



BEEF CATTLE RESEARCH UPDATE

Britt Hicks, Ph.D., PAS
Area Extension Livestock Specialist
Oklahoma Panhandle Research & Extension Center

March 2012

Evaluation of Beef Cow and Calf Separation Systems to Improve Reproductive Performance of First-Calf Cows

A leading factor impacting the profitability of a cow-calf operation is percent calf crop. Cows that are slow to breed or fail to breed are costly and reduce herd productivity and profitability. Many factors affect a cow's ability to breed after calving. In order to maintain a 365 day calving interval, a cow must begin recycling and get rebred within 80 to 85 days after calving. The most common cause of slow breeding and failure to breed is inadequate nutrition which is commonly assessed by monitoring body condition score (BCS).

Other factors besides nutrition that impact the duration of the postpartum anestrous are cow age and calf suckling activity. Research has shown that first-calf heifers are slower than mature cows to resume estrous cycles, making it more difficult to get young females rebred. Suckling activity by a calf alters the release and the level of hormones required by the cow to resume her estrous cycles after calving. Calf removal for either a short period of time or permanently often speeds the resumption of estrous activity.

Two methods of calf removal are early weaning of the calf and short-term calf removal (48-hour calf removal). The most aggressive and effective means of stimulating estrous activity in cows is early weaning. Early weaning of calves at 6 to 8 weeks of age is an effective way to get high rebreeding rates even in very thin cows.¹ With early weaning, the calves must be placed on feed or sold as light-weight calves. With short-term calf removal, calves are removed from the cows for 48 hours usually at the start of the breeding season. Short-term calf removal is recommended only for females under moderate nutrition stress.² For short-term calf removal to successfully initiate estrous activity in the majority of the cows treated, the cows should be in moderate body condition (> 4.5), be at least 45 days postpartum, have gained weight prior to the start of the breeding season, and have not resumed normal estrous activity following calving.³

Recent University of Florida research compared the effects of a 48-hour calf removal to early-weaning and repeated 48-hour calf removals on postpartum interval and measures of performance of first-calf cows.⁴ This study was conducted over two consecutive years using 112 fall-calving, 2-year old Brahman X British crossbred cow-calf pairs. The cows grazed bahiagrass pastures. The calves were either subject to a 48-hour removal at the beginning of the breeding season (STR48), early weaned (EW), or interval weaned (IW: calf removal for 48 hours at four times during the breeding season, 20 days apart). These treatments were all initiated at the start of a 90-day breeding season (calves were an average of 97 days old at start of breeding season). Early-weaned calves were kept in a dry lot pen for 10 days for acclimatization and then transferred to annual ryegrass pastures and provided a 16% protein supplement at a level of 1.0% of body weight daily. During the 48-hour removal periods, calves were kept enclosed within a pen located inside the pasture where they had tactile contact with their dams (limited to the head region), but they were not allowed to suckle. Free-choice access to supplement and water was provided to the calves during this 48-hour period. The cows and calves were weighed at the start and end of the breeding season. Pregnancy was diagnosed by ultrasonography at approximately 45 days after the end of the breeding season. To determine the effects of treatment on the length of postpartum anestrous, blood samples were collected at 10 day intervals during the breeding season for analysis of progesterone concentrations.

Cow and calf weights did not differ at the beginning of the breeding season but were greater ($P < 0.01$) for EW vs. STR48 and IW cows and calves at the end of breeding period (850, 795, and 793, and 377, 292, and 278 lb for EW, STR48, and IW cows and calves, respectively). By day 30 of the breeding season, more EW cows were cycling than IW and STR48 cows (89.5, 68.9, and 61.1%, respectively; $P = 0.02$). At the end of the breeding season, there was a tendency ($P = 0.11$) for more IW cows to be cycling compared to STR48 cows (94.6, 90.1, and 72.7 % cycling for EW, IW, and STR48 cows, respectively). Early-weaned cows tended ($P = 0.06$) to have a greater pregnancy rate compared to IW and STR48 cows and IW cows had a greater ($P = 0.03$) pregnancy rate than STR48 cows (94.4, 89.7, and 71.7% pregnant for EW, IW, and STR48, respectively).

In summary, these researchers concluded that compared to a single-time, 48-hour calf removal, repeated 48-hour calf removal resulted in similar cow weights and BCS changes, reduced calf weight gain, and hastened the resumption of estrous activity which led to a greater pregnancy rate. They suggested that repeated 48-hour calf removal may be an effective option for the management of first-calf, Brahman crossbred cows, particularly for producers that are unable or unwilling to early-wean calves at the start of the breeding season.

Effect of Rumensin® Level, Supplemental Urea, and Optaflexx® on Fecal Shedding of *E. coli* in Feedlot Cattle

Escherichia coli O157:H7 is an important food-borne pathogen that inhabits the hindgut of cattle and is shed in the feces, which can subsequently contaminate food products. Recent Kansas State University research evaluated the effects of Rumensin® (30 or 40 g/ton of dry matter, DM), supplemental urea (0, 0.35, or 0.70% of DM), and Optaflexx® (0 or 200 mg/steer daily over the last 42 days of finishing) in a steam-flaked corn grain-based diet containing 30% wet sorghum distillers grains on fecal shedding of *E. coli* O157:H7.⁵ This study used 720 crossbred beef steers housed in 48 pens (15 steers/pen).

These researchers reported the overall fecal prevalence of *E. coli* O157:H7 was 7.6% and ranged from 1.6 to 23.6%. Cattle fed Rumensin® at 40 g/ton had less ($P = 0.05$) fecal *E. coli* prevalence than cattle fed 30 g/ton (4.3 vs. 6.8%). They speculated that the reduction in fecal shedding of *E. coli* observed with the larger dose of Rumensin® occurred because of changes in the microbial populations and fermentation products in the hindgut since a substantial proportion of the Rumensin® passes through the intestinal tract intact. Supplemental urea at 0.35 or 0.70% had no effect ($P = 0.87$) on fecal shedding of *E. coli*. The fecal prevalence of *E. coli* was 5.3, 5.7, and 5.9% for groups fed 0, 0.35, and 0.7% urea, respectively. Similarly, Optaflexx® at 0 or 200 mg/head/day had no effect ($P = 0.89$) on the fecal prevalence of *E. coli* (4.4 vs. 4.0%). These authors concluded that additional research is needed to confirm the reduction in fecal shedding of *E. coli* O157:H7 in cattle fed Rumensin® at 40 g/ton of feed compared with cattle fed 30 g/ton of feed

¹ Lalman, D. 2003. Early weaning for the beef herd. Oklahoma Cooperative Extension Fact Sheet F-3264. Available: <http://pods.dasn.okstate.edu/docushare/dsweb/Get/Document-1928/F-3264web.pdf>.

² Sprott, L. R. 2003. Calf removal: A way to stimulate reproduction in cows. Texas AgriLife Extension Service L-5443. Available: <http://animalscience.tamu.edu/images/pdf/beef/beef-calf-removal.pdf>.

³ Hanson, G. R. 2006. Improve reproductive performance in your cow herd using calf removal. University of Florida IFAS Extension AN166. Available: <http://edis.ifas.ufl.edu/pdf/AN/AN16600.pdf>.

⁴ Martins, P. G. M. A., and J. D. Arthington. 2011. Evaluation of beef cow and calf separation systems to improve reproductive performance of first-calf cows. Pages 77-80 in Florida Beef Research Report. Available:

http://www.animal.ifas.ufl.edu/extension/beef/beef_cattle_report/2011/documents/lmartevalbeefcow.pdf.

⁵ Paddock, Z. D., C. E. Walker, J. S. Drouillard, and T. G. Nagaraja. 2011. Dietary monensin level, supplemental urea, and ractopamine on fecal shedding of *Escherichia coli* o157:H7 in feedlot cattle J. Anim. Sci. 89:2829-2835.

Oklahoma State University, U.S. Department of Agriculture, State and Local Governments Cooperating. The Oklahoma Cooperative Extension Service offers its programs to all eligible persons regardless of race, color, national origin, religion, sex, age, disability, or status as a veteran, and is an equal opportunity employer.