gain. The gains were not improved by the use of a pelleted roughage in this test. Greatest gains were exhibited by the lots fed chopped and mixed roughage, whether fed ad lib. or at equal intakes.

In comparing pelleted roughage (Lot 1) vs. chopped roughage (Lot 2) when the calves were allowed to consume all they wanted, it is evident that although the cattle fed the pellets ate slightly more roughage, their gains were less than those of Lot 2. Also, in the lots which received a controlled roughage intake (Lots 3 and 4), calves gained slightly more when fed roughage in the chopped form. The reason for this difference is not apparent. However, changes may occur in the food nutrients during the pelleting process, or in the efficiency of utilization by the ruminant.

These results indicate it is not practical to pellet roughage for beef calves when rate of gain and cost of pelleting are considered. The quality of roughage may have a bearing on whether or not pelleting will increase performance. Probably lower quality roughages are more favorably affected by pelleting than high quality roughages. The quality of alfalfa in this roughage mixture was rather good, which might partially explain why pelleting failed to increase consumption and rate of gain.

Free-Choice selection of roughages.—Results with 4 extra cattle show that they preferred the roughage mixture in the pelleted form. These calves consumed an average of 9.5 lb. of pellets and 4.3 lb. of chopped roughage per head daily. Thus they ate 2.2 times as much pellets as chopped roughage. For the first few weeks of the trial, however, they ate about 5 times as much pellets as chopped roughage. These data indicate an improvement in palatability through pelleting.

Summary

Four lots of six calves each were used to test the effects of pelleting roughage on rate and efficiency of gain. During the 108-day feeding period the calves were fed roughage on a free-choice basis and in controlled amounts, both in the pelleted and chopped forms. One lot of four calves was given a choice of both forms of roughage, free-choice. Cattle that were fed pelleted roughage, free-choice, ate only slightly more feed than those fed chopped roughage. Greatest gains were obtained from cattle fed roughage in the chopped form, either when fed in controlled amounts or on a free-choice basis. When given a choice of pellets and chopped roughage, the calves preferred the pelleted form about 2.2 to 1.

Effect of Stilbestrol Implants on Gains of Steers Grazing Native Grass and Their Subsequent Feed-Lot Performance

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The majority of the cattle fed fattening rations are receiving stilbestrol, either in the feed or as implants in the ear. Experiments have indicated that greatest response to stilbestrol administration occurs

when cattle are full-fed for rapid fattening, with little or no response when cattle are "wintered" on a ration of relatively low energy content. Results of tests with grazing cattle have been variable and are apparently related to kind and quality of pasture. In areas of the country where legumes and legume-grass mixtures predominate, stilbestrol implantation has resulted in marked increases in gain.

In Oklahoma, many steers graze native grass pastures during the summer with no supplemental feed except minerals. In such cases, the preferred method of stilbestrol administration would be implants in the ear. One implantation may last for the entire grazing season. During the summers of 1956 and 1957, tests were conducted at this station to determine the value of stilbestrol implants for steers grazing native grass pastures.

Many questions have been raised by cattle feeders as to the effect of implanting steers during the grazing season on their performance in the feed lot while being finished for slaughter. Little information is available on this point. As a further step in this study, the feed-lot performance of the controls and implanted cattle used in the summer grazing test was observed during fattening experiments at the Ft. Reno station.

Implanting Steers on Native Grass Pastures

Procedures

On May 20, 1957, 60, choice grade, Hereford, yearling steers were divided into four lots on the basis of weight. These steers had previously been used in a wintering experiment at the Lake Carl Blackwell experimental range area. At the beginning of the summer test each of the steers in Lots 2 and 4 was implanted with three 12 mg. pellets (total of 36 mg.) of stilbestrol near the base of the ear.

All cattle were allowed to graze the native grass pastures (Bluestem and associated grasses). Steers in Lots 1 and 2 were fed no supplement other than salt, ad lib. Those in Lots 3 and 4 were self-fed a mixture of salt and milo in order to increase the energy intake of the steers in these groups. The salt served as a regulator of consumption of the mixture. Although the milo intake was quite variable throughout the summer and the salt content was changed several times, the average salt content of the mixture was 10.5 percent. The milo consumption was slightly lower than desired with a greater consumption in Lot 4.

Results

A summary of the weight gains and milo consumption and cost is given in Table 1. In the comparison of Lots 1 and 2, stilbestrol implants increased gains 27 lb. or 13.9 percent. When milo was fed (Lots 3 and 4), stilbestrol implants resulted in 21 lb. additional gain. This was an increase of 10.4 percent. The average increase, when all lots are considered, was 12.2 percent. These results are in contrast to those obtained in the summer of 1956 when stilbestrol implants (45 mg.) had no effect on gains. (These results were reported in Okla. Agr. Exp.

fed all the silage they would consume plus 10 lbs. of ground milo for the first 150 days, 1.5 lb. of a soybean meal-urea-dried molasses supplement and salt. All steers received 10 mg. stilbestrol in the daily ration. Three levels of phosphorus were provided by additions of monosodium phosphate, with 2 lots on each phosphorus level. At the end of 150 days on test, a shrunk weight was obtained and the cattle were given a full-feed of milo. The steers were slaughtered in early April at Oklahoma City and slaughter data and carcass grades were obtained.

Results

The feed-lot performance of 30 steers which had served as controls during the summer grazing tests vs. 30 which received 36 mg. stilbestrol in late May are shown in Table 2. The feeding period has been divided into 83 days, 150 days, and the entire 192 days since the performance of the two groups appeared to differ according to length of time on feed.

Yearling steers, previously implanted on summer pasture, graded slightly higher than the controls when they entered the feed-lot. It is also apparent that they had continued to outgain the controls from the time the final Lake Blackwell weight was taken, September 4, and the steers were placed on test at Ft. Reno, September 27. Hence the implanted steers entered the feeding pens with 32 lb. per steer advantage over the controls. During the first 83 days on feed, gains were almost identical between the two groups. However, gains of the previously implanted group dropped off markedly after 83 days, and by the end of 150 days they had gained 0.14 lb. per day less than the controls. When milo was full-fed during the last 42 days, the difference appeared to narrow (.07 lb. per head daily).

Table 2.—Effect of previous stilbestrol implantation on the performance of yearling steers in the feedlot (192 days)[1]

	Controls	Implanted in May, 1957, with 36 mg. stilbestrol
Number steers compared	30	30
Av. feeder grade at start of test	B—	B
Av. weights (lb.)		
Initial 9-27-57	725	757
Daily gain for first 83 days	2.93	2.96
Daily gain for 150 days	2.38	2.24
Final weight 4-7-57	1136	1154
Av. Daily gain for 192 days	2.14	2.07
Av. Carcass grade and score[2]	Gd + (4.33)	Gd + (4.17)
Dressing percentage	60.77	60.75

[1] Steers received a full-feed of sorghum silage plus 10 lb. milo and 1.5 lb. supplement pe head daily for first 150 days, followd by a full-feed of milo to 192 days. Steers of both group received 10 mg. stilbestrol in the supplement fed daily.

[2] Carcass grade score: Choice=2, low choice=3, high good=4, and good=5.

This difference in total weight put on in the feed lot during the first 150 days favored the controls by 21 lb. per head, which made up for 65 percent of the difference in weight advantage observed in favor of the implanted group at the start of the feeding trial. Yet at the end of the trial the difference in gain favored the controls by only 13 lb. per steer. To the feeder buyer, the implanted cattle would have been worth about $0.45 less per cwt. at the start of the trial. Improved summer gains on pasture from implanting partially disappeared in the feed lot. However, it should be borne in mind that pasture gains are generally more economical.

Final slaughter grades and dressing percentage at 192 days were almost identical. Implanted cattle showed numerous high tailheads, teat development, flat loins, etc., when they entered the feed lot at the end of the summer phase. These became much less noticeable as the fattening period progressed and at the end of the trial were not adverse enough to effect the selling price of cattle.

The implants administered to these cattle at the start of the grazing period may not have been completely absorbed at the time the fattening tests started, hence the implanted steers may have continued to receive stimulation from the pellets, in addition to that coming from silbetsrol in the ration. This may have had a bearing on their performance during the first 83 days on feed. Further, it should be borne in mind that the rations fed for the first 150 days in dry lot contained only limited amounts of milo and thus the steers were not receiving an extremely high intake of energy—although gains were quite satisfactory. The implanted steers had higher maintenance requirements due to heavier weights. When milo was full-fed the last 42 days, previously implanted steers outgained the controls.

Summary

Implantation of 36 mg. of stilbestrol increased the gains of yearling steers grazing native grass. In the 107-day period the implants increased gains 13.9 percent and 10.4 percent for cattle not fed and fed supplemental milo, respectively, or an average of 24 lb. per steer.

Following the pasture tests, the steers were fed high-silage rations with limited amounts of grain and supplements containing stilbestrol for 192 days in dry lot. At the start of the fattening period, there was a 32 lb. per steer advantage for stilbestrol-implanted cattle. Control steers outgained those implanted during the previous summer by 0.07 lb. per head daily or 13 lb. per steer, during the fattening phase. Under the conditions of this study, approximately 40 percent of the improvement in gains on summer pasture from stilbestrol implantation had disappeared after 192 days in dry lot.