

Summary

Data from a 10-year test at Fort Reno indicate that low levels of supplemental feed have not adversely affected reproductive performance or weaning weight of calves. Low level cows have shown a greater survival rate under the conditions of this test. They have matured into as large cows as those fed more liberally, with the exception of cows which calved first as two-year-olds. At 10½ years of age, cows that calved first as two-year-olds had weaned 1.23 more calves than those that calved first as three's.

Total feed, pasture, and mineral costs for medium and high level cows have been 32 percent and 77 percent greater than for cows wintered each year at the low level. Results of a wintering trial with mature cows at the Lake Blackwell range have also shown that low level feeding was equal to medium levels in terms of weaning weight of calves, despite greater winter weight loss of low level groups.

Thus, it appears that small amounts of winter supplement, as practiced under conditions of this study, were adequate. Of considerable importance is the apparent trend for a shorter productive life span and lowered reproductive performance when beef cows are fed relatively large amounts of supplemental winter feed.

Carcass Studies With Steers, Bulls, and Stilbestrol-Implanted Bulls Sold as Slaughter Calves

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With an increasing demand for lighter, leaner beef cuts, many farmers in Oklahoma have found a "fat slaughter calf" program profitable. These calves are fall-dropped from dams generally of mixed breeding, and sired by beef bulls. The calves are creep-fed and allowed to run with their dams on winter and early spring pastures until they are marketed at approximately 550 pounds and 8 to 9 months of age off the cow.

In this program, the male calves are castrated. The question has been raised as to the carcass merit of bull calves, slaughtered at this young age, particularly since the bull calf gains at a faster rate than the steer. The effect of implanting bull calves with stilbestrol at a young age was not known and, thus, was also studied.

A preliminary trial was designed to (1) compare the carcass characteristics of bull and steer calves, and (2) study the effects of stilbestrol implantation on the growth and carcass characteristics of intact male calves.

Procedure

Thirty Hereford bull calves, born in October and November, 1957, were divided into three groups according to age, weight, sire, and production record of the dam. The groups were assigned to treatment at random. Calves in Lot 1 were castrated at approximately three months of age. Lot 2 calves were left as bulls. Lot 3 calves were left intact and implanted with 12 milligrams of stilbestrol at 3½ months of age and re-implanted with 24 milligrams at 6½ months of age.

All calves and their dams were in the same pasture throughout the test. The calves were creep-fed a ration of 5 parts milo, 3 parts oats, 1 part cottonseed meal, and 1 part molasses. The cows and calves grazed wheat pasture for the first 90 days of the trial, and for the remainder of the experiment were on native grass. The calves were removed from their dams and shipped to Oklahoma City for sale and slaughter, June 23, at approximately eight months of age. After slaughter, the wholesale ribs were obtained for further analysis.

Results

A summary of the gains and certain of the slaughter data are given in Table 1. Lot 2 bull calves gained 20 pounds more to weaning than the steer calves of Lot 1, while the stilbestrol-implanted bull calves of Lot 3 gained only 10 pounds more than the steers. Thus, stilbestrol apparently slightly reduced the rate of gain in intact male calves.

TABLE 1. Gain and slaughter data in comparison of steer, bull, and implanted bull calves.

	Lot 1 Steers	Lot 2 Bulls	Lot 3 Implanted Bulls
No. calves	10	10	10
Ave. weights (lb.)			
Initial 1-14-58	248	249	245
Final 6-23-58	577	598	584
Gain (180 days)	329	349	339
Live value per cwt. ¹	\$24.55	\$24.04	\$24.81
Refinement score ²	8.3	2.9	5.8
Yield, percent ³	54.6	55.2	56.2
Carcass grade scores ⁴			
Conformation	G+ (17.9)	G (16.9)	G (17.1)
Quality of ribeye lean	G (17.5)	G— (15.9)	G— (16.3)
Finish	G+ (17.9)	G— (15.9)	G— (16.1)
Final grade	G+ (17.6)	G— (16.0)	G— (16.5)
Lean area of ribeye (sq. in)	6.93	8.32	8.06

¹Calculated from current carcass values based on grade and yield and final Fort Reno live weight.

²1=Bull, 9=Steers in appearance.

³Hot carcass weights shrunk 2½%.

⁴Good+=18, Good=17, Good—=16.

Prior to shipment to market, the calves were scored individually for refinement according to their bull, or steer, characteristics. Bull calves appeared much more masculine in appearance than steers. Implanting Lot 3 calves with 36 milligrams of stilbestrol resulted in masculine characteristics intermediate to those of steer and bull calves.

At time of slaughter, the testicles were removed from calves of Lots 2 and 3 for further physiological studies. Implantation with 36 milligrams of stilbestrol caused a reduction of approximately one-half in size and weight of the testicles from Lot 3 calves, as compared to those of Lot 2. Average testicle weight for Lot 2 calves was 361 grams and for Lot 3, 194 grams.

The calves were sold as a group, without regard to treatment. From the separation of the calves by the packer buyer, it appeared that a discount of approximately \$2.00/cwt. was placed on all untreated bulls (Lot 2) and on one-half of the treated bulls (Lot 3).

From carcass yield and grade data and the current value of the carcass, an on-foot value was computed, based on final live weights at Fort Reno. These values are shown in Table 1. Average computed on-foot values showed little difference, with Lot 3 implanted calves valued slightly higher. This was apparently due to the increased yield, although differences between treatments in yield were not statistically significant.

Although there was no significant difference between the lots in carcass conformation, Lot 1 steers had a significantly higher amount of external finish and a firmer, finer-textured lean in the ribeye. Also, the steers graded $\frac{1}{3}$ of a grade higher than the implanted bulls, and the implanted bulls graded slightly higher than the untreated bulls (Lot 3 vs. Lot 2). However, Lot 2 bulls had the largest rib-eye area (8.32 square inches), while the Lot 1 steers had only 6.93 square inches. A slight reduction in rib-eye area was noted in the carcasses from stilbestrol-implanted bulls of Lot 3.

Estimates of carcass composition were made using the 9-10-11 rib cut and the results are shown in Table 2. Carcasses from Lot 2 bulls had significantly more lean (67.52 percent) and the least fat (15.84 percent), while carcasses from Lot 1 steers had the lowest percent lean and the highest percent fat, 60.80 percent and 22.86 percent, respectively. Stilbestrol-implanted bulls were intermediate in percent lean and fat, 65.74 percent and 18.58 percent, respectively. Little difference was noted among the lots in percent bone.

Chemical analyses of lean tissue from the 9-10-11 rib-eye showed that Lot 2 bulls had significantly higher percent moisture, 75.54 percent, with the Lot 1 steers having significantly the highest percent ether extract (fat), 1.88 percent, and protein, 23.46 percent. Lot 3 implanted bulls were intermediate to steers or untreated bulls in percent moisture, ether extract, and protein.

No significant differences in tenderness were obtained when steaks from each carcass were evaluated by the Warner-Bratzler shear device,

TABLE 2. Carcass composition, tenderness, and taste panel scores.

	Lot 1 Steers	Lot 2 Bulls	Lot 3 Implanted Bulls
Carcass composition ¹			
Muscle	60.80	67.52	65.74
Fat	22.86	15.84	18.58
Bone	16.91	17.12	16.45
Chemical composition of lean, %			
Moisture	74.0	75.54	74.34
Protein	23.46	22.36	22.68
Ether extract	1.88	0.99	1.02
Ash	1.13	1.15	1.14
Shear values (rib) ²	19.37	20.59	20.79
Taste panel scores			
Tenderness ³	5.54	4.99	4.71
Juiciness ³	5.49	5.11	5.15
No. chews	24.08	27.49	28.04

¹Estimate from 9,10,11th rib (Hankins and Howe, 1946).

²Warner Bratzler shear of 1" core of broiled steak, least lbs. equal most tender.

³Extremely desirable=8, extremely undesirable=1.

or taste panel scores. However, rib steaks from steer calves tended to be juicier, as determined by taste panel tests, than those from bulls. Although differences in shear values and taste panel scores were small, there was a consistent tendency for steers to be more desirable than bulls or implanted bulls.

Summary

Thirty, fall-dropped Hereford male calves were used to compare the effects of castration and stilbestrol-implantation on rate of gain, masculine characteristics, and carcass merit. Steer calves gained less than bull calves to eight months of age. They graded higher in the carcass and had more fat cover and finer-textured lean. They were also slightly superior in tenderness and taste panel score. Bulls gained more rapidly than steers, but had lower live value per cwt. They yielded significantly more lean, based on estimations from 9-10-11 rib cuts. Implanting bull calves with stilbestrol (total of 36 milligrams) reduced gains and masculine effects. It also resulted in carcass characteristics intermediate between those of steers and untreated bull