The Effects of Feeding Different Levels of Dicalcium Phosphate to Heifers on Bluestem Pasture (Project 253-2).

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This trial was designed to study the effects of low to high levels of calcium and phosphorus supplementation for heifers grazing bluestem pasture.

Forty Hereford heifer calves were divided into four groups at random, and turned into a 140-acre pasture. Each morning the heifers were gathered and separated into four lots and fed the rations shown in Table 14.

Starting October 5, 1961, the heifers were gathered and fed three times weekly instead of each day; however, the same number of pounds of feed were fed per week. The heifers were given approximately 5 pounds of prairie hay per head per day, during the winter when there was snow on the ground, about six weeks. Heated water and a trace-mineralized vitamin A salt mixture[1] were available at all times.

Observations

The heifers lost weight during the winter months; however, they appeared to be healthy, and no signs of sickness were observed.

For the entire period on test the control heifers gained significantly more than the other three lots of heifers that received dicalcium phosphate, Table 14. There were no significant differences among the three lots receiving dicalcium phosphate.

Data from this trial indicate that dicalcium phosphate supplementation at low to high levels did not increase daily gains during a summer and winter period on bluestem pasture. During the winter months as the level of dicalcium phosphate increased, daily gain tended to decrease.

These heifers will be bred this summer, and the dicalcium phosphate levels will be maintained to study effects on gestation and calving.

1. Commercial mix containing 10% manganese, 10% iron, 14% max.—12% min., calcium, 1% copper, .5% zinc, .30% iodine, .10% cobalt. Two pounds of this mix were added to 97 pounds of salt containing 1 pound of vitamin A (10,000 I.U./gm.).

Table 14

Experimental rations and average daily gain per head.

Ration	Av. daily gain[1] 2-18-61 10-2-61	Av. daily gain[2] 10-2-61 3-3-62	Av. daily gain 2-18-61 3-3-62
LOT 1			
1 lb. dried molasses			
1 lb. 41% corn gluten meal	1.22	—.237	.623
LOT 2			
1 lb. dried molasses			
1 lb. 41% corn gluten meal			
27.1 gms. dicalcium phosphate	1.10	—.322	.529
LOT 3			
1 lb. dried molasses			
1 lb. 41% corn gluten meal			
54.1 gms. dicalcium phosphate	1.15	—.342	.550
LOT 4			
1 lb. dried molasses			
1 lb. 41% corn gluten meal			
81.1 gms. dicalcium phosphate	1.18	—.375	.553

1. Approximates a long summer grazing period.
2. Approximates a winter grazing period.

Different Methods of Managing Bluestem Pastures, 1961 (Projects 253-3 and 253-5).

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This experiment was designed to determine the effect of different stocking rates, of deferred grazing, and of pasture burning on cattle performance, productivity of pastures, and range condition as determined by plant population changes. In addition to the yearly report, a summary of cattle gains for the past 12 years of the study is included.

Experimental Procedure

Yearling Hereford steers with an average USDA feeder grade of about high good were used to stock the pastures in 1961. The steers came from near Thermopolis, Wyoming, were received about March 1, and were fed prairie and alfalfa hay in drylot until the test started.

The experimental treatment for each pasture was:

Pasture 1. Moderate stocking rate, 3.3 acres per steer.

Pasture 2. Overstocked, 2.3 acres per steer.

Pasture 3. Understocked, 4.6 acres per steer.

Pastures 4, 5, and 6. Deferred grazing at the moderate stocking rate was 3.3 acres per steer. All steers were grazed on pastures 4 and 5 from May 3 to June 30. They were then moved to pasture 6 where they remained until September 25, when all were allowed to graze in all three pastures until the close of the trial October 7.

Pasture 9. Burned March 3, 1961, moderate rate of stocking.

Pasture 10. Burned April 6, 1961, moderate rate of stocking.

Pasture 11. Burned April 28, 1961, moderate rate of stocking.

The steers were gathered about 3 p.m., held over night without feed or water and weighed the following morning, about 7 a.m.

Observations

The results are reported in Tables 15, 16, and 17.

Steer gains appeared to be lowered by deferred grazing and overstocking. This was the first season in 12 years that steer gains on the non-burned pasture (no. 1) exceeded gains made by steers on the mid- or late-spring-burned pastures. Forage was sufficient on all burning treatments to permit the entire pasture to be burned, which hadn't occurred for several years.

Yields of vegetation were measured in small areas protected from grazing by wire cages, located in a randomized manner within range sites. The cages were placed in new locations each year, to reflect previous management rather than effects of the previous year's cage. Protected areas were clipped at the close of the grazing season, so they represented the full season's growth. Experiments have shown that maximum range forage yields are obtained from one cutting made at the close of the growing season.

The components of yield were considered here as forage, weeds, and mulch. The burned pastures, of course, lacked the mulch found in the unburned ones.

It will be seen that the closely grazed pasture yielded less forage and had less mulch than the moderate or lightly stocked one and that the burned pastures, which had no mulch at all, yielded significantly less forage than all unburned ones except the overstocked one. Moisture-measuring devices have been established to permit detailed study of amounts of soil moisture under the different treatments.