

Nutritive Value of Forages as Affected by Soil and Climatic Differences (Project 430).

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This is the third test to measure differences, if any, in performance of cattle in various parts of Kansas due to location, soil, climate, rainfall and/or local feed.

Forty-eight Hereford steer calves from the same herd (Warner's, near Alden and Sterling, Kansas) averaging 475 pounds each were divided as uniformly as possible into four groups of 12 animals. One group was assigned to each of four locations: Colby, Garden City, Manhattan, and Mound Valley. Uniform-size concrete lots with sheds were used at each location. Each group of 12 animals was subdivided into two groups of six. The wintering ration consisted of locally grown sorghum silage (PS1a) fed free choice with 5 pounds of locally grown second-cutting alfalfa hay per head daily. At the end of the wintering phase, silage was gradually decreased and removed from the ration. At the same time, locally grown sorghum grain was introduced and gradually increased until the grain was self-fed. Salt was the only added mineral throughout the test. Analyses of the feeds used are shown in table 13.

Results and Observations

Results of the third test are shown in table 14. Variation in wintering and fattening gains were observed among locations; however, there were no significant differences in carcasses. Rate and feed cost of gain were satisfactory at all locations.

Table 15 gives the results of some crossbreds fed at Colby and Garden City and Holsteins fed at Mound Valley. They were fed in the same manner as reported above.

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1. Colby Station.
 2. Garden City Station.
 3. Mound Valley Station.

Table 13
Feedstuff analyses.

	Dry matter, %	Moisture, %	Protein, %	Ash, %	Ether extract, %	Crude fiber, %	N.F.E.	Carotene, mgs. per lb.
Colby:								
Sorghum silage	32.09	67.91	1.95	2.01	0.66	6.86	20.61	2.28
Alfalfa hay	94.17	5.83	17.01	9.70	1.84	30.25	35.37	9.23
Sorghum grain	88.54	11.46	10.71	2.86	1.05	1.09	72.83	----
Garden City:								
Sorghum silage	35.77	64.23	1.58	2.57	0.52	5.67	25.43	3.05
Alfalfa hay	90.80	9.20	13.46	8.89	2.57	29.97	35.91	37.69
Sorghum grain	87.28	12.72	9.23	1.06	1.59	1.82	73.58	----
Manhattan:								
Sorghum silage	35.77	64.23	1.84	1.29	0.70	6.87	25.07	1.07
Alfalfa hay	91.73	8.27	22.54	7.48	2.57	26.59	32.55	5.34
Sorghum grain	87.32	12.68	10.19	1.78	2.38	1.84	71.19	----
Mound Valley:								
Sorghum silage	35.77	64.23	2.47	1.90	0.67	7.15	23.58	0.72
Alfalfa hay	94.96	5.04	19.96	5.96	2.75	33.45	32.84	5.11
Sorghum grain	88.34	11.66	9.69	1.55	2.66	1.89	72.48	----

Table 14
Feed lot results for wintering phase, November 13, 1964, to March 5, 1965 - 112 days.

Location	Colby		Garden City		Manhattan		Mound Valley	
Lot no.	1	2	1	2	1	2	1	2
No. steers per lot	6	6	6	6	6	6	6	6
Av. initial wt. lb.	475	475	475	477	476	476	471.8	479.2
Av. final wt., lb.	615	612	598.2	602.2	620	607.5	662.2	672.2
Av. daily gain, lb.	1.25	1.22	1.10	1.12	1.29	1.18	1.70	1.72
Av. daily ration, lb.:								
Sorghum silage	28.9	30.9	23.6	24.2	22.0	22.0	24.6	26.3
Alfalfa hay	4.5	3.7	4.7	4.9	4.9	5.0	4.7	4.2
Feed per cwt. gain, lb.:								
Sorghum silage	2316	2540	2147	2137	1712	1875	1445	1525
Alfalfa hay	363	302	399	429	383	424	276	246
Total dry matter per cwt. gain, lb.	1085	1100	1130	1154	964	1060	779	779
Feed cost per cwt. gain	\$ 13.80	\$ 13.94	\$ 13.58	\$ 13.91	\$ 11.64	\$ 12.80	\$ 9.23	\$ 9.18
Results for fattening phase, March 5 to September 25, 1965 - 204 days								
No. steers per lot	6	6	6	6	6	6	6	6
Av. initial wt. lb.	615	612	598.2	602.2	620	607.5	662.2	672.2
Av. final wt. lb.	1110	1075	1076.7	1086.6	1064.2	1090	1037.5	1065
Av. daily gain lb.	2.43	2.27	2.35	2.38	2.18	2.37	1.84	1.93
Av. daily ration lb.:								
Alfalfa hay	4.9	4.8	4.3	4.9	4.5	4.6	4.8	4.8
Sorghum grain	16.3	16.0	16.0	16.0	16.0	16.5	15.3	16.3
Feed per cwt. gain lb.:								
Alfalfa hay	202	210	181	208	207	236	261	250
Sorghum grain	671	705	684	672	736	698	833	847
Feed cost per cwt. gain ¹	\$ 14.60	\$ 15.32	\$ 14.58	\$ 14.70	\$ 15.83	\$ 15.51	\$ 18.26	\$ 18.36
Shrink to market, %	3.53	2.71	3.79	4.22	2.27	3.06	2.33	5.09
Av. hot carcass wt. lb.	654.0	645.2	669.8	663.5	653.8	674.7	619.7	638.7
Dressing %, feedlot wt.	58.92	60.02	62.21	61.06	61.44	61.90	59.73	59.97
Dressing %, market wt.	61.07	61.69	64.67	63.75	62.87	63.84	61.15	63.18
Av. fat thickness 12th rib	.60	.72	.77	.75	.63	.80	.63	.67
Av. size rib eye sq. in.	11.79	11.39	11.76	11.46	11.27	11.53	11.21	11.13
Av. degree marbling ²	6.67	6.00	4.67	6.00	5.33	5.50	5.83	5.67
Carcass grades:								
Top prime	-	-	1	-	1	-	-	-
Av. prime	-	-	-	-	-	1	-	-
Low prime	-	1	1	-	-	-	-	-
Top choice	-	1	2	4	2	2	4	2
Av. choice	3	2	2	-	1	1	1	3
Low choice	2	1	-	2	2	2	-	1
Top good	1	-	-	-	-	-	-	-
Av. good	-	1	-	-	-	-	1	-

1. Alfalfa hay \$25 per ton, sorghum grain \$1.80 per cwt., sorghum silage \$8 per ton.
2. 4=slightly abundant, 5=moderate, 6=modest, 7=small amount, 8=slight amount 9=trace.

Table 15

Feed Lot Results for Wintering Phase, November 13, 1964, to March 5, 1965 - 112 days.

Location	Colby		Garden City		Mound Valley
Lot no.	3	4	3	4	3
Animals	AngusX Hereford (steers)	AngusX Hereford (heifers)	Charolais X Hereford	Charolais X Angus	Holstein
No. of animals	6	6	6	6	6
Av. initial wt., lb.	487.5	423.3	299	285	410.3
Av. final wt., lb.	598	537	653.5	621.8	589.2
Av. daily gains, lb.	1.2	1.16	1.38	1.22	1.60
Av. daily ration, lb.:					
Sorghum silage	32.0	26.2	29.6	24.7	31.0
Alfalfa hay	3.6	4.2	4.9	4.7	5.0
Feed per cwt. gain lb.:					
Sorghum silage	2848	2264	2136	2006	1940
Alfalfa hay	324	359	346	381	310
Total dry matter per cwt. gain, lb.	1219	1065	1078	1063	988
Feed cost per cwt. gain	\$15.44	\$13.55	\$12.87	\$12.78	\$11.64

Results for Fattening Phase, March 5 to September 25, 1965
- 204 days.

No. steers per lot	6	6	5*	6	6
Av. initial wt. lb.	598	537	547.6	621.8	589.2
Av. final wt. lb.	1027.5	935.8	1178	1085.8	1013.3
Av. daily gain lb.	2.11	1.96	2.60	2.27	2.08
Av. daily ration lb.:					
Alfalfa hay	4.9	4.8	4.7	5.0	5.0
Sorghum grain	15.5	16.0	17.9	17.7	17.8
Feed per cwt. gain, lb.					
Alfalfa hay	234	246	179	218	239
Sorghum grain	735	816	687	778	805
Feed cost per cwt. gain ¹	\$16.16	\$17.75	\$14.60	\$16.74	\$18.38
Shrink to market, %	2.60	3.83	3.90	3.45	2.80*
Av. hot carcass wt. lb.	627.8	581.0	713.6	660.8	616.2
Dressing % feedlot wt.	61.10	62.08	60.58	60.86	59.59
Dressing % market wt.	62.73	64.56	63.04	63.04	61.31
Av. fat thickness 12th rib	.85	.87	.61	.58	.24
Av. size rib eye sq. in.	11.90	10.58	11.73	10.43	11.42
Av. degree marbling ²	5.50	4.33	5.20	4.67	6.00
Carcass grades:					
Top prime	1	1	-	1	-
Low prime	1	3	1	1	-
Top choice	-	-	2	1	-
Av. choice	1	2	2	2	1
Low choice	3	-	-	1	-
Top good	-	-	-	-	3
Low good	-	-	-	-	1

* Carcass data for five animals presented: One Holstein heifer was not marketed

* Data for five steers presented: One steer died during fattening phase.

¹ Alfalfa hay, \$25 per ton; Sorghum grain \$1.80 per cwt; Sorghum silage \$8 per ton.

² 4=slightly abundant, 5=moderate, 6=modest, 7=small amount, 8=slight amount, 9=trace.