



# Ridin' Herd

► by **Rick Rasby**, Extension beef specialist, University of Nebraska

## Direct, indirect effects of supplementation strategies

*With fall and winter just around the corner, producers are beginning to develop supplementation strategies for spring-calving cows. Depending on your feed resources, you may be developing strategies for cows grazing dormant winter range or crop residues. The most common crop residue grazed by beef cows is cornstalks. The question arises, what kind of response should be expected if gestating cows are supplemented?*

### Protein supplementation

Data suggest that dormant winter native range is deficient in protein for spring-calving cows. Previous data at many land-grant universities and the University of Nebraska suggest that protein supplementation of spring-calving beef cows grazing dormant Sandhills range during late gestation does not improve cow reproductive performance (2006 *Nebraska Beef Report*, pp. 7-9), namely pregnancy rate, despite the fact that nutrient requirements are greater than nutrient content of the grazed forage.

In a more recent study (2009 *Nebraska Beef Report*, p. 5), spring-calving cows (3 to 5 years of age) were supplemented either 1 pound (lb.) of a 28% crude protein (CP) cube daily or not supplemented protein while grazing dormant native range. After winter grazing, supplemented and nonsupplemented cows were managed together.

Cow body weight and cow body condition precalving was greater for cows that were supplemented. Those differences were not seen prior to the start of the breeding season nor at weaning. Pregnancy rate was not different between the supplemented and nonsupplemented groups and were above 92%.

Calf birth weight was not different between the two groups; however, calves from supplemented dams were heavier at an interim weigh date in the spring (before the start of the breeding season for the cows) and at weaning despite the fact there was no difference in milk production of dams that were either supplemented or not supplemented prior to calving. This might suggest that calves from dams that were supplemented precalving may be more thrifty and their immune system status may have been better able to ward off sickness

and, therefore, make better gains. However, there was no indication of any differences in calf sickness between calves from supplemented or nonsupplemented dam groups.

It might also suggest that calves from dams that were supplemented are more efficient at using feeds. Another suggestion might be, although milk production was not different, that there are differences in milk quality or colostrum quality in supplemented vs. nonsupplemented dams.

Just as interesting, statistically more cows that were supplemented (83%) while grazing dormant native range precalving calved the first 21 days of the calving season compared to nonsupplemented (62%) cows. Cows that calve early in the calving season wean calves that are heavier and that should generate more dollars at weaning.

In the same study reported above, a similar group of spring-calving cows was supplemented the same protein cube while grazing cornstalk residue, while another group of cows grazing cornstalk residue was not supplemented. After cornstalk grazing, both groups of cows were managed together.

Precalving weight and body condition were statistically different between the two groups in favor of the supplemented group. In the cornstalk grazing part of the study, the difference between the supplemented and nonsupplemented groups was not the same magnitude as that observed among cows grazing dormant native range.

Precalving body condition score for cows grazing cornstalks and supplemented was 5.3 and that for nonsupplemented cows was 5.2, although these numbers are statistically different, they are likely not different biologically, meaning it would be difficult to say that any performance difference between the two groups is a result of differences in

body condition; nor would you expect any differences in performance due to differences in body condition of the two groups.

There were no differences between groups in calf birth or weaning weight. Calving date, percentage of cows calving in the first 21 days of the calving season and milk production did not differ. Pregnancy rate was high for both groups (97% for supplemented and 95% for nonsupplemented cows).

### Calf performance

The fetal programming hypothesis states postnatal growth and physiology can be influenced by stimuli experienced *in utero*. Can the performance of calves be influenced by nutrition of the dam during late gestation?

The study described above evaluated steer and heifer performance from supplemented and nonsupplemented dams that were either grazing dormant range or cornstalk residue. Heifers from dams that grazed corn residue tended to weigh more prebreeding compared to heifers from dams that grazed native range, whether they were supplemented or not. Heifers from dams that were supplemented while grazing range or crop residue were younger when they reached puberty. Pregnancy rate tended to be greater for heifers from dams that were supplemented protein precalving compared to heifers whose dams were not supplemented.

The differences in reproductive performance for heifers was more pronounced if their dams grazed native range compared to cornstalks. Pregnancy rate for heifers from dams that were supplemented and grazed range was 90% compared to 77% for heifers whose dams were not supplemented. Pregnancy rates for heifers from dams that were grazing cornstalks and supplemented was 88% compared to 83% for heifers whose dams were not supplemented.

The performance of the steer mates to the heifers discussed above was also recorded. Carcass weight tended to be greater for steers from supplemented dams compared to steers from nonsupplemented dams. Backfat,

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ribeye area, and yield grade were not different between steers whose dams were supplemented compared to steers whose dams were not supplemented. Percentage of the steers grading USDA low-Choice or better was greater for steers from dams that were supplemented compared to steers from dams that were not supplemented. The greatest difference in percentage USDA low-Choice was in steers from dams that grazed corn residue and were supplemented (86%) compared to steers from dams that grazed

corn residue and were nonsupplemented (64%).

### **Final thoughts**

Supplementation strategies affect profit potential of the cow-calf enterprise. The point here is not only to determine the effect of a management strategy in regard to cow performance, but also how the management strategy may affect the performance of the calf that is being developed in the uterus. As with all management strategies, determine the economics and how they might affect profitability and use data to help determine differences that can be expected.

These data were developed in using feed resources in Nebraska. Visit with your beef specialist about how these concepts might fit the feed resources and supplementation strategies in your location.



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**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.