carcass grade, while wether carcasses were intermediate. Ram carcasses yielded fewer pounds of breast, rack or loin, and less kidney and pelvic fat. Hotel racks were dissected into lean, fat and bone to study sex effect on carcass composition. Less fat, more muscle and more bone were found in the rack from ram carcasses, while ewe carcasses had more fat, less muscle and less bone in the rack.

No large differences were found in taste panel evaluations of flavor, juiciness or tenderness of lamb loin roasts (Table 18). Roasts from rams showed a higher volatile cooking loss, a lower drip loss and a lower total cooking loss. The greater drip loss of ewe loin roasts probably is due to their greater fatness. A higher shear value was noted for cooked samples from ram loins than ewe loins, indicating less tenderness.

Table 18

Cooking time, cooking losses and taste panel evaluations of loin roasts from ram, wether, and ewe lambs.

	Ram	Wether	Ewe
Mean cooking time, min. per lb.	39.0	37.5	38.0
Volatile cooking loss, %	8.7	8.1	8.0
Drip cooking loss, %	2.6	4.0	4.7
Total cooking loss, %	11.6	12.3	12.8
Flavor intensity score	4.7	4.6	4.6
Flavor desirability score	5.5	5.4	5.5
Juiciness score	6.0	6.1	6.1
Press fluid, mls. per 25 gms.	8.0	8.1	8.2
Shear value, ½-inch core, lbs.	8.2	7.2	6.9
Final tenderness score	5.3	5.5	5.5

Cattle

Dicalcium Phosphate and Vitamin A for Calves on Winter Bluestem Pasture, 1963-1964 (Project 253-2).

E. F. Smith, D. Richardson, F. W. Boren, and C. V. DeGeer

The 42 heifer calves, 10 or 11 per treatment, used in this experiment were good to choice Herefords from near Fort Davis, Texas, assigned on a random-weight basis to treatments. They were pastured together in a 190-acre bluestem pasture. During winter, so the three groups could get their experimental rations (Table 19), they were penned and fed three times weekly. Dicalcium phosphate (0.1 pound per heifer daily) and vitamin A (10,000 I.U. daily), when fed, were mixed with soybean meal. The experimental rations were discontinued April 3 and only salt was supplied during summer grazing.

The heifers were bred July 1 to October 1. From July 1 to August 15 they were penned each night and those in heat were artificially bred, using Hereford semen; from August 15 to October 1 a Hereford bull was with the heifers.

Results (Table 19) indicate no apparent advantage to feeding dicalcium phosphate, vitamin A or a combination of the two to heifer calves during winter grazing on bluestem pasture.

Table 19

Dicalcium phosphate and vitamin A for calves on winter bluestem pasture, December 6, 1963, to November 11, 1964—341 days.

Lot no.	7	8	9	10
Treatment	Control	Dicalcium phosphate	Vitamin A	Dicalcium phosphate and vitamin A
No. of heifers	11	10	11	10
Initial wt. per heifer, lbs.	437	437	428	437
Winter grazing period—December 6, 1963, to April 3, 1964—120 days.				
Daily gain per heifer, lbs.	0.36	0.15	0.17	0.15
Daily ration per heifer, lbs.:				
Soybean oil meal	1.0	1.0	1.0	1.0
Ground sorghum grain	1.0	1.0	1.0	1.0
Dicalcium phosphate		0.1		0.1
Vitamin A, 10,000 I.U.			Yes	Yes
Bluestem pasture	Free choice			
Salt	Free choice			
Summer grazing—April 3, 1964, to November 11, 1964—221 days.				
Initial wt. per heifer, lbs.	480	446	448	455
Daily gain, lbs.	1.21	1.34	1.29	1.33
Summary—December 6, 1963, to November 11, 1964—341 days.				
Final weight, lbs.	747	742	732	750
Gain per heifer, lbs.	310	305	304	313
Daily gain per heifer, lbs.	0.91	0.89	0.89	0.92
No. of heifers pregnant	11	9	11	8

Table 20

A comparison of different methods of managing bluestem pastures, May 5, 1964, to September 27, 1964—145 days.

Pasture number	1	2	3	4, 5, 6	9	10	11
Management	Moderately stocked	Over-stocked	Under-stocked	Deferred and late-spring burned[1]	Early-spring burned	Mid-spring burned	Late-spring burned
Number of steers per pasture	18	25	13	54[2]	13	13	13
Acres in each pasture	60	60	60	3-60[3]	44	44	44
Acres per steer	3.3	2.4	4.6	3.3	3.4	3.4	3.4
Initial wt. per steer	556	571	573	568	575	582	577
Gain per steer	214	196	196	209	225	231	218
Daily gain per steer	1.48	1.35	1.35	1.44	1.55	1.59	1.50
Gain per acre	64.8	81.7	42.6	63.3	66.2	67.9	64.1

1. Deferred pasture number 6 was late-spring burned.
2. Ten of the steers in this pasture were counters only, because they came from a different source.
3. Three 60-acre pastures.

Different Methods of Managing Bluestem Pasture, 1964 (Projects 253-3-5).

E. F. Smith, K. L. Anderson, F. W. Boren, and C. V. DeGeer

This experiment was 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 15 years is included.

Experimental Procedure

Yearling Hereford steers with an average U.S.D.A. feeder grade of choice were used in 1964. They were purchased as calves the previous fall near Sterling, Kansas, and received silage, prairie hay, and about 4 pounds per head daily of a mixture of grain, dehydrated alfalfa and bran in dry lot during winter before the test started. They were assigned to pastures on a random-weight basis.

The experimental treatment for each pasture was:

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

Pasture 2—Overstocked, 2.4 acres per steer.

Pasture 3—Understocked, 4.6 acres per steer.

Pastures 4, 5, 6—Deferred grazing and burning, moderate stocking rate, 3.3 acres per steer. The steers were grazed on pastures 4 and 5 from May 5 to July 1. They were then moved to pasture 6 where they remained until September 17, when they were grazed in all three pastures until September 27, close of the trial. Deferred pasture 6 was burned April 30.

Pasture 9—Burned March 31, 1964, moderate rate of stocking.

Pasture 10—Burned April 8, 1964, moderate rate of stocking.

Pasture 11—Burned April 30, 1964, moderate rate of stocking.

The steers were gathered in the afternoon, held over night without feed or water and weighed the following morning about 8:00. Starting and final weights were obtained after putting all steers together and weighing them in random order.

Observations

Results are reported in Tables 20, 21, 22, and 23. Gain per steer under the various treatments ranged from 231 to 196 pounds per steer. Mid- and late-spring burning produced the highest gain, over- and understocking produced the least gain. It was dry and a 10-15 mile-per-hour wind

Table 21

Grass decreasers and grass increasers shown as percent of total vegetation and an estimated range condition percentage based on percent of the vegetation that is "original."

Pasture number	1	2	3	Av. of 4 & 5	6[1]	9[2]	10[2]	11[2]
Range site	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Ordinary upland								
Grass decreasers	38	25	31	39	52	40	63	67
Grass increasers	38	45	46	45	30	32	17	15
Range condition	73	37	47	51	68	52	78	82
Limestone breaks								
Grass decreasers	49	34	54	57	68	54	62	72
Grass increasers	30	43	29	27	24	23	24	19
Range condition	72	61	77	78	90	80	84	92

1. Burned late spring, 1964, before deferment.
2. Burned annually early, mid, and late spring, respectively.