BEEF CATTLE RESEARCH UPDATE

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Effect of Castration Timing on Growth Performance and Carcass Quality of Beef Calves

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] The percentage of operations that castrated any bull calves prior to sale increased as herd size increased (50.3, 75.0, 85.1, and 95.3% of operations, respectively, for herd size of 1-49, 50-99, 100-199, and 200 or more beef cows). 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]

Recent joint research between the University of Arkansas and West Texas A&M University (WTAMU) evaluated the effect of castration timing (near birth or at weaning) on lifetime growth performance and carcass quality of beef calves.[5] In this study, calves were surgically castrated near birth or at weaning. All calves were weaned at day 214 of the study to undergo a 56-day weaning period. For the first 28 days after weaning, the calves were fed hay ad libitum and a supplemental ration intended to achieve approximately 1.5 lb of gain per day. After 28 days, the calves were moved to a mixed-grass (endophyte-infected tall fescue and Bermuda grass) pasture to be maintained for an additional 28-day period to complete the 56-day weaning phase of the study. After this weaning phase, the calves were shipped 480 miles (on day 278) to the WTAMU Nance Ranch and grazed on native grass and sorghum-Sudan grass for a 111-day backgrounding period until entry into the adjacent WTAMU Research Feedlot on day 389. The calves were fed a common feedlot ration throughout the finishing period (average length of 128 days) and harvested at a commercial processing plant.

These researchers reported that average daily gain from birth to weaning (214 days) was similar between treatments (1.81 vs. 1.85 lb/day for steers and bull calves, respectively). Furthermore, there was no difference in weaning weight between the bulls left intact (483 lb) or the non-implanted steers castrated near birth (475 lb). These authors suggest that this observation indicates that testosterone-enhanced growth in bulls vs. steer cohorts is not realized until bulls reach ages beyond the typical weaning age. However, during the 56 day weaning period, calves castrated near birth gained faster than calves castrate at weaning (2.25 vs. 2.04 lb/day, $P = 0.04$). Summer grazing and feedlot finishing performance and carcass measurements did not differ between treatments. Theses researchers concluded that the results of this study indicate that castration procedures should be performed as early in life as possible to minimize performance loss.

The Effect of Delayed Corn Silage Harvest on Corn Silage Yield and Feedlot Performance

Corn silage should typically be harvested between 65 to 70% moisture (30 to 35% dry matter, DM) for horizontal bunker silos. The kernel milk line (represents starch content of the grain) is a common visual tool used to determine kernel moisture content (Figure 1). One examines the milk line by breaking a cob in half and looking at the kernels. After denting (0% milk line), a whitish line can be seen on the kernels. This line is where the solid and liquid parts of the kernel are separated while maturing and drying. This line will progress from the outer edge of the kernel towards the cob. When this milk line reaches the cob (100% milk line), a black layer will occur. The traditional recommendation (considered optimum for both yield and quality) has been to harvest corn silage

when the milk line is between one-half and three-fourths down the kernel (moisture content of 60 to 70%).

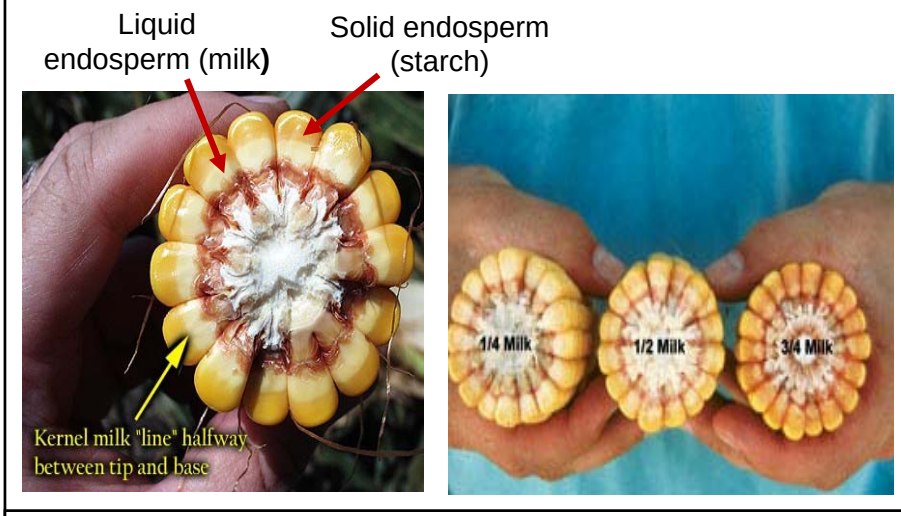

Figure 1. Illustration of kernel milk line.

University of Nebraska plot research in 2013 suggested that delaying silage harvest to black layer formation maximized yield while having little effect on nutritive quality of the silage.[6] In this study, late silage harvest increased DM harvest from 11 tons per acre to 12.18 tons per acre as compared to early silage harvest. Late harvest also increased the grain content of the silage leading to increased energy (TDN) in the silage. More recent Nebraska research evaluated the effect of delaying corn silage harvest on yearling steer (943 lb initial weight) feedlot performance and carcass characteristics.[7] In this study, corn silage was either harvested to mimic traditional corn silage harvested at ¾ milk line (~35% DM) or harvested about 2 weeks later coinciding with black layer formation (~42% DM). The silage was stored in sealed Ag bags.

These researchers reported that the DM content of the silage had no effect on live performance or carcass characteristics. However, corn silage yield was greater for the 42% DM silage vs. the 35% DM silage (10.07 vs. 9.55 DM tons/acre, $P < 0.01$). They concluded that delaying corn harvest in order to increase harvested corn silage tonnage could provide an economic incentive to put up drier corn silage. However, they also noted that packing and storage of high DM corn silage could be a concern with traditional bunker silage. This occurs because dryer corn does not pack well, producing more air pockets during packing. This may lead to poor fermentation causing higher DM losses (shrinkage), greater spoilage and poor bunk life.

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