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Different Methods of Managing Bluestem Pastures

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Studied were the effects of early season heavy stocking and burning on cattle performance, productivity of pastures and range condition as determined by plant population changes.

The objective of early season heavy stocking at twice the normal rate for the first half the growing season is to obtain more gain per acre, have cattle available for dry lot finishing at mid summer and determine if the grass will recover the last half of the season. Forage quality is best early in the growing season.

Previous tests have shown late spring burning will increase summer weight gains and is compatible with good management of bluestem pasture. Present burning treatments are to determine how often a pasture must be burned to achieve good results; annually, every third year or only when conditions favor burning, usually when moisture conditions are good and excessive dry grass has accumulated.

This is the first report since the study was redesigned. Some of the information may not bear directly on the research reported. It is recorded as knowledge in the transition from an old research project to a new one. Since all of the pastures were used in previous research, understanding their past history may help explain some of the results obtained initially in this study.

The yearling Hereford heifers grazed were purchased in April, 1967, near Maple Hill, Kansas, where they had been fed sorghum silage and limited grain during the winter. They were randomly allotted to treatments and weighed individually after being gathered and held overnight without feed or water.

The experimental treatment for each pasture starting in 1967 was as follows (unless otherwise stated the grazing season was May 2 to October 3 and if a pasture was burned, it was in late spring):

Pasture 1 - Moderate stocking rate

Pasture 3 - Heavy stocking rate, May 2 to July 15.

Pasture 4 - Moderate stocking rate

Pasture 5 - Burned periodically, when soil moisture was ample and a residue of old grass had accumulated, not burned in 1967.

Pasture 6 - Burned every third year, burned in 1967

Pasture 10 - Heavy stocking rate, May 2, to July 15.

Pasture 11 - Burned annually

Pasture 1 was continued under the same treatment as in the old project, pasture 2 and 9 were not grazed in 1967 nor used in this study because their previous treatment made them differ from other pastures. Pasture 3 had been lightly stocked in previous years. Pasture 4, 5, and 6 had been in a deferred rotation grazing scheme. Pas-

ture 10 was previously burned annually at mid-spring. Pasture 11 was continued on its treatment of annual late spring burning, which had been its treatment for several years.

Results

On pastures 1, 4 and 5, which were not burned in 1967, the daily gain per head ranged from 1.07 to 1.22 lbs. compared with 1.32 and 1.39 for the heifers on the burned pastures 6 and 11. Late spring burning, as in the past enhanced cattle performance.

Pasture 10, grazed heavily early in the season produced more gain per acre than pastures 1 or 4, which were moderately grazed the entire summer season. That pasture 10 had been mid spring burned several years may have contributed to the cattle's good performance.

A heavy cover of old grass from previous understocking was probably largely responsible for the low gain of heifers on early-season, heavily stocked pasture 3.

The heifers on pasture 3 and 10 were put through a squeeze chute for a health check the morning before their last weighing. That likely reduced their gain. Due to variables mentioned, weight gains for heifers on pastures 3 and 10 probably do not reflect fully the 1967 treatments given the pastures.

Table 4
A Comparison of Different Methods of Managing Bluestem Pastures, 1967

Management	Grazed from May 2 to Oct 2, 152 days					Grazed from May 2 to July 15; 73 days	
	Not burned		Burned			Not burned	
			Burned periodically[1]	Burned every 3rd year	Burned annually		
Pasture number	1	4	5	6	11	3	10
Number of heifers per pasture	18	18	18	18	13	36	26
Acres per pasture	60	60	60	60	44	60	44
Acres per heifer	3.33	3.33	3.33	3.33	3.38	1.67	1.69
Initial wt. per heifer lb.	548	557	544	546	558	559	545
Final wt. per heifer lb.	733	720	722	746	770	614	647
Gain per heifer lbs.	185	163	178	200	212	55	102
Daily gain per heifer lbs.	1.22[3]	1.07[3]	1.17	1.32	1.39	.75	1.40
Gain per acre lbs.	55.50	48.90	53.40	60.00	62.63	33.00	60.27

1. Not burned in 1967

2. Burned in 1967

3. Daily gain in pounds to July 15 for pasture 1, 1.13; pasture 4, 1.21

Table 5

Per Acre Production and Disappearance of Forage Weeds, and Mulch (Air-dry). Donaldson Pastures Near Manhattan, 1967
Clippings Were Taken at the Close of the Growing Season

Pasture no.	1	3	4	5	6	10	11
			Under cages lb/A (air-dry)				
Ordinary upland range site							
Forages	2575	3407	4128	2958	2819	2797	2163
Weeds	355	562	106	295	264	383	253
Mulch	1740	1885	808	610	128	826	-
Limestone breaks range site							
Forages	1475	1991	3062	2892	2170	2388	2055
Weeds	777	233	70	286	152	181	42
Mulch	1610	1744	1112	839	220	826	-
			Disappearance (Index of grazing use)				
Ordinary upland							
Forages	1356	1544	2086	1396	1568	1663	240
Weeds	59	159	20	134	216	200	99
Mulch	-	137	-	-	-	-	-
Limestone breaks							
Forages	485	1042	1218	1240	965	764	921
Weeds	337	141	-	211	55	51	-
Mulch	346	-	-	170	-	-	-
			Remainder (Residue at end of season)				
Ordinary upland							
Forages	1218	1863	2042	1562	1251	1134	1922
Weeds	295	403	86	160	48	183	154
Mulch	2004	1749	837	956	247	883	-
Limestone breaks							
Forages	941	949	1844	1652	1205	1623	1134
Weeds	441	93	77	75	97	130	97
Mulch	1264	1952	2066	670	361	874	-

Table 6

Grass Increasers and Grass Decreasers Shown As Percentage of Total 1967 Vegetation and an Estimated Range Condition[1] Based on the Percentage of "Original" Vegetation

Pasture no.	1	3	4	5	6	10	11
Ordinary upland, range site							
Decreasers	48.5	34.8	41.5	49.0	55.3	57.2	61.2
Increasers	29.0	42.4	42.8	28.7	29.9	17.8	23.8
Range condition[1]	65.5	54.2	65.4	68.4	73.0	75.2	77.4
Limestone breaks, range site							
Decreasers	47.1	42.9	58.8	56.1	61.5	58.0	32.6
Increasers	25.0	40.7	27.4	31.3	23.8	27.5	44.4
Range condition[1]	73.2	74.6	88.4	88.4	89.4	86.5	68.0

[1] 0-25% indicates poor condition; 25-50%, fair; 50-75%, good; 75-100%, excellent.