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Nutritive value of forages as affected by soil and climatic differences

Abstract

Wintering and finishing performances of beef steers have been compared at Colby, Garden City, Manhattan and Mound Valley. When feeds were grown locally, cattle at Garden City and Colby outperformed those at Manhattan and Mound Valley (Bulletin 507, 1967). Since all cattle were of the same origin, differences were credited to the climate and/ or feed composition. In 1968-9 (trials 5 and 6), cattle were fed at all locations on feed produced at Garden City. During the wintering phase in trial 5, cattle at Colby and Garden City significantly outgained those at Mound Valley ($P < .01$). Performance at Manhattan was intermediate. In trial 6, table 18, during wintering, steers at Manhattan gained faster ($P < .01$) than those at Colby or Garden City but not those at Mound Valley. Finishing gains did not differ significantly in either trial. Results of the last two tests being more uniform than results of the previous four indicates some of the differences are from the site where the feed is produced.

Keywords

Cattlemen's Day, 1969; Report of progress (Kansas State University. Agricultural Experiment Station); 529; Beef; Soil; Climate; Wintering performance; Finishing performance

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

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Colby, Garden City, and Mound Valley Branches and
the Kansas Ag. Exp. Sta., Manhattan

Wintering and finishing performances of beef steers have been compared at Colby, Garden City, Manhattan and Mound Valley. When feeds were grown locally, cattle at Garden City and Colby outperformed those at Manhattan and Mound Valley (Bulletin 507, 1967). Since all cattle were of the same origin, differences were credited to the climate and/or feed composition. In 1968-9 (trials 5 and 6), cattle were fed at all locations on feed produced at Garden City. During the wintering phase in trial 5, cattle at Colby and Garden City significantly outgained those at Mound Valley ($P < .01$). Performance at Manhattan was intermediate. In trial 6, table 18, during wintering, steers at Manhattan gained faster ($P < .01$) than those at Colby or Garden City but not those at Mound Valley. Finishing gains did not differ significantly in either trial. Results of the last two tests being more uniform than results of the previous four indicates some of the differences are from the site where the feed is produced.

Steers at the Manhattan station now are being fed a single variety of sorghum grain produced near the four test stations. Data from all tests are being summarized, and feed-stuffs from the four location are being analyzed for mineral content.

Table 18

Feedlot Results at Indicated Locations,
Project 430 Wintering Phase
November 17, 1967 - February 9, 1968 - 84 days

Location	Colby		Garden City		Manhattan		Mound Valley	
Lot no.	1	2	1	2	1	2	1	2
No. steers per lot	6	5	6	5	6	6	6	6
Av. initial wt., lb.	455.8	456.0	455.8	454.0	453.3	458.3	456.7	456.7
Av. final wt., lb.	556.0	554.0	556.3	548.8	583.3	601	574.7	572.5
Av. daily gain, lb.	1.20	1.17	1.20	1.13	1.55	1.70	1.40	1.38
Av. daily ration, lb.								
Alfalfa hay	14.06	14.15	12.55	12.04	17.31	17.16	15.05	15.02
Feed per cwt. gain, lb.	1177.1	1213.9	1048.9	1067.1	1118.7	1011.5	1077.4	1092.2
Feed cost per cwt. gain ¹ \$	14.71	15.17	13.11	13.34	13.98	12.64	13.47	13.65
Finishing phase, February 10 -- August 9, 1968 - 182 days								
No. steers per lot	6	4	6	5	6	5	6	6
Av. final wt., lb.	950.3	968.1	1011.0	990.6	1012.5	1065.0	1016.0	996.0
Av. daily gain, lb.	2.17	2.26	2.50	2.43	2.36	2.55	2.43	2.33
Av. daily ration, lb.								
Alfalfa hay	5.09	5.40	4.16	4.71	3.83	4.76	5.22	4.21
Sorghum grain	14.46	14.55	16.50	14.50	16.85	16.99	16.38	16.32
Feed per cwt. gain:								
Alfalfa hay	235.09	239.91	166.72	194.16	162.52	186.19	215.08	180.77
Sorghum grain	667.53	644.36	660.6	597.64	714.56	665.16	674.51	700.63
Feed cost per cwt. gain, \$	14.96	14.60	13.97	13.19	14.89	14.30	14.83	14.87
Av. daily gain, 266 days	1.86	1.93	2.09	2.02	2.10	2.28	2.10	2.03
Shrink to market, %	2.66	3.40	2.73	3.08	2.88	1.69	1.82	3.02
Av. hot carcass wt., lb.	572.8	583.3	604.3	590.8	616.3	645.6	626.0	598.8
Dressing %, feedlot wt.	60.3	60.3	59.8	59.7	60.9	60.6	61.6	60.2
Dressing %, market wt.	61.9	62.4	61.5	61.5	62.7	61.7	62.8	62.0
Av. fat thickness, 12th rib	.47	.46	.67	.44	.61	.57	.61	.53
Est. % kidney knob	2.50	2.63	2.92	3.10	2.90	2.80	3.00	2.80
Av. size rib eye, sq. in.	10.70	10.98	10.45	10.98	10.82	11.37	11.27	11.21
Av. degree marbling ²	7.2	7.3	7.3	6.8	6.2	6.2	7.2	7.5
Av. yield grade	2.9	2.8	3.7	3.0	3.5	3.3	3.4	3.1
Carcass grades:								
Top choice					1			
Av. choice		1	2	1	2	1	1	
Low choice	3	1	1	3	3	3	2	2
Top good	2	1	3			1	2	3
Av. good	1	1		1			1	1

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

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