BEEF CATTLE RESEARCH UPDATE

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Effects of Density of Steam-Flaked Corn & Roughage Concentration on Feedlot Performance

Recently published Texas Tech University research used 128 beef steers (869 lb initial weight) in a 2 X 2 factorial to evaluate the effect of two bulk densities of steam-flaked corn (SFC; 26 or 30 lb/bu) and two dietary roughage concentrations (6 or 10% coarsely ground alfalfa hay, DM basis) on feedlot performance and carcass characteristics.[1] Over the entire feeding period (average of 125.5 days), steers fed 26 lb/bu SFC were more efficient (P = 0.04; 5.38 vs. 5.59 lb feed/lb gain) than steers fed 30 lb/bu SFC. In addition, the cattle fed 26 lb/bu SFC tended to be more efficient (P < 0.10) at all 35-day intervals throughout the trial. Flake density did not influence gains or feed intakes over the entire feeding period. Cattle fed 6% roughage consumed less feed from day 0 to 35 (P = 0.03) and day 0 to 70 (P = 0.05) than cattle fed 10% roughage. However, feed intakes did not differ over the entire feeding period. Feeding 6 vs. 10% alfalfa tended to improve overall efficiency (P = 0.09); 5.41 vs. 5.56). Flake density did not influence carcass characteristics. Steers fed 10% roughage had a greater dressing percent (P = 0.01; 62.4 vs. 61.6%). These researchers concluded that within the ranges of bulk density and roughage concentrations evaluated, that it should be possible to improve efficiency by simultaneously decreasing bulk density of SFC and dietary roughage concentrations. A 2007 survey of consulting feedlot nutritionists reported that the average bulk density recommended for SFC was 27 lb/bu; however the most frequently recommended bulk density was 28 lb/bu.[2] Published research indicates that flaking corn to densities less than 28 lb/bu does not further improve feedlot performance.[3,4]

Impact of Reducing Length of Calving Season

Reducing the length of the breeding season and thereby the calving season is one of the most effective practices that can improve beef production efficiency, increasing the profitability of a cow-calf operation. Some of the advantages to shortening the calving season include being able to market heavier, more uniform lots of calves and having improved and more efficient herd health and cow supplementation programs.[5] A 2009 USDA survey found that 54.5% of the beef cow operations, accounting for 34.1% of all the beef cows, did not have a set breeding season. This survey also noted that 34% of these operations had a single breeding season, accounting for 48.4% of the beef cows. For operation with one breeding season, 69.7% of the operations completed calving within 3 months, with an average breeding season of about 110 days.[6]

University of Arkansas research recently evaluated the effects of reducing the length of the calving season from more than 200 days to less than 90 days by working with six cooperator cow-calf operations.[7] A specific plan was designed for each cow herd that included such management practices as supplement and mineral feeding, bull breeding soundness examinations, and other management factors that could affect reproduction rates. The average calving season length of the six cow herds was reduced from 273 to 85 days in 3.8 ± 0.75 years. The percentage of cows calving during the desired calving season increased from 46.3 to 92.0%. The mature cow calving percentage did not change from the

first year (89.2%) to the final year of the study (87.2%). The herd breakeven cost decreased from $0.61/lb to $0.43/lb over the study which caused the income per animal unit (1000 lb cow) to increase from $95.0 to $189.70. Even though these differences in cost and income were not statistically significant, they were financially relevant to the cooperators.

A 2005 research analysis of 394 ranch observations from a standardized performance analysis (SPA) data set (from Oklahoma, Texas, and New Mexico) supports the findings from this recent Arkansas study.[8] In this SPA data set, the length of the breeding season ranged from 11 to 365 days with an average of 133 days. This analysis suggested that for each day the breeding season was lengthened, the annual cost of producing 100 lbs of weaned calf increased by 4.7¢ ($P < 0.10$) and pounds of calf weaned per exposed female decreased by 0.158 lb ($P < 0.05$). Applying these values to the Arkansas data suggest that reducing the calving season from 273 to 85 days reduces the cost of production by $8.83/cwt of weaned calf and increase the pounds of calf weaned per exposed cow nearly 30 lb. These data clearly illustrate that reducing the length of the calving season is one of the most important and cost-effective practices that producers can implement.

[1] Hales, K. E., J. P. McMeniman, J. Leibovich, J. T. Vasconcelos, M. J. Quinn, M. L. May, N. DiLorenzo, D. R. Smith, and M. L. Galyean. 2010. Effects of varying bulk densities of steam-flaked corn and dietary roughage concentration on in vitro fermentation, performance, carcass quality, and acid-base balance measurements in finishing steers. J. Anim. Sci. 88: 1135-1147.

[2] Vasconcelos, J. T. and M. L. Galyean. 2007. Nutritional recommendations of feedlot consulting nutritionists: The 2007 Texas Tech university survey. J. Anim. Sci. 85:2772-2781.

[3] Zinn, R. A. 1990. Influence of flake density on the comparative feeding value of steam-flaked corn for feedlot cattle. J. Anim. Sci. 68:767-775.

[4] Sindt, J. J., J. S. Drouillard, E. C. Titgemeyer, S. P. Montgomery, E. R. Loe, B. E. Depenbusch, and P. H. Walz. 2006. Influence of steam-flaked corn moisture level and density on the site and extent of digestibility and feeding value for finishing cattle. J. Anim. Sci. 84:424-432.

[5] Selk, G., and K. Barnes. 2008. Choosing a calving season. Pages 237-242 in Oklahoma Beef Cattle Manual Sixth Edition, Oklahoma Cooperative Extension Service, Oklahoma State University, Stillwater, OK.

[6] USDA. 2009. Pages 13-17 in Beef 2007-08, Part II: Reference of Beef Cow-calf Management Practices in the United States, 2007–08. USDA–APHIS–VS–CEAH, Fort Collins, CO. Available: http://www.aphis.usda.gov/vs/ceah/ncahs/nahms/beefcowcalf/beef0708/Beef0708_dr_PartII.pdf

[7] Troxel, T. R., and B. L. Barham. 2009. The impact of reducing the length of the calving season. Arkansas Animal Science Department Report Research Series 574: 75-76. Available: http://arkansasagnews.uark.edu/574-21.pdf

[8] Ramsey, R., D. Doye, C. Ward, J. McGrann, L. Falconer, and S. Bevers. 2005. Factors affecting beef cow-herd costs, production, and profits. J. Agric. Appl. Econ. 37: 91-99.