

Ridin' Herd

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How nutrition of the dam affects male progeny

It seems the more we know, the more we really don't know or understand. In this column we have discussed fetal programming of fertility in female progeny. This month we consider

male progeny: Are there differences in performance and carcass characteristics of male progeny from dams that were supplemented or not supplemented with protein the last 90 days of gestation?

These data suggest marbling genes in the progeny are affected before birth by protein supplementation of the dam during the last 90 days of gestation.

Female refresher

Data from Nebraska would indicate there is a difference in heifer fertility based on whether they are born to dams that were supplemented protein the last 90 days of gestation or to dams that were not supplemented. There is also a difference based on whether the heifers' dams were grazing winter range while being supplemented or grazing corn residue while being supplemented.

Heifers from dams that were grazing winter range and supplemented protein tended to be younger at puberty (355 days of age vs. 370 days) and tended to have greater pregnancy rates (91% vs. 77%) compared to female calves born to cows not supplemented protein during the last trimester.

In regard to heifers from dams that were grazing corn residue and either supplemented with protein or not supplemented the last 90 days of gestation, there was no difference in fertility. This is the fetal programming information for the heifer progeny.

Effect on male progeny

To set this discussion, it will be important to describe grazing and protein supplementation strategies. Cows were grazing either corn residue after the corn was harvested as grain, or Sandhills dormant winter range. Cows grazing cornstalk residue were either supplemented 1 pound (lb.) of a 28% protein supplement daily or were not supplemented. The cows grazing dormant winter range were either supplemented 1 lb. of a 28% protein supplement daily or were not supplemented.

Performance of male progeny was recorded from birth to harvest. The protein cube contained a high percentage of distillers' dried grains, but also contained wheat midds, cottonseed meal and corn gluten feed. The cows were spring-calving cows, and their calves were weaned in fall.

When looking at the data, the greatest difference in feedlot performance appeared to be in steer progeny from dams that were grazing winter range and supplemented compared to not supplemented protein.

Steer progeny from dams that were either supplemented or not supplemented while grazing corn residue were not different in final live weight or hot carcass weight. There tended to be about 0.11 lb. difference in average daily gain (ADG) in favor of the male progeny from dams that were supplemented while grazing either

winter range or corn residue.

The biggest difference in steer performance was observed in calves from dams that were either supplemented or not supplemented protein while grazing winter range. Steers from dams supplemented protein while grazing winter range averaged 68 lb. heavier at harvest and their average hot carcass weight was about 45 lb. greater compared to steers from dams that were not supplemented protein the last 90 days of gestation grazing winter range.

As an example, if finished calves were selling for \$1 per pound on a liveweight basis (remember, no price slide for finished cattle) and if you retained your calves to harvest, some money was left on the table for not supplementing. In this example, if the 28% protein supplement could be purchased for \$400 per ton (20¢ per lb.) and the cost to deliver the protein supplement to the cow is \$20 per ton (1¢ per lb.), then a rough cost for 90 days of protein supplementation would be \$18.90 per cow. In this example, using a partial calculation, \$49.10 (\$68 – \$18.90) would have been left on the table for not supplementing the last 90 days of gestation if cows were grazing dormant winter range and steer progeny were retained to harvest.

When looking at carcass characteristics, there wasn't a difference in 12th-rib fat, ribeye area or yield grade in steers from dams that were either supplemented or not supplemented protein the last 90 days of gestation. For these parameters measured, it did not make any difference if the cows were grazing dormant native range or corn residue.

There was a difference in the percentage of carcasses grading USDA Choice. Steers born to dams that were supplemented protein while grazing winter range or corn residue had a greater number of carcasses that graded Choice. For steers from dams that were grazing winter range and protein-supplemented, the advantage was 8%. For steers from dams that were grazing corn residue and supplemented, the difference in percentage Choice was 23% (88% Choice vs. 65% Choice).

There was also a difference in the percentage of carcasses grading in the upper two-thirds of the Choice grade for steers from dams that were supplemented the last 90 days of gestation. Comparing carcasses from steers from dams that were supplemented and grazing winter range, the difference was a 16% advantage grading in the upper two-thirds of Choice compared to carcasses of steers from dams that were not supplemented. The difference recorded for carcasses grading in the upper two-thirds of the Choice grade for steers from dams that were supplemented protein and grazing crop residue compared to carcasses of steers from dams that were not supplemented was 20%.

These data suggest marbling genes

in the progeny are affected before birth by protein supplementation of the dam during the last 90 days of gestation. This would affect economics depending on how the finished calves were marketed.

Final thoughts

We don't totally understand the biological mechanism of how protein supplementation in late gestation affects feedlot performance and carcass

composition of male progeny. At least in the Nebraska data, there seems to be some differences in calf performance in the feedlot whether their dams are protein supplemented or not and grazing winter range. Positive carcass composition characteristics favor calves from dams that were supplemented protein the last 90 days, and it didn't matter if cows were grazing corn residue or winter range during the protein

supplementation period. Producers who retain steer calves through harvest may want to investigate the cost/return of implementing this management strategy.



Editor's Note: "Ridin' Herd" is a monthly column written by Rick Rasby, professor of animal science at the University of Nebraska. The column focuses on beef nutrition and its effects on performance and profitability.