It appears that rate of gain and the general well being of young pigs are not closely associated with hemoglobin levels when these values are within the range of 9 to 12 grams per 100 c.c. of blood. Obvious symptoms of anemia are associated with hemoglobin readings of 6 to 7 or lower.

Stilbestrol Implants and Urea In Protein Suplements for Wintering Steer Calves and the Effect of Stilbestrol Implants on Subsequent Summer Gains

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Cattle and sheep are able to utilize, to varying degrees, the nitrogen from urea. This utilization is possible because of the micro-organisms in parts of the ruminant stomach. Efficient utilization of urea will result only when other nutrients are present in amounts needed by the micro-organisms. There have been many studies which indicate that urea may satisfactorily replace part of the protein in the rations of fattening cattle. There is a lesser number of tests on the value of urea in wintering rations in which the quantity of concentrate feed offered as a supplement to grass hays or dry range is very limited.

Tests conducted at this station in recent years have indicated that urea apparently is not efficiently utilized by cattle wintered on dry range grass when it is added to a mixture of corn and cottonseed meal to produce a pellet containing 40 percent protein, with one-third of the nitrogen furnished by urea. However, in two of three tests the addition of trace minerals or dehydrated alfalfa meal to the urea-containing pellet resulted in increased gains. An additional test on the use of urea in wintering rations has been conducted during the 1959-60 season.

The use of stilbestrol in various systems of beef production has increased considerably. Its use with fattening cattle is generally accepted as a means of increasing gain and feed efficiency. Also, implanting of stilbestrol has usually increased the gains of suckling calves. There are indications that the response from stilbestrol is less when the energy content of a ration is low, such as is the case with many of our wintering rations. Our interest in this particular report is the value of stilbestrol implants for steer calves wintered on dry range grass after weaning, and the effect of these implants on subsequent summer gains as yearlings.

Part 1. Urea in Protein Supplements for Wintering Steer Calves

Procedure

Seventy-five grade Hereford steer calves, purchased from T. J. Blakemore and Sons Ranch near Forgan, Oklahoma, were divided into 5 lots of 15 each on November 19, 1959. They were allowed to graze the dry

native grass at the Lake Blackwell range area. In addition, they were fed an average of 2 lbs. per head daily (twice the daily allowance every other day) of the following protein supplements:

Lot 1—40 percent protein supplement

Lot 2—40 percent protein supplement containing urea

Lot 3—40 percent protein combination supplement

Lot 4—40 percent protein combination supplement containing urea

Lot 5—26 percent protein combination supplement.

The protein content was equalized in the supplements fed in the first four lots. Calcium and phosphorus supplements were added at such rates that the contents of these minerals in all pellets were approximately equal. The 40 percent protein supplement was 92.0 percent cottonseed meal, 7.5 percent ground yellow corn, and 0.5 percent ground limestone. Corn was added to this pellet in order to reduce the protein content slightly because of desired low protein additions to the supplement fed in Lot 3.

The 40 percent protein supplement containing urea was 54.0 percent cottonseed meal, 39.0 percent ground yellow corn, 5.0 percent urea[1], 0.7 percent ground limestone, and 1.3 percent monosodium phosphate. Urea furnished approximately one-third of the nitrogen in this pellet.

The 40 percent protein combination supplement contained several different feed ingredients which are often found in feed supplements offered for sale. The supplement fed in our test was 40.0 percent cottonseed meal, 40.0 percent soybean oil meal, 8.4 percent linseed meal, 5.0 percent dehydrated alfalfa meal, 5.0 percent cane molasses, 1.5 percent monosodium phosphate, and 0.1 percent trace mineral premix.[2] The premix was included as a source of additional manganese, iodine, cobalt, iron, copper, and zinc.

The 26 percent protein combination supplement was 23.0 percent cottonseed meal, 23.0 percent soybean oil meal, 6.0 percent linseed meal, 5.0 percent dehydrated alfalfa meal, 35.65 percent ground yellow corn, 5.0 percent cane molasses, 0.5 percent dicalcium phosphate, 1.75 percent monosodium phosphate, and 0.1 percent trace minerals. The 40 percent protein combination supplement containing urea was the same as the 26 percent protein supplement except that 5.0 percent urea replaced a like quantity of ground yellow corn.

A mixture of 2 parts salt and 1 part steamed bone meal was available in all lots.

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[1] Urea was furnished by Grand River Chemical Division of Deere and Company, Pryor, Oklahoma.
[2] Mineral mixture furnished by Calcium Carbonate Company, Carthage, Missouri.

Results

A summary of winter gains is given in Table 1. In contrast to the results obtained in previous tests the gains of all groups of steers were nearly equal. This would indicate only small differences in gain due to increased protein content (Lot 3 vs. 5). A comparison of Lots 4 and 5 indicates little, if any, utilization of urea. However, the gains in

Table 1.—Urea in Protein Supplements for Wintering Steer Calves Grazing Native Grass.

Lot Number Supplement	1 40-CSM	2 40-Urea	3 40-Comb	4 40-Urea Comb	5 26-Comb
Number of steers[1]	14	14	15	15	15
Average weight per steer (lbs.)					
Initial 11-19-59	399	396	399	396	399
Final 3-18-60	412	401	416	401	401
Gain (120 days)	13	5	17	5	2

[1] In Lot 1 one steer was removed because of sickness and one steer died in Lot 2.

Lot 3 (natural protein combination pellet) were only 12 lbs. greater than when the urea-containing supplement was fed (Lot 4). Also, the gains of the Lot 2 calves, fed the urea-containing simple supplement, were only 8 lbs. less than the gains in Lot 1 where the pellet fed was nearly all cottonseed meal. The combination pellet containing many feed ingredients (Lot 3) was of essentially the same nutritive value as the control pellet fed in Lot 1.

Part 2. Stilbestrol Implants for Wintering Steer Calves

Procedure

The steers used in this test were those fed the various protein supplements as described in Part 1. Within each lot, 8 steers were implanted with 12 mg. of stilbestrol[3] and 7 steers served as controls. One of the control steers was removed from Lot 1 due to sickness and a control steer in Lot 2 died. Therefore, a total of 39 steers were in the implanted group and 34 were in the control group. Initial weighing and implanting was on November 19, 1959.

Results

Gains of the groups of calves are given in Table 2.

The average winter gain of the steers implanted with 12 mg. of stilbestrol was 12 lbs. This was 7 lbs. more than the 5 lbs. gained by the control calves. There was a considerable variation in response to stilbestrol within the five nutritional treatments. In Lot 1 the control calves gained 17 lbs. more than the implanted calves. However, in each of the other four lots, the gains were in favor of the implanted cattle.

[3] Stilbestrol furnished by Chas. Pfizer & Co., Inc., Terre Haute, Indiana.

Table 2.—Stilbestrol Implants for Wintering Steer Calves.

Stilbestrol Implant	Number of Steers	Lot Number[1] 1	2	3	4	5	Average
		Winter gain (120 days), lbs.					
0	34	23	2	11	— 5	— 6	5
12 mg.	39	6	9	24	13	9	12

[1] Winter feeding treatment as indicated in Table 1.

These results are in agreement with earlier studies, which indicated that the response to stilbestrol implants was not as great under wintering conditions as when animals graze during the summer or are fed fattening rations. No differences in behavior or body conformation of the steers were recorded.

Part 3. Subsequent Summer Gains of Stilbestrol-Implanted Steers

Procedure

On November 6, 1958, 60 steer calves were divided into 4 lots of 20. Lot 1 was the control group of calves; Lot 2 was implanted with 12 mg. of stilbestrol; and Lot 3 was implanted with 24 mg. of stilbestrol. The gains in the period ending May 14, 1958, were 48, 63, and 73 lbs., respectively. During the summer the steers were allowed to graze in the native grass pastures at the Lake Blackwell range area.

Results

A summary of the gains is given in Table 3. During the subsequent summer period, after implantation at the beginning of the winter season, the gains of all groups of steers were nearly equal. These summer gains were 183, 189, and 188 lbs. for 0, 12, and 24 mg. of stilbestrol, respectively, implanted on November 6, 1958. Although there were practically no differences in subsequent summer gains, total yearly gains were related to level of winter implant because of the differences in winter gains.

Table 3.—Subsequent Summer Gains of Previously Implanted Steers.

Lot Number Stilbestrol Implant	1 0	2 12 mg.	3 24 mg.
Number of steers	20	20	20
Average weight per steer (lbs.)			
Initial 11-6-58	518	500	505
Winter and early spring gain (189 days)	48	63	73
Summer gain (146 days)	183	189	188
Total gain (335 days)	231	252	261

Results of the subsequent feed-lot performance of selected steers from this study are summarized in the report "Effect of Stilbestrol Implants on Summer Gain and Subsequent Feed-Lot Performance of Yearling Steers."

Summary

Gains of steers grazing dried range grass and fed 2 lbs. of various protein supplements per head daily were only slightly different. This was in contrast to previous tests which indicated that gains were related to quantity of supplemental protein fed and that urea was not efficiently utilized.

Implanting 12 mg. of stilbestrol increased only slightly the winter gains of weanling steer calves.

The subsequent summer gains of steers previously implanted in November were nearly equal. Therefore, total yearly gains were related to level of winter implant because of the differences in winter gains.

Effect of Level of Wintering Upon the Growth and Reproductive Performance of Beef Heifers

Don Pinney, L. S. Pope, Dwight Stephens, George Waller

Results of a long-time study on the effects of different amounts of supplemental winter feed for spring-calving beef cows are reported elsewhere in this publication. At 11½ years of age, low levels of supplemental winter feed (1.0 pound of cottonseed meal per head daily) for cows grazing native bluestem pastures has not decreased percent calf crop or weaning weights. In other trials, lesser amounts of supplemental feed during growth and reproduction have reduced weaning weight and body size to 4½ years of age.

These studies on the effects of different levels of wintering on the growing and developing heifer have been continued. Due to the variability encountered in conducting experiments under range conditions, several repetitions have been initiated. These studies differ from the original test in that more drastic treatments were imposed and heifers were selected with greater known history.

This report summarizes the 1958-59 results obtained from four repetitions of the experiment at the Fort Reno station and include data on the effects of levels of wintering on the growth and development of replacement heifers from weaner calves up to 4½ years of age.