Level of Vitamin A in Beef Steer Rations: Wintering Phase. Progress Report (Project 567).

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Sixty Hereford steer calves were divided into six equal lots. Sorghum silage ad lib. and 1 pound of soybean oil meal per head daily were fed to all lots. Half of the animals (Lots 7, 8, and 9) received 8 pounds of sorghum grain per head daily; the other half (Lots 10, 11, and 12), 4 pounds per head daily. This phase of the test was to measure performance on two levels of grain and prepare the animals for the fattening phase. At the beginning of the fattening phase, the animals were reallotted to six lots of 10 with five animals from the 8-pound level of grain and five from the 4-pound level. Objectives of the fattening phase are to study:

1. 0, 15,000 and 30,000 units of added vitamin A per head daily added to a basal sorghum silage, sorghum grain and supplement ration.
2. Performance with 10 or 20 pounds of silage in ration.
3. Level of wintering ration on subsequent performance.

Results are shown in Table 32.

Table 32

Level of sorghum grain in steer calf wintering ration results, November 12, 1963, to March 6, 1964—115 days.

Lot no.	7	8	9	10	11	12
No. steers per lot	10	10	10	10	10	10
Av. initial wt., lbs.	489.5	486.0	486.5	487.0	487.0	487.5
Av. final wt., lbs.	751.5	745.0	763.0	730.5	737.0	732.0
Av. daily gain, lbs.	2.28	2.25	2.40	2.12	2.17	2.13
Av. daily ration, lbs.:						
Sorghum silage	24.2	24.3	24.3	29.8	29.7	29.7
Sorghum grain	7.9	7.9	7.9	4.0	4.0	4.0
Soybean oil meal	1.0	1.0	1.0	1.0	1.0	1.0
Feed per cwt. gain, lbs.:						
Sorghum silage	1063.0	1077.0	1010.0	1405.0	1368.0	1399.0
Sorghum grain	344.3	348.3	326.2	188.9	184.0	188.1
Soybean oil meal	43.9	44.4	41.6	47.2	46.0	47.0
Feed cost per cwt. gain	$11.97	$12.12	$11.35	$10.28	$10.02	$10.24

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

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It is generally thought that performance of cattle may differ in various parts of the state due to location, soil, climate, rainfall and/or feed produced. This project is an attempt to determine whether such differences exist and, if so, to measure them.

Forty-eight Hereford steer calves from the same herd and averaging 448 pounds were divided as uniformly as possible into four lots of 12 animals. One lot was assigned to each of four locations: Colby, Garden City, Manhattan, and Mound Valley. Uniform size concrete lots with sheds are being used at each location. The animals were subdivided into two groups of six animals. The wintering ration consisted of locally grown sorghum silage fed to limit of appetite and 5 pounds of locally grown second cutting of 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 entire test. Analyses of the feeds used are shown in Table 34.

Results and Observations

Results of the first test are shown in Table 33. Satisfactory and economical performance was obtained at all locations. There were differences in the performance of animals at the various locations in both the wintering and fattening phases; however, one test is not sufficient to determine whether the differences were real. The test will be repeated several times.

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

Table 33
Feedlot results for wintering phase, November 21, 1962, to March 19, 1963—118 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., lbs.	448	448	449	448	449	449	449	448
Av. final wt., lbs.	585.8	567.5	588.3	584.8	581.7	592.5	611	611
Av. daily gain, lbs.	1.17	1.01	1.18	1.16	1.12	1.21	1.37	1.38
Av. daily ration, lbs.:								
Sorghum silage	24	24	22	22	23	23	30	29
Alfalfa hay	5	5	5	5	5	5	5	5
Feed per cwt. gain, lbs.:								
Sorghum silage	2,082	2,376	1,853	1,873	2,045	1,895	2,187	2,135
Alfalfa hay	418	490	422	430	445	412	365	363
Dry matter per cwt. gain, lbs.:								
Sorghum silage	618	706	584	590	644	597	538	525
Alfalfa hay	397	465	401	408	423	391	347	345
Total dry matter per cwt. gain, lbs.	1,015	1,171	985	998	1,067	988	885	870
Feed cost per cwt. gain[1]	$11.99	$13.85	$11.30	$11.47	$12.21	$11.31	$11.67	$11.48
Feedlot results for fattening phase, March 19 to September 28, 1963—193 days.								
Initial wt. per steer, lbs.	585.8	567.5	588.3	584.8	581.7	592.5	611	611
Final wt. per steer, lbs.	1,024	965.5	1,026	1,035	995	977.5	945	906
Av. daily gain, lbs.	2.27	2.06	2.27	2.33	2.19	1.99	1.73	1.53
Av. daily ration, lbs.:								
Alfalfa hay	4.6	4.6	4.5	4.4	5.0	5.0	4.5	4.1
Sorghum grain	17.1	16.5	16.9	16.8	15.4	16.0	14.7	13.2
Feed per cwt. gain, lbs.:								
Alfalfa hay	202.2	223.4	197.0	190.4	231.9	249.6	261.9	270.0
Sorghum grain	751.7	800.9	745.8	718.5	720.4	802.0	850.2	862.9
Feed cost per cwt. gain[1]	$16.06	$17.21	$15.88	$15.31	$15.87	$17.56	$18.57	$18.91
Shrink to market, %	5.5	4.2	4.7	3.1	3.9	3.2	4.5	3.8
Av. hot carcass wt. less 2%	602.2	574.8	608.3	610.7	583.6	583.1	546	525
Dressing %, feedlot wt.	58.8	59.5	59.3	59	58.7	59.7	57.8	57.9
Dressing %, selling wt.	62.2	62.1	62.2	61.9	61	61.7	60.5	60.2
Av. finish:								
Fat thickness, 12th rib, in.	.59	.74	.56	.53	.46	.56	.49	.40
Distribution[2]	3.0	3.0	3.2	3.3	3.2	3.2	2.3	3.7
Size rib eye, sq. in.	10.04	9.67	10.64	10.27	10.36	10.12	10.19	9.26
Degree marbling[3]	5.8	6.0	6.5	6.8	6.7	6.2	5.5	6.7
Degree firmness[4]	3.7	4.2	4.3	4.7	4.5	4.2	3.7	4.0
Fat color[5]	2.7	2.7	3.3	2.8	2.5	2.8	2.7	3.2
Lean color[6]	2.5	2.0	3.2	2.5	2.7	2.7	2.7	3.2
Av. carcass grade:								
Av. prime	..	..	..	..	..	..	1	..
Top choice	..	..	..	..	..	..	..	..
Av. choice	1	1	..	..	..	2	2	..
Low choice	5	3	5	3	4	2	1	1
Top good	..	2	1	2	2	1	1	2
Av. good	..	..	..	..	..	..	1	1
Low good	..	..	..	1	..	1	..	2
Liver wt., lbs.	10.02	10.11	10.48	10.55	10.15	9.69	8.80	8.77
Vitamin A per gram liver, I.U.	155.7	189.1	238.0	151.7	55.4	66.7	59.9	52.6
Carotene per gram liver, mcg.	4.7	5.1	5.9	6.1	4.2	4.2	3.3	3.6

1. Silage, $6.50 per ton; alfalfa hay, $25 per ton; sorghum grain, $1.80 per cwt.
2. 2 = uniform, 3 = moderately uniform, 4 = modestly uniform.
3. 5 = moderate, 6 = modest, 7 = small amount.
4. 3 = moderately, 4 = modestly firm, 5 = slightly firm.
5. 1 = white, 2 = creamy white, 3 = creamy, 4 = slightly yellow.
6. 1 = light cherry red or dark pink, 2 = slightly dark cherry red, 3 = moderately dark cherry red, 4 = slightly dark red.

Table 34
Feedstuff analyses.

	Moisture, %	Dry matter, %	Protein, %	Ash, %	Crude fiber, %	Ether extract, %	N.F.E., %	Carotene, mgs./lb.
Colby:								
Sorghum silage	71.80	28.20	1.82	2.61	5.07	0.84	17.86	8
Alfalfa hay	5.00	95.00	15.50	6.41	33.32	1.40	38.37	14
Sorghum grain	11.99	88.01	8.19	2.86	4.07	5.10	67.79	....
Garden City:								
Sorghum silage	68.56	31.44	1.33	2.00	3.17	0.48	24.46	1
Alfalfa hay	5.00	95.00	14.28	9.19	29.97	1.62	39.94	38
Sorghum grain	9.90	90.10	7.35	2.79	2.34	5.20	72.42	....
Manhattan:								
Sorghum silage	68.49	31.51	1.95	1.54	7.38	0.75	19.89	2
Alfalfa hay	5.00	95.00	11.98	3.11	35.67	1.19	43.05	10
Sorghum grain	10.65	89.35	8.14	2.58	3.48	4.50	70.65	....
Mound Valley:								
Sorghum silage	75.96	24.04	1.80	1.61	3.95	0.39	16.29	2
Alfalfa hay	5.00	95.00	13.67	5.79	31.01	1.41	43.12	7
Sorghum grain	7.99	92.01	7.73	2.23	3.41	4.40	74.24	....

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This is a progress report on the second test to determine whether there is a difference in the performance of beef steers due to location, soil, climate, rainfall and/or feed produced in four areas of Kansas: Colby, Garden City, Manhattan, and Mound Valley. Forty-eight Hereford steer calves averaging 454 pounds each were divided into four groups of 12. One lot was assigned to each location. Sorghum silage from the same variety (FSIA) and second cutting of alfalfa plus plain salt were used in the wintering phase. Feedstuff analyses are shown in Table 34, and results of the wintering phase in Table 35. Silage has been removed from the ration and sorghum grain added. The animals will be fattened for slaughter.

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