

Table 4.—Performances of Sows and Pigs Retained in Confinement and Fed Rations Containing Two Levels of Calcium and Phosphorus

Lot No.: Ration Treatments:	1 Basal	2 Basal plus Cal. and Phos.
No. of sows and litters	11	11
Average No. pigs per litter		
7 days of age	9.0	9.1
42 days of age	7.8	8.4
56 days of age	7.8	8.4
Average Pig weights (lbs.)		
42 days	19.9	19.2
56 days	27.3	27.2
Average litter weight (lbs.)		
42 days	155.2	161.3
56 days	212.9	228.5
Average weight loss per sow (lbs.)		
Farrowing to 7 days	42.8	54.5
7 to 42 days	27.6	38.7
Total weight loss of sow	70.4	93.2
Average feed consumption (lbs.)		
Per sow to 42 days	480.9	435.6
Per sow per day	11.4	10.4
Per pig to 56 days	20.2	22.1
Feed cost (\$)		
Per sow—farrowing to 42 days	10.10	9.15
Per pig—creep ration only	.75	.82
Total feed cost per pig weaned— farrowing to weaning	2.05	1.91
Value of weight lost by sow ¹	8.95	10.44
Feed Cost per pig plus credit for weight lost by sow	3.13	3.15

¹ Weight cost per sow figured at \$12.00 per cwt.

Urea in Protein Supplements for Wintering Steer Calves Grazing Native Grass

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Cattle and sheep may utilize urea as a source of nitrogen (protein) because of the action of microorganisms in parts of the ruminant stomach. Efficient utilization of urea will result only when other nutrients are present in amounts needed by the microorganisms. These other nutrients are usually present in rations of fattening cattle. However, some of these nutrients may be lacking when cattle are wintered on dry native grass supplemented with a urea-containing feed.

Tests conducted at this station in recent years have indicated that urea is apparently 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. The addition of trace minerals or dehydrated alfalfa meal to these supplements has improved urea utilization.

The results of additional tests of the value of urea are reported here.

Procedure

Ninety grade Hereford steer calves were weighed and divided into six lots of 15 head on November 4, 1960. Some of these calves were produced in herds of the Oklahoma Agricultural Experiment Station but slightly more than one-half were purchased at the Oklahoma City National Stockyards Co. The weanling calves were allowed to graze the dry native grass at the Lake Blackwell range area. In addition, they were fed an average of two pounds per head daily (twice the daily allowance every other day) of the following pelleted protein supplements:

- Lot 1. 26 percent protein simple supplement
- Lot 2. 40 percent protein supplement containing urea
- Lot 3. 40 percent protein supplement
- Lot 4. 26 percent protein combination supplement
- Lot 5. 40 percent protein combination supplement containing urea
- Lot 6. 40 percent protein combination supplement

The 26 percent protein simple supplement was 54.0 percent cottonseed meal (41 percent protein, old process), 44.0 percent ground yellow corn, 0.7 percent ground limestone, and 1.3 percent monosodium phosphate.

The 40 percent protein supplement containing urea was 54.0 percent cottonseed meal, 39.0 percent ground yellow corn, 5.0 percent urea¹, 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 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 to reduce slightly the protein content in order to make it equal to the protein content of the pellets fed in Lot 6.

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.

¹Urea was furnished by Grand River Chemical Division of Dow and Co.

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.

Calcium and phosphorus supplements were added at such rates that the content of these minerals in all pellets was nearly equal. A mixture of two pounds salt and one pound steamed bone meal was available in all lots.

Results

A summary of winter gains is given in Table 1.

Steers fed the low protein simple supplement (Lot 1) gained 34 pounds in the 130-day wintering period. When urea was added to this supplement to increase the protein equivalent to 40 percent (Lot 2) the calves gained 30 pounds. When the 40 percent control supplement (Lot 3, essentially cottonseed meal) was fed the gain was 50 pounds. As was true in many of our previous tests, urea was apparently not efficiently utilized.

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

Lot Number Supplement	1 26-Simple	2 40-Urea	3 40-CSM	4 26-Comb.	5 40-Urea Comb.	6 40-Comb.
Number of steers	15	15	14 ¹	15	15	15
Average weight per steer, lbs.						
Initial Nov. 4, 1960	395	394	390	392	393	393
Final Mar. 14, 1961	429	424	440	448	439	470
Gain (130 days)	34	30	50	56	46	77

¹ One steer was removed because of urinary calculi.

The supplements fed in Lots 4, 5, and 6 contained increased quantities of certain nutrients which may effect urea utilization. The feeding of the 26 percent protein combination supplement resulted in a gain of 56 pounds. Adding urea to this feed decreased gain 10 pounds (46 vs. 56 pounds). The gain from the high protein combination pellet without urea was 77 pounds. Again, urea was not efficiently utilized.

In this test it was possible to compare the value of simple vs. combination supplements. It should be noted that in all three comparisons

² Mineral mixture furnished by Calcium Carbonate Company, Carthage, Missouri.

(Lots 1 vs. 4, 2 vs. 5, 3 vs. 6) the gains were greater when the combination supplements were fed. In previous tests the results have been variable; however, in this 1960-61 winter season the combination supplements apparently furnished nutrients which resulted in greater gain.

Self-Feeding Lambs on Wheat Pasture

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During years of adequate rainfall thousands of lambs are fattened on wheat pasture in Oklahoma and adjoining areas. Lambs grazing lush wheat pasture make excellent gains at a much lower cost per unit of gain than can be obtained in the feedlot.

Previous work at the Ft. Reno Station has shown that lush wheat pasture on fertile soil will carry approximately five lambs per acre. In this year's work, in order to increase the carrying capacity per acre, all lambs were self-fed a mixed ration while grazing wheat pasture.

Procedure

Three hundred and nineteen western feeder lambs were used in this study. The lambs were produced in the range area of Southwest Texas. They were sheared at San Angelo prior to shipment. The lambs were shipped by truck and were received at the Ft. Reno Station on October 1. During the month of October the lambs grazed dry-native grass and were fed approximately two pounds of alfalfa hay daily. The lambs were not vaccinated for enterotoxemia. Soluble aureomycin was used in the drinking water the first week. Just prior to starting on pasture (October 31) the lambs were divided into three weight groups, and each weight group was divided into two lots as follows:

Light lambs—62 pounds and below.

Lot 1—Self-fed a ground mixture of 45% milo, 5% molasses and 50% alfalfa hay. (Ration No. 1)

Lot 2—Self-fed a ground mixture of 70% milo, 5% molasses, and 25% alfalfa hay. (Ration No. 2)

Medium weight lambs—63-72 pounds.

Lot 3—Self-fed the same ration as the lambs of Lot 1. (Ration No. 1)

Lot 4—Self-fed the same ration as the lambs of Lot 2.