

Table 13

A comparison of dry rolled and steam rolled sorghum grain.
July 25 to November 6, 1959—104 days.

Treatment	Dry rolled grain	Steam rolled grain
Lot number	15	17
Number heifers	9 ¹	9
Initial wt. per heifer, lbs.	604	602
Gain per heifer	260	251
Daily gain per heifer	2.50	2.41
Daily ration per heifer, lbs.:		
Sorghum grain, self-fed	17.3	17.1
Soybean meal	1.5	1.5
Prairie hay	4.7	4.8
Ground limestone	0.1	0.1
Salt	0.06	0.04
Feed per cwt. gain:		
Grain	692	708
Soybean meal	60	62
Prairie hay	188	199
Dressing percentage	58.6	58.9
Av. carcass grade ²	16.7	16.6
Marbling score ³	7.7	7.9

1. Ten heifers were in this lot originally; one was removed due to poor health.

2. The USDA grade low good was assigned a numerical value of 16; average good, 17.

3. Degree of marbling: A score of 7 indicates small amount, 8 indicates slight amount. The higher the score, the less marbling.

A Comparison of Feeding Hay to Heifers on Bluestem Pasture and in Drylot, 1958-1959. Project 253-2.

E. F. Smith, D. L. Good, B. A. Koch, and F. W. Boren

This study was designed to evaluate mature dry winter pasture for animals fed all of the harvested roughage such as hay that they would consume. In addition one group of animals wintered in drylot were moved to pasture one month prior to the start of the summer growing season to study their adjustment to pasture.

The following experimental treatments were used:

Lot 8—Wintered in a 139-acre bluestem pasture from December 1, 1958, to April 30, 1959, and fed all of the prairie hay they would eat with 4 to 6 pounds of alfalfa hay per head daily.

Lot 18—Wintered in a drylot 50 by 120 feet in size from December 1, 1958, to April 30, 1959, and fed hay in the same manner as lot 8.

Lot 18A—Wintered in a drylot 50 by 120 feet in size from December 1, 1958, to March 30, 1959, and fed hay in the same manner as lot 8 and lot 18. From December 1, 1958, to March 30, 1959, these animals were wintered with lot 18; from March 30, 1959, to April 30, 1959, they were in the same pasture as lot 8.

Observations

The results of this test are reported in Table 14.

Feeding hay to heifers on pasture reduced their hay intake as compared to drylot feeding.

Those fed hay on pasture gained less than those fed in drylot, and those moved to pasture one month before the grazing season also gained less than those kept in drylot.

The heifers in this test were grazed together during the summer following the winter period. The combined winter and summer gains in pounds per head daily were: lot 8, 0.66; lot 18, 0.75; lot 18A, 0.71. None of these gains were significantly different when statistically analyzed.

Table 14

A comparison of feeding hay to heifers in drylot and on pasture.
December 1, 1958, to April 30, 1959—150 days.

Lot number	8	18	18A
Number heifers per lot	10	10	10
Feeding area	Bluestem pasture	Drylot	Bluestem pasture and drylot
Initial wt. per heifer, lbs.	493	497	497
Gain per heifer, lbs.	12	87	45
Daily gain per heifer, lbs.	0.08	0.58	0.30
Standard error of mean	±0.06	±0.06	±0.05
Daily ration per heifer, lbs.:			
Alfalfa hay	4.6	4.9	4.6
Prairie hay	7.7	9.8	8.9
Bluestem pasture	Yes	No	Month of April only
Mineral (2 parts bonemeal, 1 part salt)	0.18	0.06	0.06

A Comparison of Wintering in Drylot with Wintering on Bluestem Pasture for Yearling Steers on a Wintering, Grazing, and Fattening Program, 1958-1959. Project 253-4.

E. F. Smith, F. W. Boren, and B. A. Koch

This is the third trial in a series designed to study the effect of winter management on performance of yearling steers. The first trial was reported in Circular 349 and the second in Circular 371 from this station. Yearlings consume large quantities of feed compared with calves, and cost of production is increased accordingly. This study is concerned with lowering the cost of wintering by introducing the use of low-cost, low-quality winter grass and observing its effect on future performance, especially with regard to the effect on the carcass.

Experimental Procedure

Twenty head of yearling Hereford steers, grading about high good on the basis of USDA feeder grades, were used in the test. They came from near Fort Davis and Paducah, Texas, and were allotted into two lots on the basis of origin and weight. They were the heavy end of the calves purchased in the fall of 1958 and were about one year old when started on the test. The only difference in treatment of the two lots was during the winter period; the treatment for the two lots was as follows:

Lot 12. Wintered on bluestem pasture supplemented with 5 pounds of alfalfa hay per head daily; bluestem pasture from April 30 to July 23; fed grain on grass from July 23 to November 14 and grain in drylot from November 14, 1959, to January 8, 1960.

Lot 23. Wintered in drylot on prairie and alfalfa hay and then handled for the remainder of the test in an identical manner to lot 12.

Observations

1. The difference in winter management produced a significant difference in winter gain, which was reduced somewhat during the summer and fattening phase, but in total gain for all phases the steers wintered in drylot gained 32 pounds per head more than those wintered on pasture. This was a statistically significant difference. In addition, they had a higher dressing percentage and produced slightly superior carcasses.

2. Except for the gain and possibly the dressing percentage, the overall differences produced by the two treatments were somewhat small but in every case it favored steers wintered under drylot conditions.

Table 15

A comparison of wintering in drylot with wintering on dry bluestem pasture for yearling steers on a wintering, grazing, and fattening program, 1958-59.

Phase 1, Wintering, December 9, 1958, to April 30, 1959—142 days.

Lot number	12	23
Place wintered	Bluestem pasture	Drylot
Initial wt. per steer, lbs.	612	608
Gain or loss per steer, lbs.	-60	73
Daily gain or loss per steer, lbs.	-0.42	0.51
Feed per steer daily, lbs.:		
Alfalfa hay	5.0	5.0
Prairie hay		13.6
Bluestem pasture	Yes	No
Mineral (bonemeal and salt)	0.10	0.11
Feed cost per steer ¹	\$ 9.44	\$18.80

Phase 2, Grazing, April 30, 1959, to July 23, 1959—84 days.

Gain per steer, lbs.	219	141
Daily gain per steer	2.61	1.68

Phase 3, Fattening, July 23, 1959, to January 8, 1960—169 days.

Final wt. per steer, lbs.	1213	1241
Gain per steer	442	419
Daily gain per steer	2.62	2.48
Standard error of mean	±0.11	±0.10
Daily ration per steer, lbs.:		
Ground shelled corn	14.3	14.3
Soybean meal	1.5	1.5
Alfalfa hay ²	1.4	1.4
Bluestem pasture ³	July to November	
Ground limestone	0.07	0.07
Salt	0.06	0.06
Feed per cwt. gain, lbs.:		
Corn	547	577
Soybean meal	57	61
Alfalfa hay	54	57
Feed cost per steer ¹	\$84.08	\$84.08
Feed cost per cwt. gain	\$19.02	\$20.07

Summary of Phases 1, 2, and 3, December 9, 1958, to January 8, 1960—395 days.

Total gain per steer, lbs.	601	633
Daily gain per steer, lbs.	1.52	1.65
Standard error of mean	±.04	±.04
Feed cost per cwt. gain ¹	\$15.56	\$16.25
Total feed cost per steer	\$93.52	\$102.88
Sale price per cwt., live wt., based on carcass value ⁴	\$24.39	\$24.82
Loss per steer above initial cost plus feed cost	\$14.53	\$10.77
Dressing percentage	59.1	60.6
Carcass grade ⁵	16.6	17.4
Marbling score ⁶	7.7	7.2

1. Feed prices may be found inside back cover.

2. Alfalfa hay was fed only when the steers were in drylot, about 4 pounds per head daily from November 14, 1958, to January 8, 1959.

3. The two lots were fed grain on grass from July 23 to November 14, when they were moved to drylot.

4. Hot carcass weights were shrunk 2% and evaluated per cwt. as follows: Standard, \$38.50; good, \$42; choice, \$44.50. These lot carcass values were then divided by the home weight, less 3%, to arrive at a live price per cwt.

5. A numerical value of 16 is low good; 17, av. good; and 18, high good.

6. Marbling score based on: small amount, 7; slight amount, 8.

Different Methods of Managing Bluestem Pastures, 1959. Projects 253-3 and 253-5.

E. F. Smith, K. L. Anderson, B. A. Koch, F. W. Boren, and B. D. Carmack

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 10 years of the study is included.

Experimental Procedure

Yearling Hereford steers with an average USDA feeder grade of high good were used in 1959. They were purchased as calves from near Fort Davis, Texas, and during the winter prior to summer grazing were grazed on bluestem range supplemented with about 7 pounds of alfalfa hay per steer daily. In addition to the steers a limited number of heifer yearlings were used to stock the different pastures—to increase the stocking rate. Gains of the heifers are not reported. They remained on the pastures only from May 5 to July 24, 1959.

The experimental treatment for each pasture was:

Pasture 1. Moderate stocking rate, 3.2 acres per head (5 acres per animal unit).

Pasture 2. Overstocked, 2.2 acres per head (3.75 acres per animal unit).

Pasture 3. Understocked, 5.0 acres per head (7.5 acres per animal unit).

Pastures 4, 5, and 6. Deferred grazing at the moderate stocking rate, 3.1 acres per head. All steers were held on pastures 5 and 6 from May 5 to June 30. They were then moved to pasture 4 where they remained until October 1. From October 1 until November 2 the steers were grazed on pastures 5 and 6.

Pasture 9. Burned March 21, 1959, moderate rate of stocking.

Pasture 10. Burned April 10, 1959, moderate rate of stocking.

Pasture 11. Burned April 30, 1959, moderate rate of stocking.

Part of the steers, about 50% in each pasture, were implanted with 24 mgs. of stilbestrol.

Observations

The results are presented in Tables 16 and 17.

Early-spring burning and overstocking have reduced the forage produced on these pastures. It was possible to burn only about 75% of the early-spring-burned pasture because of reduced forage. Sufficient grass was present on the mid- and late-spring-burned pastures to burn them completely.

Steer gain per head was increased by mid- and late-spring burning and reduced under deferred grazing. The other treatments produced only slight variations in daily gain.

Burning and grazing are significantly affecting vegetational makeup as shown in Table 18, a summary of plant populations on major range sites.

Table 16
A comparison of different methods of managing bluestem pastures.
 May 5, 1959, to November 2, 1959—181 days.

Pasture number	1	2	3	4, 5, 6	9	10	11
Management	Normally stocked	Over-stocked	Under-stocked	Deferred	Early-spring-burned	Mid-spring-burned	Late-spring-burned
Number animals per pasture:							
Steers	17	21	11	50	12	12	12
Heifers ²	2	6	2	9	2	2	2
Acres in pasture	60	60	60	3-60 ¹	44	44	44
Acres per head	3.2	2.2	5.0	3.1	3.1	3.1	3.1
Initial wt. per steer, lbs.	461	462	464	467	463	468	472
Final wt. per steer, lbs.	713	703	726	670	717	743	767
Gain per steer, lbs.	252	241	262	203	254	275	295
Daily gain per steer, lbs.	1.39	1.33	1.45	1.12	1.40	1.52	1.63
Gain per acre, lbs.	79	110	52	65	82	89	95

1. Three 60-acre pastures.
 2. The heifers were used to increase the stocking rate; their gains are not reported. They were removed from the pastures July 24.

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Table 17
Yearly account of cattle gains under different methods of grazing pastures; 10-year summary, 1950-1959. Average gain per steer in pounds for the summer season of approximately 150 days.

Pasture number	1	2	3	4, 5, 6	9	10	11
Management	Normally stocked	Over-stocked	Under-stocked	Deferred rotated	Early-spring-burned	Mid-spring-burned	Late-spring-burned
1950	221	210	214	205	216	254	230
1951	242	256	290	234	243	265	254
1952	246	209	228	197	251	278	283
1953	226	194	233	197	205	217	234
1954	261	237	236	214	270	271	306
1955	270	224	253	213	282	305	307
1956	179	184	168	154	212	234	216
1957	243	236	244	209	261	256	279
1958	208	207	207	198	222	270	253
1959	252	241	262	203	254	275	295
Average	235	220	234	202	242	263	266

Table 18

Vegetational composition by major groups of plants in major range sites. Amounts given are percentages of total population for 1959.

Treatment	Total ¹ big bluestem, little bluestem, Indiangrass	Total ² perennial grass	Total veg. other than perennial grass
Ordinary upland range site			
Not burned	%	%	%
Heavy stocking	35	34	30
Moderate stocking	56	23	19
Light stocking	52	25	21
Def.-rol. grazing ³	54	25	15
Burned (moderate stocking)			
Early spring	46	28	25
Mid-spring	71	13	15
Late spring	75	15	8
Limestone breaks range site			
Not burned	%	%	%
Heavy stocking	46	24	28
Moderate stocking	68	18	13
Light stocking	65	18	15
Def.-rol. grazing ³	72	17	10
Burned (moderate stocking)			
Early spring	54	21	24
Mid-spring	72	18	8
Late spring	75	15	9
Clay range sites⁴			
Not burned	%	%	%
Heavy stocking	27	38	31
Moderate stocking	30	36	31
Light stocking	35	46	17
Def.-rol. grazing ³	38	36	15
Burned (moderate stocking)			
Early spring	6	79	21
Mid-spring	6	83	10
Late spring	17	67	9

1. The two bluestems and Indiangrass are the most abundant grasses in these pastures that decrease under heavy grazing pressure.
 2. These include the Gramins, buffalograss, bluegrass, and others that increase under grazing pressure.
 3. Average of pastures 4, 5, and 6.
 4. Clay upland sites in the pastures not burned but claypan sites in those burned. The latter are somewhat more restrictive in terms of moisture and plant growth.

Stilbestrol Implants¹ for Steer Calves on a Wintering, Grazing, and Fattening Program; the Value of Aureomycin² during the Wintering and Fattening Periods, 1958-1959 (Project 258-6).

E. F. Smith, B. A. Koch, F. W. Boren, and B. D. Carmack

The Hereford steer calves used in this experiment were assigned to experimental lots randomly according to weight. They originated near Paducah, Texas, and graded USDA Good as feeders. All received the same basic ration from December 1, 1958, to April 28, 1959. They were grazed on bluestem pasture from April 28, 1959, to July 24, 1959, and were self-fed grain on grass from July 24 to November 14, 1959.

1. The stilbestrol implants were supplied by Chas. Pfizer & Co., Inc., Terre Haute, Ind.
 2. The Aureomycin was supplied by the American Cyanamid Company, Pearl River, N.Y.

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