

108, 94 and 90 lbs. There was no consistent effect of varying levels of carotene intake on cow or calf weights.

Most of the calves were weak at birth and susceptible to scours for the first few weeks. Diarrhea was very noticeable in calves of lots 1 and 2 throughout the trial where the cows received 10 and 20 mg. of carotene per cwt. daily.

Two calves were lost in lot 1, and one in lot 2. Severe diarrhea was noted in these calves shortly before death.

The cows of lot 1 were not able to maintain liver vitamin A stores during lactation. In contrast, the liver stores of the cows in lots 2 and 3 had increased by the time the calves were 3 months old. Hence a carotene intake of 20 mg./cwt. appears necessary to maintain body vitamin A stores in the lactating beef cow. Slight differences in blood vitamin A levels in the cows, and liver and blood levels of their calves, reflected the greater carotene intake of lots 2 and 3.

Summary

Three levels of carotene were fed beef cows during early lactation and their effects on the performance of the cows and their calves were studied. The cows were depleted of body stores of vitamin A during gestation and received supplemental carotene to supply 10, 20 or 30 mg./cwt. after parturition. No deficiency symptoms appeared in the cows, and the different levels of carotene intake after calving had no consistent effect on calf weights at three months. Rate of survival was greater in calves from cows receiving the 20 and 30 mg./cwt. levels of carotene intake. It appears that beef cows may use body stores of Vitamin A to maintain health for long periods, but must receive relatively large amounts in the feed in order to protect their calves against a deficiency. Under range conditions, it may be more profitable to give the calves carotene or vitamin A directly (such as in the creep feed) than to feed high levels to their dams.

The Effect of Stilbestrol Implantation on Gains of Steers Grazing Native Grass

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Both the feeding and implanting of stilbestrol have greatly increased the gains of fattening cattle. The degree of response is apparently related to the level of energy in the ration. Experiments have indicated that the greatest response to stilbestrol implantation occurs when cattle are full-fed for rapid fattening with lesser or no response when cattle are "wintered" on a ration of relatively low energy content.

Results of tests with grazing cattle have been quite variable but apparently related to the type of pasture. In tests in other areas of the

country, stilbestrol implantation has resulted in increased gains of cattle grazing high quality pastures such as legumes or legume and grass mixtures. During the summer of 1956 a test was conducted by the Oklahoma Agricultural Experiment Station to determine the value of implanting with stilbestrol steers grazing native-grass pastures.

Procedure

The 56 steers used in this test had been used in previous experiments at the Lake Carl Blackwell experimental range area. They were choice-quality grade Hereford yearlings and two-year-olds which were divided into 4 lots of 14 head each. There were 7 yearlings and 7 two-year-olds in each lot. The test was started on June 8, 1956 at which time the steers were hauled in a truck for approximately 5 miles prior to weighing. Thus, the initial weight was a partially shrunk weight. The steers of Lots 2 and 4 were implanted with three 15 mg. pellets of stilbestrol at the base of the right ear.

All cattle were allowed to graze the native grass pastures (Bluestem and associated grasses). The steers in Lots 1 and 2 were allowed grazing plus salt, free choice. Those in Lot 2 were implanted with 45 mg. of stilbestrol. Because stilbestrol administration has been most beneficial in fattening rations this study included the feeding of a limited amount of ground milo to the steers in Lots 3 and 4. These steers were self-fed a mixture of salt and ground milo with the salt serving as a regulator of consumption. The salt content of the mixture was either 10 or 15 percent at various periods of the test. The average salt content was 13.2 percent and the average milo consumption was approximately 4.5 lbs. per head daily. In addition to self-feeding salt-milo to Lots 3 and 4, the steers in Lot 4 were implanted with 45 mg. of stilbestrol.

Results

A summary of the weight gains and milo consumption is presented in Table 1. The gains of the two groups of cattle allowed grazing only (Lots 1 and 2) were nearly equal. The stilbestrol implanted in the steers

Table 1.—The effect of stilbestrol implantation on gains of steers grazing native grass.

	Lot number/Supplemental feed/Stilbestrol			
	1 None ¹ None	2 None ¹ 45 mg. implant	3 Salt-milo ² None	4 Salt-milo ² 45 mg. implant
Number of steers per lot	14	14	14	14
Average weights per steer (lbs.)				
Initial 6-8-56	704	708	701	714
Final 9-6-56	840	845	858	872
Gain	136	137	157	158
Daily gain	1.51	1.52	1.74	1.76
Average supplemental milo (lbs.)	None	None	4.65	4.43
Cost of milo per steer (\$)	None	None	8.58	8.17

¹ Salt was available free-choice.

² Self-fed a mixture of salt and ground milo. The mixture contained either 10 or 15 percent salt with an average salt content of 13.2 percent for the 90-day test.

of Lot 2 had no effect on gains. Also, the gains of the steers in Lots 3 and 4 were nearly equal. Thus, stilbestrol did not affect gains in either comparison (with and without milo).

The steers fed milo gained 21 lbs. more per head than those not fed milo. The value of the increased gain was not equal to the cost of the milo fed.

There were noticeable differences in the behavior of the steers implanted with stilbestrol and those not implanted. The implanted steers appeared to be more nervous and when confined to the corral for weighing would paw the ground excessively with more than usual bellowing. Their behavior was quite similar to that of an active bull. Most of the implanted steers had noticeably higher tail-heads. When some of these steers were marketed the buyers purchased them at \$1-\$2 per cwt. less than the control steers. This change in conformation and the behavior on test suggest that the implanted dosage (45 mg.) of stilbestrol may have been too high.

This test was conducted during a season of abnormally low rainfall, therefore, both the quantity and quality of grass in the pastures should be considered abnormal.

At the end of this experiment many of the steers were used in a test to determine the value of various supplements to high-silage rations for fattening two-year-old steers. All steers were fed stilbestrol in the dry-lot fattening phase and they were allotted in a manner which would allow a study of the carry-over effect of the stilbestrol implant during the summer. The summer treatment (implant or no implant, feeding milo) apparently had no effect on subsequent gains of fattening cattle.

Summary

Implantation of 45 mg. stilbestrol did not increase the gains of yearling and two-year-old steers grazing native grass with and without supplemental feed.

Nutritive Value of Various Protein Supplements for Lambs

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Many feeders show a preference for one protein supplement over another in rations for cattle and sheep. The opinion generally held among research workers is that protein supplements when compared at equal protein intake are about the same in nutritive value for ruminants, although they may differ widely for non-ruminants, such as swine. A series of feeding and digestion trials with lambs were initiated in the Spring of 1955 to study differences in protein quality