

gains in the subsequent 27-day period were 19 pounds for prairie hay and 26 pounds for Bermuda grass hay. Calves fed the latter hay had gained more rapidly in this period. Gains of the two groups of calves will be recorded for an additional 40 days.

Table 2.—Relative Value of Bermuda Grass Hay Vs. Prairie Hay for Wintering Beef Calves.

Lot Number Hay Fed <sup>1</sup>	1 Prairie	2 Bermuda Grass
Number of calves per lot	9	9
Average weight per calf (lbs.)		
November 16, 1960	360	362
February 11, 1961	418	369
Nov. - Feb. gain (87 days)	58	7
March 10, 1961	437	395
Feb. - March gain (27 days)	19	26
Average feed consumption per calf (lbs.)		
Cottonseed meal	158	21
Hay <sup>2</sup>	1056	1049

<sup>1</sup> Calves in Lot 1 were fed prairie hay and 1.39 lbs. cottonseed meal pellets for the total 114 days. Those in Lot 2 were fed only Bermuda grass hay until Feb. 16. At this time the Bermuda grass hay was also supplemented with 1.39 lb. of cottonseed meal pellets per head daily.

<sup>2</sup> Total pounds of hay consumed per calf. Average daily consumption was 9.26 and 9.20 lbs. in Lots 1 and 2, respectively.

## Summary

Preliminary results have shown that weanling grade Hereford calves fed Bermuda grass hay gained one-eighth of the amount of those fed prairie hay supplemented with cottonseed meal to make the two rations equal in estimated digestible protein content. These data suggest that (1) the protein of the Bermuda grass hay was poorly utilized, (2) the Bermuda grass hay contained some unrecognized inhibitory factor, or (3) the Bermuda grass hay was deficient in some respect.

## Stilbestrol for Range Beef Cattle

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Stilbestrol is being used in many systems of beef cattle production. Its use with fattening cattle is generally accepted as a means of increasing weight gain and feed efficiency. In range beef cattle production the three phases in which stilbestrol is being used are: (1) suckling calves, (2) wintering weanling calves, and (3) summer grazing of yearlings. Summaries of 1960-61 research concerning these three phases are included in this report.

## Part 1. Stilbestrol Implants for Fall Calves

## Procedure

A total of 89 grade Hereford calves (53 steers and 36 heifers) were divided into lots as shown in Table 1. These calves were born in November and December of 1959 and were from six groups used in a creep-feeding study. Five of these groups were creep-fed and the other group was not creep-fed. One group was creep-fed until weaning; four groups were creep-fed only until green grass was available in the spring. Within each of these treatments, calves of like sex were divided into three lots. One lot served as the control. The second lot was implanted with 6 mg. of stilbestrol, and the third lot was implanted with 12 mg. of stilbestrol.

Table 1.—Stilbestrol Implants for Fall Calves

Lot Number	1	2	3
Stilbestrol Implant, mg <sup>1</sup>	0	6	12
<b>Steers</b>			
Number of calves	20	16	17
Average weight per calf, lbs.			
Initial 3-19-60	214	228	214
Final 7-25-60	454	473	467
Gain (128 days)	240	245 (5) <sup>2</sup>	253 (13)
<b>Heifers</b>			
Number of calves	12	12	12
Average weight per calf, lbs.			
Initial 3-19-60	216	217	212
Final 7-25-60	440	438	452
Gain (128 days)	224	221 (-3)	240 (16)

<sup>1</sup> Implants furnished by Chas. Pfizer and Co., Terre Haute, Indiana.

<sup>2</sup> Figures in parentheses are increased gain compared to no implant.

The calves were weighed and implanted (Lots 2 and 3) on March 19, 1960. They were left with their dams in native grass pastures at the Lake Blackwell experimental range area until they were weaned on July 25, 128 days after implanting.

## Results

The response to stilbestrol implants was nearly equal for both sexes. The 6 mg implant increased steer gains six pounds but reduced heifer gains three pounds. Apparently this level of stilbestrol is too low to consistently affect weight gains.

Although the response was not relatively great, the 12 mg implant resulted in increased gains, an increase of 13 pounds for the steers and 16 pounds for the heifers when compared to no stilbestrol. This is less than the 12 percent average increase obtained in several previous tests.

## Part 2. Feed-Lot Performance of Previously-Implanted Calves

Research conducted to date has indicated that the subsequent performance of calves implanted when they are three to five months old is not adversely affected when they are fattened in dry lot or fed wintering rations after weaning. The data reported here are the results of fattening fall calves which were previously used in the study of stilbestrol implants reported in Part I.

### Procedure

From weaning in July until the start of the feed-lot test in October all cattle were treated alike. At weaning they were trucked from the Lake Blackwell range area to Ft. Reno for use in a nutrition study. In the post-weaning period (81 days) from weaning in July (full weight) until the start of the feed-lot test in October (shrunk weight), the steers were allowed to graze native grass and were fed six to eight pounds of a fattening ration containing a moderate amount of roughage. In this period the average gains of the three groups were nearly equal, 61 to 64 pounds. (see Table 2).

Table 2.—Subsequent Feed-Lot Performance of Previously Implanted Fall Calves

Lot Number	1	2	3
Previous Stilbestrol Implant, mg	0	6	12
Number of steers per lot	16	13	13
Average weight gain per steer, lbs.			
Implantation on March 19 to weaning on July 25, 1960	241	247	260
Weaning in July to start of feed-lot test on October 10, 1960	64	61	63
133-day feed-lot gain	321	335	342
Total gain	626	643	665

In the subsequent nutrition study, the stilbestrol treatment as suckling calves was considered and each treatment was uniformly allotted to seven different full-fed fattening rations. On October 10, 1960, the initial weight was recorded and all steers were implanted with 24 mg of stilbestrol.

Several steers which were seriously foundered were removed from the experiment.

### Results

The 133-day feed-lot gains of the steers are given in Table 2. The steers which were not previously implanted in March gained 321 pounds; those previously implanted with six mg gained 335 pounds, and those previously implanted with 12 mg gained 342 pounds. In this test stilbestrol implants for calves did not have any detrimental effect on sub-

sequent feed-lot gains; in fact, the previously implanted cattle, which had gained more while suckling, also gained more during the feed-lot phase. The total 11-month gain was considerably greater for the previously-implanted steers.

### Part 3. Stilbestrol Implants for Wintering Weanling Steer Calves

#### Procedure

Ninety weanling steer calves used in a nutrition study of the value of urea in protein supplements for wintering range cattle were divided into three groups for stilbestrol treatment. The first group (Lot 1) received no stilbestrol treatment. Those in the second group were implanted with 12 mg of stilbestrol. This group was divided into 2 lots. Lot 2 was implanted with two 6 mg pellets, but one 12 mg pellet was used in Lot 3. The steers in the third group were divided into Lots 4 and 5 and implanted with 24 mg stilbestrol, Lot 4 with four 6 mg pellets and Lot 5 with two 12 mg pellets.

All steers were allowed to graze in the dry native grass pastures and were fed an average of two pounds of protein supplement per head daily. A mineral mixture of two pounds salt and one pound steamed bone meal was available in all pastures.

#### Results

A summary of the weight gains is given in Table 3.

Implanting 12 mg of stilbestrol increased gains an average of six pounds and 24 mg implants increased gains an additional five pounds. Therefore, 24 mg of stilbestrol increased gains an average of 11 pounds. These results are in agreement with earlier tests which indicate a slight response from stilbestrol when cattle are fed maintenance or low-grain wintering rations.

The response to 12- and 24 mg implants was essentially the same whether administered as 6- or 12 mg pellets.

Table 3.—Stilbestrol Implants for Wintering Weanling Steer Calves

Lot Number	1	2	3	4	5
Stilbestrol Implant, mg	0	12		24	
Pellets, Number and Weight	0	2-6 mg	1-12 mg	4-6 mg	2-12 mg
Number of steers	30	16	14	14 <sup>1</sup>	15
Average weight per steer, lbs.					
Initial November 4, 1960	395	393	394	386	393
Final March 14, 1961	483	441	444	440	448
Gain (130 days)	43	48	50	54	55

<sup>1</sup> Originally 15 head, but one steer was removed because of urinary calculi.

## Part 4. Stilbestrol Implants for Yearling Steers Grazing Grass

### Procedure

Seventy-two yearling, grade Hereford steers were divided into two lots on May 31, 1960. Lot 1 served as the control group. Those in Lot 2 were implanted with 12 mg c<sup>6</sup> stilbestrol. All cattle were allowed to graze in the native grass pasture and a mineral mixture of two pounds salt and one pound dicalcium phosphate was available. The final weighing was on September 24.

### Results

The average weight data are given in Table 4.

The 12 mg stilbestrol implant increased gains 19 pounds or 11.5 percent in the 116-day period. When this relatively low level of stilbestrol was used there were no noticeable side effects, such as low loins and increased teat length. On the average, this and other tests have indicated that 12 mg implants will increase gains of yearling steers nearly as much as 24 or 36 mg without causing undesirable side effects.

Table 4.—Effect of Stilbestrol Implants on Gains of Yearling Steers Grazing Native Grass

Lot Number Stilbestrol Implant <sup>1</sup>	1 0	2 12 mg
Number of steers per lot	36	36
Average weight per steer (lbs.)		
Initial 5-31-60	524	524
Final 9-24-60	689	708
Gain (116 days)	165	184 (19) <sup>2</sup>

<sup>1</sup> Implants furnished by Chas. Pfizer and Co., Inc., Terre Haute, Indiana.

<sup>2</sup> Increased gain compared to Lot 1.

### Summary

Stilbestrol implants increased the gains of suckling calves (fall), although the response was less than the average recorded in previous tests. Subsequent feed-lot gain of such stilbestrol-implanted cattle was not decreased. Implants of 12 and 24 mg of stilbestrol slightly increased gains of weanling calves wintered on dry grass. Gains of yearling steers grazing native grass during the summer were increased 11.5 percent by a 12 mg implant without producing any noticeable side effects.