BEEF CATTLE RESEARCH UPDATE

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Effect of Method and Timing of Castration on Newly Arrived Stocker Cattle

A 2007-08 USDA survey of U.S. beef cow operations found that about 59.2% of operations castrated any bull calves prior to sale.[1] This same survey reported that most operations (74.5%) castrated bull calves at an average age of less than 93 days, but almost one of five operations (18.4%) did not castrate calves until they were over 122 days old. Beef Quality Assurance Guidelines recommend that bull calves that are not herd sire prospects be castrated as early in life as possible (preferably, between birth and four months of age). All methods of castration have been shown to cause significant acute pain and distress. It is well documented that castration of feeder calves on arrival or shortly after arrival at a feedlot decreases daily gains and increases morbidity.[2,3,4] As a result, when purchasing feeder calves, bulls are typically discounted relative to steer calves. A 2010 survey of 14 Arkansas auction barns (38,346 lots consisting of 79,822 head) reported that steer calves sold for $6.31 more per cwt of live weight than bull calves.[5] Traditionally, bull calves are castrated immediately after arrival at a stocker or feedlot facility. However, the stress caused by castration combined with other stressors (weaning, marketing, transportation, co-mingling, etc.) could worsen the negative effects caused by castration.

University of Arkansas researchers determined the effects of castration method and timing on performance and health of newly arrived beef stocker cattle purchased at livestock markets in three groups/trials (271 calves averaging 463 lb: 184 bulls and 87 steers).[6] These calves were divided into five treatment groups: 1) calves that arrived as steers; 2) calves that arrived as bulls and were castrated surgically at arrival or 3) 14 day later; and 4) calves that arrived as bulls and were castrated utilizing a bander at arrival or 5) 14 days later.

Steers gained 45.2% faster than calves that arrived as bulls (1.83 vs. 1.26 lb/day; $P < 0.0001$) over the entire receiving period (50-, 53-, or 43-day trial for trials 1, 2, and 3, respectively). In the castrated groups, calves surgically castrated at arrival had the greatest average daily gain (ADG: 1.43 lb/day) with those surgically castrated on day 14 (1.10 lb/day) and band-castrated at arrival gaining the least (1.19 lb/day) while calves banded on day 14 had intermediate gains (1.30 lb/day). Morbidity was greatly affected by castration status (51% of steers pulled for antibiotic treatment vs. 78% of castrated bulls; $P < 0.0001$). However, morbidity did not differ between the castration treatments.

In conclusion, both methods of castration dramatically reduced performance and increase morbidity compared with receiving steers calves. These researchers noted that the method of castration should be determined by producer preference. However, with surgical castration growth performance is maximized by castrating at arrival, whereas banding should be delayed until 2 weeks after arrival.

Effect of Castration and Dehorning at Arrival on Long-Term Growth Performance of Stocker Cattle

Even though it is well documented that castration of feeder calves on arrival or shortly after arrival at a feedlot decreases daily gains and increases morbidity during a receiving period, little research has been done on the negative long-term effects of purchasing bulls vs. steers. Dehorning of horned cattle is also a common management practice upon entrance into a stocker or feedlot operation. The 2010 survey of Arkansas auction barns reported that polled calves sold for $8.03 more per cwt of live weight than horned calves.[5]

In additional University of Arkansas research, data was compiled from nine studies to quantify the effect of castration and dehorning of beef calves upon arrival at a stocker unit on long-term growth performance and morbidity during a receiving period and subsequent grazing period.[7] These studies were conducted over a 3-year period using 1,105 calves averaging 410 lb at arrival. All bulls in these studies (672 head) were castrated at arrival, and their ADG and morbidity over the course of the receiving (22-69 days) and grazing (44-217 days) phases were compared with calves received as steers (433 head). Horn status was available on 979 of the 1,105 calves (823 polled or previously dehorned calves with 156 calves requiring dehorning). Dehorning was performed at arrival.

These researchers reported that during the receiving phase that steers gained 22.2% faster than bulls castrated at arrival (1.43 vs. 1.17 lb/day; $P < 0.01$) and polled calves gained 17.1% faster than dehorned calves (1.37 vs. 1.17 lb/day; $P < 0.01$). Whereas, during the grazing phase no differences in ADG were noted between castrated bulls and steers or polled and dehorned calves. Over the combined receiving and grazing phases, steers tended to gain 8% faster than castrated bulls (1.48 vs. 1.37 lb/day; $P = 0.09$) and polled calves tended to gain 5.9% faster than dehorned calves (1.43 vs. 1.35 lb/day; $P = 0.11$). Morbidity rates tended to be greater for castrated bulls than steers (55 vs. 47%; $P = 0.08$) over the entire feeding period (receiving plus grazing phases). Morbidity rates were not affected by dehorning ($P \geq 0.21$) in these data.

These data suggests that purchasing bulls over steers due to lower initial costs, would have a negative effect on receiving ADG, overall ADG, and the incidence of morbidity but would not affect performance during the grazing phase. These authors noted that this reduced performance and increased morbidity could result in castrated bulls having higher breakeven prices and cost of gain compared to steers, depending on purchase price. These data also suggested that purchasing horned calves over polled calves due to lower initial costs, would have a negative effect on receiving ADG and overall ADG, but would not affect performance during the grazing phase or the incidence of morbidity.

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[7] Ratcliff, M. D., E. B. Kegley, J. G. Powell, J. Hawley, K. S. Lusby, M. P. Rowe, S. A. Gunter, L. B. Daniels, and D. S. Hubbell. 2014. Assessment of the effect of castration upon arrival on long-term growth performance of stocker cattle. Prof. Anim. Sci. 30:466-475.