifers expend a great deal of energy moving around and exploring the space.

To document this, SDSU researchers placed pedometers on heifers to track and compare the number of steps they take in a drylot versus a pasture setting. Prior to artificial insemination (AI), heifers in the drylot averaged approximately 2,500 to 3,000 steps daily. Meanwhile, heifers on pasture averaged around 6,000 steps per day. After breeding, when the two groups were both turned onto pasture, drylot heifers had nearly double the

number of steps on the first day on pasture. Specifically, heifers with grazing experience had about 10,000 steps on the first day on pasture, while those coming from the drylot had about 18,000 steps.

Salverson says by approximately the fourth day on pasture, both heifer groups were averaging 8,000 to 9,000 steps daily. However, she notes the extra steps the drylot group took during the first few days expended a lot of energy — which may have impacted weight gain and the pregnancy rate for those heifers.

According to Salverson, the bottom line from this research is this: If heifers are naïve to grazing, they will experience a negative plane of nutrition, which can impact weight and pregnancy success.

Recommendations

Therefore, in heifer development, she recommends to producers, "If you are able to allow heifers some access to pasture before breeding it gives those heifers knowledge and ability to graze."

Salverson notes access to just 40 acres can be beneficial. "Anything so heifers are allowed to graze," she states. With that in mind, she emphasizes heifers do not have to be on a full grazing diet while gaining this experience — they can be supplemented with hay, dried distillers' grain, wheat midds or other supplements.

How far in advance should heifers be put on pasture before breeding to ensure they are back on a positive plane of nutrition? Salverson says, "If you get heifers on grass at least 30 days prior to breeding, reproductive success should not be affected."

For producers who breed in a drylot, she suggests they adapt heifers to grass for up to a month before breeding. Then heifers could be drylotted and supplemented for 10 days while AIing. When they are turned out to grass post-AI, they should not go through the negative gain period.

For producers who do not have the option of getting heifers onto pasture before breeding, Salverson advises breeding in the drylot. After breeding, she says to maintain them there another 30 days, or to supplement them on grass if they are immediately put on pasture.

All total, Salverson underscores the ultimate goal is developing heifers so they stay in the herd and have a long, productive life. Minimizing energy crashes as heifers transition to pasture and into the cow herd by managing nutrition before and after breeding appears to be integral to pregnancy success, Salverson concludes. HW

Vaccinations and reproductive performance

SDSU researcher reevaluating effect of modified live vaccine on beef females' reproductive performance

How do vaccinations against infectious diseases such as BVD (bovine viral diarrhea) and IBR (infectious bovine rhinotracheitis) affect reproductive efficiency? This is a question South Dakota State University (SDSU) Associate Professor and Extension Beef Reproductive Specialist George Perry and his colleagues are addressing.

He explains many current management protocols suggest inactivated (killed) and modified live vaccines (MLV) can both be safely administered to replacement females 30 days prior to the start of the breeding season and as an annual booster to cows. Conventional wisdom has suggested the MLV actually provides better immunity protection.

However, via a review of several reproduction cycles, Perry is documenting data suggesting administration of the MLV, even when given at labeled pre-breeding intervals, may negatively affect reproductive parameters compared to cattle vaccinated with inactivated vaccines. Additionally, research indicates the MLV does not appear to offer superior immunity protection.

Perry hypothesizes the negative effect of the MLV may be impacting development of the egg as it is grown by the follicle in the 90-day period prior to ovulation and fertilization. But he adds, "Right now I can't tell you what's causing those negative effects. We have studies trying to identify that."

Until more investigation is complete, Perry advises producers, "Modified live vaccines have their place to prime the immune system." However, he suggests an MLV is best administered to calves at weaning. Then, for replacement females pre-breeding, Perry suggests switching to an inactivated, killed vaccine. For the cow herd, Perry advises using a killed vaccine booster annually for disease protection.

He notes this protocol — using an MLV at weaning and an inactivated at pre-breeding — activates both sides of the immune system.

That said, Perry calls it "critical" for producers to gain input from their herd veterinarian before making changes to their vaccination products or timing. He notes, "Prevention needs differ among herds and depend on the virus loads that herds are exposed to." He also explains that none of the data from the pre-breeding studies he reviewed were carried out in the face of disease challenge and did not address the question of protection in the face of an infectious reproductive disease exposure.

Perry advises producers to monitor future research findings to help determine the best balance to achieve appropriate disease protection and to minimize harmful effects from the vaccines themselves. HW