

Project 253-3: Effect of Grazing System on Livestock and Vegetation

A Comparison of Different Methods of Grazing Bluestem Pastures

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It is important that we know as much as possible about the carrying capacity of our bluestem pastures. Cattlemen in general are interested in obtaining as much gain as possible from their grass in keeping with sound management. They would like to know whether there is any method of increasing the safe stocking load and maintaining gain as well as grass. Also the effect of such increase on forage species, stand and vigor, and weed population.

EXPERIMENTAL PROCEDURE

Six pastures containing 60 acres each are being used in this study and were managed as follows in 1949:

Pasture 1: Normal rate of stocking, 4 acres per head

Pasture 2: Overstocked, 3 1/3 acres per head

Pasture 3: Not stocked during May, turned on June 1, 3 acres per head

Pastures 4, 5 and 6: Deferred and rotation grazing, 4 acres per head. All steers were held in two pastures until June 20, then turned into the protected pasture until deemed advisable to allow them the run of all three pastures which in 1949 was August 5.

The stocking rates are flexible and may be adjusted as deemed necessary.

OBSERVATIONS

1. The gain made by the steers in the pasture grazed at the rate of 4 acres per steer was 244 pounds per head; on the deferred and rotation plan 221 pounds; and at the rate of 3 1/3 acres per steer, 219 pounds.

2. Pasture 3 in which grazing was deferred until June 1, thus allowing the grass to obtain good growth and thereby increasing carrying capacity produced the smallest gain in this test. Although difficult to show, it should not be overlooked that the steers grazed in this pasture were utilizing other grass prior to June 1 and had already made substantial gains before going on test. A system of grazing of this type is designed to utilize earlier grasses in conjunction with bluestem.

3. The greatest gain per acre was obtained from Pasture 2, overstocked. Other experiments have sometimes shown this to be true during the early stages of the experiment, but as overgrazing continued gains per acre have declined.

4. In view of the unusually light rainfall during the period from July to the close of the growing season of 1949 all of the pastures were fairly closely grazed; however, the three used in the deferred-rotation trials were much less closely grazed than the other three.

TABLE 1. A COMPARISON OF DIFFERENT METHODS OF GRAZING BLUESTEM PASTURES

May 1, 1949 to October 10, 1949—162 days

1. Pasture number	1	2	3	4, 5 & 6
2. Method of grazing.....	Normally stocked	Overstocked	Stocked June 1	Deferred and rotated ¹
3. No. of head per pasture	15	18	20	45
4. No. of acres per pasture	60	60	60	3-60 acre pastures
5. No. of acres per head	4	3 1/3	3	4

6. Av. initial weight, lbs...	731	728	804 ²	729
7. Av. final weight, lbs. ..	975	947	951	950
8. Av. gain, lbs.	244	219	147	221
9. Av. daily gain, lbs.	1.51	1.35	1.12	1.36
10. Gain per acre, lbs.	61	66	49	55

1—Deferred and rotated grazing—all steers were held in two pastures until June 20, then turned into protected pasture until August 5 at which time they were allowed the run of all three pastures.

2—Lot 3 was held on another pasture until June 1 which decreased their number of days on test to 131. Their initial weight is as of June 1, whereas the other weights date from May 1.

Project 253-4: Wintering and Grazing Yearling Steers

A—A Comparison of Protein Supplements and Methods of Feeding Protein Supplements to Yearling Steers Wintered on Bluestem Pasture, 1948-49

Ed F. Smith—A. G. Pickett

Good to choice quality yearling Hereford steers were used in this study which included four lots of 10 steers each. The objective was to determine the value of dry bluestem grass when supplemented with different proteins fed by various methods. All pastures used for winter grazing had been used the previous summer but were not closely grazed and dry grass was abundant. The steers were allowed from twelve to eighteen acres per head.

EXPERIMENTAL PROCEDURE

Lot 1—Wintered on bluestem grass with three pounds of soybean pellets per steer fed every other day.

Lot 2—Wintered on bluestem grass with a mixture of salt and cottonseed meal, self-fed. (The purpose of the salt is to limit the consumption of the cottonseed meal.)

Lt 3—Wintered on bluestem grass with six pounds of alfalfa hay per steer daily.

Lot 4—Wintered on bluestem grass with 1 1/2 pounds of soybean pellets per steer daily.

TABLE 1. A COMPARISON OF PROTEIN SUPPLEMENTS AND METHODS OF FEEDING PROTEIN SUPPLEMENTS TO YEARLING STEERS WINTERED ON BLUESTEM PASTURE

December 1, 1948 to May 1, 1949—151 Days

1. Lot number	1	2	3	4
2. No. steers per lot	10	10	10	10
3. Method of feeding	Fed soybean pellets every other day	Self fed cottonseed meal and salt mixed together	Fed alfalfa hay daily	Fed soybean pellets daily
4. Average daily winter ration:				
Soybean pellets	1.51			1.50
Cottonseed meal		2.81		
Salt	ad lib	.88	ad lib	ad lib
Alfalfa hay			6.10	

Bluestem grass	ad lib	ad lib	ad lib	ad lib
Prairie hay'				
5. Av. initial weight	745	755	755	749
6. Av. final weight	757	806	769	775
7. Av. gain	12	51	14	26
8. Av. daily gain08	.34	.09	.17
9. Feed cost per steer for entire winter	\$ 20.94	\$ 28.94	\$ 20.38	\$ 20.56
10. Initial cost per steer at 25 1/2 c per pound	\$189.98	\$192.53	\$192.53	\$191.00
11. Initial cost per steer plus winter feed cost	\$210.92	\$221.47	\$212.91	\$211.56
12. Necessary selling price per cwt. to cover initial cost plus wintering cost	\$ 27.86	\$ 27.48	\$ 27.69	\$ 27.30
13. Appraised value per cwt. on May 6, 1949	\$ 25.00	\$ 25.00	\$ 25.00	\$ 25.00

(1) All lots were fed Prairie hay when snow covered the grass. The total Prairie hay fed per steer is as follows: Lot 1, 318 lbs.; Lot 2, 300 lbs.; Lot 3, 156 lbs.; Lot 4, 276 lbs.

Feed prices: Cottonseed meal and Soybean Pellets, \$75 per ton; Alfalfa hay, \$20 per ton; Prairie hay, \$15 per ton; Bluestem grass for winter 1948-49, \$10 per head; Salt, \$12 per ton.

OBSERVATIONS

- All steers in this test wintered in a strong thrifty condition.
- The total winter gains were so small except in the case of Lot 2 that it is difficult to make comparisons of the different rations.
- All lots gained in weight up to March 1 and all except Lot 4 showed heavy losses for the month of March; Lot 1 lost 67 pounds, Lot 2 lost 28 pounds and Lot 3 lost 58 pounds. All these losses were offset by heavy gains during the month of April.
- Lot 2 which was self-fed the salt-cottonseed meal mixture consumed almost twice as much protein as was hand fed to Lot 4, the check lot. This probably accounts for the larger gain of this lot.
- The limited information available indicates that the ability of a steer to consume large quantities of salt will vary with his age and weight. Under the conditions of this test with yearling steers weighing about 750 pounds it appears that it would require about 50 pounds of salt per 100 pounds of meal to limit the cottonseed meal consumption to two pounds or less per steer daily. No ill effects from the high salt consumption were observed.
- Prairie hay was fed only when the grass was covered with snow.

B—The Effect of Feeding a Protein Supplement During the Latter Part of the Grazing Season to Two-Year-Old Steers on Bluestem Pasture

The rate of gain made by steers on bluestem pasture during the first 75 to 90 days is difficult to improve on; however, as the season progresses past mid-summer the nutritive value of the grass, particularly its protein value, usually declines and along with it, cattle gains. The objective of this experiment is to find what effect the feeding of a protein supplement after mid-summer will have on cattle gains and condition. It is hoped that by starting the feeding at different times, the most opportune date to start feeding may be determined, if feeding is found worthwhile. The two-year-old steers used in this test were dry wintered steers and are the same steers that were used in the winter study last year, "A Comparison of Protein Supplements and Methods

of Feeding Protein Supplements to Yearling Steers Wintered on Bluestem Pasture".

EXPERIMENTAL PROCEDURE

- Lot 1—May 1 to July 18 - Bluestem pasture.
July 18 to October 10 - Bluestem pasture and 3 pounds of soybean pellets per head daily.
- Lot 2—May 1 to August 10 - Bluestem pasture.
August 10 to October 10 - Bluestem pasture and 3 pounds of soybean pellets per head daily.
- Lot 3—May 1 to September 1 - Bluestem pasture.
September 1 to October 10 - Bluestem pasture and 3 pounds of soybean pellets per head daily.
- Lot 4—May 1 to October 10 - Bluestem pasture.

OBSERVATIONS

- All lots made excellent gains during the early summer period when the grass was not supplemented.
- Feeding protein during the late summer period increased the gain in every lot during that period; 15 pounds per head for Lot 1, 44 pounds per head for Lot 2 and 43 pounds per head for Lot 3.
- Lots 1, 2 and 3 carried more flesh than Lot 4, their hair presented a more glossy appearance, and they were appraised at a higher price, 50c a hundred more for Lot 1 and \$1.00 a hundred more for Lots 2 and 3. (The presence of three plain steers in Lot 1 reduced the appraisal price of that lot.)
- The total gain for the grazing season does not indicate a strong response to caking in respect to total gain in this test. On the other hand, the higher appraisal price, particularly in the case of Lots 2 and 3, coupled with an increased gain in the case of Lot 3 makes caking appear worthwhile.
- Of interest is the fact that the 40 steers in this test, 30 of which were caked for various periods, had a shrink of only 2.7% when shipped to market. Similar steers shipped with them, none of which were caked, shrank 6.7%.

Project 253-4: Wintering and Grazing Yearling Steers

B—Wintering Yearling Steers on Bluestem Pasture 1949-50

Ed F. Smith—R. F. Cox

The maximum utilization of bluestem pasture in keeping with sound management is of utmost importance to Kansas stockmen. If a system of wintering and grazing yearling steers can be developed to utilize bluestem grass profitably during the winter it will be a major contribution to the industry.

The primary purpose of this study, then, is to test the value of dry bluestem pasture as a winter feed for yearling steers when fed different kinds and amounts of protein supplements.

EXPERIMENTAL PROCEDURE

Four lots of good quality Hereford yearling steers, 10 head to a lot, were used in this test which started on December 11, 1949. All of the four pastures in which these steers were wintered had been grazed the previous season but a plentiful supply of dry grass was available. There are creek bottoms with some blue grass in each of these pastures. From 6 to 19 acres of pasture were allowed each steer.

Each lot received a supplement in addition to pasture as follows:
Lot 1—2 pounds of soybean pellets per head daily.