

## Implanting Steer, Bull and Heifer Calves In a Fat Slaughter Calf Program

*L. S. Pope, E. J. Turman,  
L. E. Walters, Kenneth Urban, Joe Halbert*

With the increased interest in fat slaughter calf production in Oklahoma, several experiments have been conducted on methods of wintering the brood cow, and the use of stilbestrol and antibiotics in the creep feed of the suckling calf. More recently the possibility of leaving male calves uncastrated was investigated. It seemed possible that the young bull, slaughtered at 8 to 9 months of age, might produce an acceptable carcass that would be heavier and have a higher proportion of lean than that of the steer.

An initial trial compared the performance and carcass characteristics of bull calves, stilbestrol-implanted bull calves, and steer calves.<sup>1</sup> As might be expected, bull calves gained faster than steers, while the gain of implanted bull calves was intermediate between the steers and bulls. The steer calves had fatter, higher grading carcasses, with more marbling. However, unimplanted bull calves had a greater proportion of lean in the carcasses. Bull calves that had been implanted with stilbestrol were much less masculine in appearance than untreated bull calves, and were intermediate between steers and bulls in performance and carcass quality. There was little difference between the three groups in tenderness of broiled steaks as measured by taste panel tests and shear techniques. Although steer calves sold for more on-foot, stilbestrol-implanted bull calves produced the most valuable carcasses.

The results of this trial suggested that although stilbestrol administration depressed the gain of bull calves, the implanted bulls gained faster than unimplanted steers. The results of numerous studies, both at this station and elsewhere, have shown that suckling steer calves respond to stilbestrol implants made at 90 to 100 days of age. Hence the question was raised as to whether implanted steer calves would gain as rapidly as implanted bull calves, and if so, whether it would be advantageous to leave young males intact and implant with stilbestrol.

The data reported herein covers results from two experiments during 1959 comparing stilbestrol-implanted steer calves and stilbestrol-implanted bull calves. A further comparison was made with heifer calves between stilbestrol implants and a new Synovex-H implant (estradiol and testosterone) when administered at about 4 months of age.

### Procedure

In the fall of 1958, 18 male and 8 female Hereford and Hereford X Angus calves were available from one of the breeding projects at Ft. Reno. They were divided as equally as possible into two lots of male

<sup>1</sup> Results of this trial can be found in Okla. Agr. Exp. Sta. Misc. Pub. MP-55:62.

calves and two of heifers. Male calves of one lot were castrated in December while their mates were left intact. In February, steer calves were implanted at the base of the ear with 12 mg. stilbestrol, whereas the bulls received 24 mg. (12 mg. in each ear). One group of heifers received an implant of 18 mg. stilbestrol, the other was implanted with Synovex-H (20 mg. estradiol + 200 mg. testosterone).<sup>2</sup> The level of 18 mg. of stilbestrol for the heifers was chosen to approximate the amount of female hormone (estradiol) administered in the Synovex-H implant.

All calves remained with their dams in comparable pastures with a creep mixture available at all times. They were sold in mid-June as fat slaughter calves, and conformation scores, slaughter data, and carcass measurements were obtained.

In the spring of 1959, another group of 45 Hereford and Hereford X Angus calves were available. Essentially the same procedure was followed as outlined above, with one-half of the male calves (12 head) castrated at about 8 weeks of age. In early July, at about 4 months of age, the steer calves received 12 mg. of stilbestrol, and the bull calves were implanted with 24 mg. Three lots of 7 heifers each were treated as follows: Lot 1—Control, no implant; Lot 2—18 mg. stilbestrol; and Lot 3—Synovex-H implant.

All calves remained with their dams in a common pasture with a creep mixture of 5 parts ground milo, 3 parts whole oats, 1 part cottonseed meal, and 1 part molasses available free choice. Since calves of all treatments were in the same pasture, no data could be obtained on creep-feed intake. The calves were sold in late October in Oklahoma City as fat slaughter calves. Again, certain live animal grades, slaughter data, and carcass information were obtained.

The wholesale rib cuts were obtained from steer and bull carcasses in each trial and taken to Stillwater for physical separation of fat and lean, detailed chemical analyses, tenderness studies, and taste panel tests. These studies are now being completed and are not available for this report.

## Results

Data obtained relative to weight gains, conformation scores, carcass yields and grades, and other carcass measurements for steer and bull calves are shown in Table 1. Similar data are presented for heifer calves in Table 2. A carcass value, based on carcass grade and weight, was computed as the best measure of actual worth of the calves. This calculation was based on the current market value of dressed calf, assuming no cost or credit for slaughtering.

### 1. Implanted steers vs. implanted bulls

Results of the two trials showed no consistent advantage for either stilbestrol-implanted steers or bulls in rate of gain from implantation to

<sup>2</sup> Stilbestrol implants were supplied by Chas. Pfizer and Co., Terre Haute, Ind., and the Synovex-H implants by The Squibb Institute, New Brunswick, New Jersey.

Table I.—Effect of Stilbestrol Implants on Performance of Suckling Steer and Bull Calves.

	Implanted Steers	Implanted Bulls
<b>Trial I</b>		
Number of calves	9	9
Average weights (lbs.)		
Initial, Feb. 17	284	267
Final, June 15	598	589
Total gain	314	322
Average daily gain	2.66	2.73
Conformation score <sup>1</sup>	6.1	6.6
Carcass grade score <sup>1</sup>	7.0	8.4
Rib-eye lean area, sq. in.	8.00	8.68
Dressing percent, hide off	57.4	56.5
Carcass value, \$ <sup>3</sup>	168.01	157.04
Marbling score <sup>2</sup>	10.7	13.2
<b>Trial II</b>		
Number of calves	12	12
Average weights (lbs.)		
Initial, July 9	324	329
Final, Oct. 26	547	548
Total gain	223	219
Average daily gain	2.04	2.01
Conformation score	4.1	4.1
Carcass grade score	8.2	8.8
Marbling score	11.8	13.6
Carcass conformation score <sup>1</sup>	7.1	6.9
Dressing percent	55.9	56.3
Carcass value, \$	124.74	123.59

<sup>1</sup> Based on Choice=4, Good=7, etc.

<sup>2</sup> Moderate amount=3, lower the score the higher the marbling.

<sup>3</sup> Based on carcass weight X dressed calf price for the grade.

market weight. Results of the previous trial with bull calves, implanted at 3 months of age, showed a slight depression in gain as compared to untreated bulls, whereas other experiments have shown that steers respond to low level implants. Thus, implanting the steer calf might stimulate gain, while the opposite effect might occur in the intact male.

Although rate of gain was similar for implanted steers and bulls, the steers had a slightly higher conformation score at the end of the test in the first trial, but were little different from implanted bulls in the

Table 2.—Effect of Implanting Suckling Heifer Calves with Stilbestrol or Synovex-H.

	Controls	Stilbestrol	Synovex-H
<b>Trial I</b>			
Number of calves		4	4
Average weights (lbs.)			
Initial, March 3		346	344
Final, June 15		608	586
Total gain		262	242
Average daily gain		2.73	2.52
Conformation score <sup>1</sup>		5.5	5.0
Carcass grade score <sup>1</sup>		5.5	5.2
Marbling score <sup>1</sup>		7.0	6.3
Rib-eye area, sq. in.		8.17	8.08
Dressing percentage		56.9	57.6
Carcass value, \$ <sup>2</sup>		176.04	172.77
<b>Trial II</b>			
Number of heifers	7	7	7
Average weights (lbs.)			
Initial, July 9	303	302	307
Final, Oct. 26	476	505	511
Total gain	173	203	204
Average daily gain	1.59	1.86	1.87
Conformation score	4.4	4.0	4.3
Carcass grade score	7.3	8.1	7.9
Marbling score	9.1	11.6	11.0
Dressing percentage	56.2	56.0	57.2
Carcass value, \$	112.06	115.44	120.37

<sup>1</sup> See footnotes to Table 1.

second test. As was observed in the previous experiment, implanted bulls showed a considerable reduction in testicle size and masculine characteristics.

Implanted steers had slightly higher grading carcasses in both trials, although dressing percentage was variable. Much of this advantage was due to greater amounts of marbling in the steer carcasses. Rib-eye measurements taken in Trial I showed a slight advantage in lean area for implanted bulls over implanted steers.

The carcass value, based on carcass grade, yield, and dressed beef values, shows that the implanted steers were more valuable than implanted bulls in each trial, because of higher carcass grade. The average

carcass value of implanted steers was \$6.06 more than that for implanted bulls, approaching \$1.00 per cwt. increased on-foot value of the calves. In both trials, the steer calves sold for more than the bulls on the market, primarily because of a lower price placed on 3 or 4 head of bull calves that were obviously thinner than the rest. No feeder price was obtained on these calves as it is obvious that bull calves would sell for considerably less, although conformation scores did not differ significantly between the two groups. Under existing markets, there would be no advantageous feeder outlet for bull calves. Thus, if sold either as feeders or for slaughter, implanted steer calves would be more desirable than implanted bulls.

## 2. Implanting heifer calves with different hormones

In Trial I, two groups of 4 heifers each were implanted with either 18 mg. stilbestrol or Synovex-H. In Trial II, these treatments were repeated, plus an additional lot which received no implant and served as the control. Results of the two trials are shown in Table 2.

With the limited numbers of calves available, there appeared to be some advantage in weight gain for the stilbestrol implanted heifers in Trial I, but essentially no difference between the two hormone treatments in Trial II. In Trial II, where a control group was available for comparison, either implant increased gains about 30 lbs., or 17%. This compares with the results from 8 other trials at this station, where 12 mg. or 24 mg. implants of stilbestrol have resulted in an average of 36 lbs. additional gain in suckling heifer calves to weaning.

There appeared to be little effect of hormone treatment in Trial II on the conformation of the calves, although a few high tailheads were present among implanted heifers. In Trial II, the unimplanted heifers had higher carcass grades and marbling scores, but the extra gain of implanted calves resulted in a higher value of from \$3.38 to \$8.31 per calf for the stilbestrol and Synovex-H treatments, respectively.

In the comparison of stilbestrol vs. Synovex-H, there was no consistent advantage for one type of implant over the other in conformation score. However, Synovex-H implanted calves had a slight advantage in marbling, carcass grade, and yield. Considering both trials, carcass value per calf was essentially the same. It appears there was little difference in response of the calves used in this trial to either 18 mg. stilbestrol or Synovex-H.

## Summary

In two trials the performance of stilbestrol implanted steer calves was compared with stilbestrol implanted bulls in a fat slaughter calf program. While detailed studies of carcass composition and acceptability have not been completed, rate of gain, conformation scores and slaughter data indicate little difference between the two groups. Stilbestrol-

implanted steers had higher grading carcasses with better marbling. From these results there appears to be no advantage to leaving bulls intact and "chemically castrating" them by the use of stilbestrol implants.

Implanting heifer calves at 3½ months of age with either 18 mg. stilbestrol or Synovex-H increased gains approximately 17% over the controls, and increased the carcass value per calf by \$3.00 to \$8.00. There appeared to be little advantage to either type of implant with the limited number of suckling calves used in these trials.

## Creep-Feeding Fall Calves

*A. B. Nelson, L. R. Kuhlman, W. D. Campbell*

Creep-feeding is a method of increasing the gain and finish of suckling beef calves. In any feeding system increased feed consumption usually results in increased gain; one of the goals in creep-feeding, therefore, is to provide a palatable feed that will be consumed in large quantities as a supplement to the pasture grass and the milk produced by the dam.

There are many factors which must be given careful consideration when making a decision of whether or not to creep-feed. When creep-feeding is practiced it is with the expectation of increased profit. However, in a three-year test with spring-dropped calves (Okla. Agr. Exp. Sta. Bul. B-462) creep-feeding resulted in decreased profits. The calf gains were increased an average of 30 lbs., but the value of this gain was not as great as the cost of the creep-feed. The cows were high-quality grade Herefords grazing native grass pastures where an abundance of forage was available. In a study with calves from two-year-old heifers and in a season of low rainfall creep-feeding was profitable with the steers but not with the heifers. The average consumption of creep-feed in this test was 740 lbs. per head. Upon completion of these tests, attention has been given to the value of creep-feeding fall calves.

One would expect that creep-feeding would be of greater importance with fall calves than with spring calves. The fall-calving cow would be nursing a calf during the season when the forage in the native grass pastures is of lowest nutritive value. Unless the level of supplemental feeding is very high, the milk production of the cow would be expected to be lower than if green grass were available. The provision of creep-feed during this season would greatly increase the nutrient intake of the calf.

In a four-year study with fall calves (Okla. Agr. Exp. Sta. MP-55:72) creep-feeding increased the calf gains an average of 70 lbs. When the cows were fed an average of 1.5 lbs. of cottonseed meal per head daily creep-feeding increased gains 87 lbs. When similar cows were fed 2.5 lbs. cottonseed meal and 3 lbs. grain, the gains were increased 52 lbs.