BEEF CATTLE RESEARCH UPDATE

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Carryover Effects of Stocker Cattle Systems on Feedlot Performance and Carcass Characteristics

Stocker cattle production is an important part of the beef cattle production system in the United States. A number of stocker cattle management factors such as forage type and quality, type and amount of supplementation, rate of gain, use of technology (implants, ionophores, etc.), and animal-related factors (behavior, stocker body weight, age, condition, health, genotype, etc.) may affect subsequent feedlot performance and carcass characteristics. Researchers from the Nobel foundation (Ardmore, OK) and the University of Arkansas reviewed and summarized stocker cattle research studies that included follow up study of subsequent feedlot performance and carcass characteristics.[1]

Some of the major highlights of this review include:

- The most consistent effects of stocker management on feedlot finishing and carcass performance can be explained by changes in placement weight of feeder cattle. Increasing placement weight typically is confounded with cattle age at placement, average daily gain (ADG) during stocker period, and duration of the stocker period. In an analysis of several data sets, these authors noted that finishing ADG increased by 0.14 to 0.20 lb/day for each 100 lb increase in feedlot placement weight. I conducted a similar analysis on 4,767 pen records from beef steers and 4,789 pen records from beef heifers that closed out from 2001 through 2005 at Hitch Enterprises' feedyards and observed very similar results. In this data, I found that finishing ADG increased by 0.20 and 0.22 lb/day, respectively, for heifers and steers for each 100 lb increase in feedlot placement weight.
- Data from studies comparing calf-fed to yearling-fed cattle indicated that as age or body weight at feedlot entry increased, finishing ADG, feed intake, and hot carcass weight increased, whereas, feed efficiency (gain to feed ratio), days on feed, marbling score and tenderness (measured by Warner-Bratzler shear force) decreased.
- In yearling cattle backgrounded on forage, as backgrounding ADG increased, finishing ADG, feed intake, and days on feed decreased while carcass weight and ribeye area increased with no effect on marbling.

These researchers concluded that stocker cattle producers should make management decisions primarily to maximize their own net return and place only secondary consideration on potential effects on subsequent performance. However, if cattle are owned across both stocker and finishing phases of production, management decisions should focus on maximizing net return over the entire ownership period. They also concluded that of the traits of feeder cattle that can be affected by stocker cattle systems, body weight is the primary determinate of their value when they are placed into commercial feedyards.

Performance of Calves Weaned in the Morning or Evening using Either Fence-line or Traditional Weaning Methods

Beef calves are traditionally weaned by abrupt remote separation from their dams. Weaning is one of the most stressful events in a calf's life.[2] Minimizing weaning stress should improve calf health and weight gain. Fence-line weaning has gained popularity in recent years over traditional methods because calves show less behavioral stress, vocalize less (bawling), spend more time eating and gain more weight following weaning.[3] Recent University of Arkansas research evaluated the effects of weaning method (fence-line vs. traditional) and time of day (morning vs. evening) on behavior and performance of fall-born calves.[4]

In this study, crossbred fall-born calves were allotted to the following weaning treatments: 1) fence-lined weaned in morning, 2) fence-lined weaned in evening, 3) traditional weaned in morning, and 4) traditional weaned in evening. The calves assigned to the morning weaning treatments were gathered at 7:30 am, separated from their dams, weighed, and either placed in 4-acre paddocks adjacent to their dams (fence-line weaning) or in 1-acre drylots away from their dams for 14 days (traditional weaning). The calves assigned to the evening weaning treatments were gathered at 5:30 pm and handled the same as the morning treatment groups. During the weaning period, all groups had ad libitum access to water, trace mineral salt, and were offered 2 lb per head per day of dried distiller's grains. In addition, the traditional weaned groups were offered medium quality hay. Each treatment group was evaluated for vocalization and behavior (walking rapidly, running, standing, or lying down) at approximately 12, 24, 48, and 72 hours after weaning. After the 14 day weaning period, the calves were gathered and reweighed.

These researchers reported that the percentage of calves walking rapidly, standing, or lying down did not differ across treatments. However, the percentage of calves vocalizing were greater for morning weaning compared with evening weaning (67 vs. 42%, P = 0.01) and from traditional weaning compared with fence-line weaning (62.5 vs. 46.5%, P = 0.05). In addition, during the 14 day weaning period, evening weaned calves gained 86% faster than morning weaned calves (2.70 vs. 1.45 lb/day, P = 0.04) and fence-lined weaned calves gained 59% faster than traditional weaned calves (2.55 vs. 1.60 lb/day, P = 0.08).

The results of this study suggest that weaning fall-born calves in the evening may reduce the number of calves vocalizing and may increase calf gains over the weaning period. These researchers suggested that this might benefit producers that sell calves to a cash market shortly after weaning. Fence-line weaning might also result in fewer calves vocalizing during the weaning period and improve performance compared with traditional weaning.

Even though fence-line weaning is not always possible or feasible, minimizing stress is still important. A 2008 review listed the following tips to minimize stress from weaning to shipping.[2]

- Provide calves access to the weaning area (pen, trap, or pasture) a few weeks prior to weaning so calves do not undergo the stress of an environment change at weaning.
- Allow fence-line contact between calf and dam for four to seven days following weaning. Fences should be sturdy and allow nose to nose contact while preventing nursing.
- If fence-line contact is not practical, move cows far enough away that they cannot hear the calves bawling.
- Move the cows to a new location when cows and calves are separated at weaning. Do not move the calves.
- If weaning in a drylot or corral, place feed bunks, hay, or water troughs along the fence to minimize perimeter walking.
- Do not castrate, dehorn, or brand calves at weaning. These practices should be completed at least three weeks before weaning and preferably prior to three months of age.

[1] Reuter, R. R. and P. A. Beck. 2013. Southern Section Interdisciplinary Beef Cattle Symposium: Carryover effects of stocker cattle systems on feedlot performance and carcass characteristics. J. Anim. Sci. 91:508-515.

[2] Mathis, C. P. 2008. Calf management: Weaning to shipping. Pages 35-40 in 2008 Southwest Beef Symposium, Roswell, NM. Available: http://cahe.nmsu.edu/ces/swbeef/documents/2008-sw-beef-symposium-proceedings.pdf.

[3] Price, E. O., J. E. Harris, R. E. Borgwardt, M. L. Sween, and J. M. Connor. 2003. Fenceline contact of beef calves with their dams at weaning reduces the negative effects of separation on behavior and growth rate. J. Anim. Sci. 2003: 116-121.

[4] Ness, K., J. Caldwell, K. Coffey, B. Shanks, D. Hubbell, III, A. Stewart, E. Backes, J. Tucker, C. Clifford-Rathert, and A. Wurst. 2012. Performance by fall-born calves weaned in the morning or evening using either fenceline or traditional weaning methods. Arkansas Animal Science Department Report Research Series 606:31-33. Available: http://arkansasagnews.uark.edu/606-7.pdf.