

The Value of Feedlot Lighting, 1963-64.

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The favorable results of previous tests* of the value of beef feedlot lighting justified further studies. Faster and more efficient gains were obtained under lighted conditions in two years of farm testing.

Two tests are reported here, one using heifer calves on a silage ration and the other with steer calves self-fed a roughage-concentrate mixture. The heifer calves were good to choice Herefords from near Fort Davis, Texas; steer calves were choice Herefords from near Alden, Kansas. All animals were assigned to treatment on a random-weight basis.

The lighting arrangement consisted of three 25-watt incandescent lamps, spaced about 8 feet apart and suspended under sheet metal reflectors about 7 feet high. A photoelectric control automatically turned the lights on at dusk and off at dawn. The low mounting height and the reflectors were used to limit lighting to the lot in which they were mounted.

On the silage ration the two lots were located about 80 feet apart. Where the roughage-concentrate mixture was self-fed the two lots were about 100 feet apart.

* "Beef Feedlot Lighting" by K. E. Robertson and R. I. Lipper, Report of Progress No. 30, Department of Agricultural Engineering, Kansas Agricultural Experiment Station, February, 1964.

Table 55
The value of lights for feedlot calves.

Treatment	Silage ration		Roughage-concentrate mixture self-fed	
	Lights	No lights	Lights	No lights
Duration of study	Nov. 27, 1963-Mar. 17, 1964—111 days		Dec. 17, 1963-Mar. 21, 1964—95 days	
Lot no.	3	6	13	17
No. of animals per lot	10	10	10	10
Initial wt. per animal, lbs.	430	430	483	479
Daily gain per animal	1.46	1.23	2.72	2.77
Av. daily ration, as-fed basis, lbs.:				
Sorghum silage	30.89	30.60		
Soybean meal	1.25	1.25		
Dicalcium phosphate	0.10	0.10		
Roughage-concentrate-molasses mixture ¹			17.44	16.68
Alfalfa wafers			3.79	3.83
Prairie hay			1.73	1.76
Salt			Free choice	
Feed per lb. of gain, lbs.:				
Sorghum silage	21.16	24.88		
Soybean meal	0.86	1.02		
Roughage-concentrate mixture			6.41	6.02
Alfalfa wafers			1.39	1.38
Prairie hay			.64	.64
Feed cost per lb. of gain ²	\$0.1125	\$0.1327	\$0.1573	\$0.1496

1. The roughage-concentrate mixture on a percentage basis consisted of: Ground rice hulls, 42; ground sorghum grain, 40.4; molasses, 10; soybean meal, 4.6; urea, 1; dicalcium phosphate, 1; Aureomycin and stilbestrol premix, 1 (Supplied about 70 mgs. Aureomycin and 10 mgs. stilbestrol per steer daily).

2. Feed prices given on page 78.

On the silage tests the lighted lot gained slightly more than the non-lighted lot with no increase in feed intake, for more efficient gains. Where the roughage-concentrate mixture was self-fed, lighting seemed to have no effect. The last two lots will be on test 15 more days. Both trials were short, so the results should be interpreted as progress reports only.

Improving Beef Cattle Through Breeding Methods (Project 286).

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The purebred Shorthorn beef cattle breeding project was continued during 1963 without modification. Inbreeding was continued in the two separate lines, which have remained closed to outside breeding since the study was initiated in 1949. The inbreeding plan has been basically to continue successive generations of half-sibbing in both lines. The Wern-acre Premier line is in its fifth generation and the Mercury line, its fourth generation of inbreeding.

This project was initiated to study the inheritance of production traits in beef cattle, to evaluate the effects of inbreeding in beef cattle, and to explore the feasibility of using inbred lines of beef cattle to improve production traits.

Extensive individual animal production data have been collected on all cattle produced in the project since its start. No extensive line crossing has been attempted to date because of the relatively low levels of inbreeding and the limited number of breeding animals in the project.

The management of the experimental cattle includes weighing each cow and calf immediately following parturition. Summer pasture breeding is practiced and the calves are born during the spring of each year. The mature cows are wintered on dry native grass. The calves are not creep fed during the suckling period. All calves are weaned, weighed, and scored for conformation when they are approximately six months old and the standardized weaning age for weaning weight correction is 180 days. They are placed on individual feeding trials for record-of-performance tests for 182 days shortly after they are weaned. Body weight gain and feed consumption records are maintained on all calves during the feeding period. The calves are scored for conformation as yearlings when they complete the prescribed feeding test.

The full-feed ration for the bulls consists of 75 percent cracked corn and 25 percent chopped alfalfa hay; that for the heifers, 55 percent cracked corn and 45 percent chopped alfalfa hay. All calves are fed twice daily from individual feeders.

Production data for the 1962 calves are summarized in Table 56. The 1963 calves had not completed their feeding test at the time of this report. Thirty-four calves of the 1963 calf crop are being fed.

Table 56
Summary of the 1961 Shorthorn calves from indicated inbred lines.

Tag no.	Coefficient of inbreeding	Birth weight	Weaning weight	Days fed	Initial weight	Final weight	Total gain	Average daily gain	Final score	Dis. corr. per cent. gain	Dis. corr. per cent. gain
Mercury Line, Bulls											
6	17.19	57	315	182	330	751	421	2.31	2	436	223
91	15.63	43	274	182	310	662	352	1.93	3	482	273
189	15.63	55	353	182	385	830	445	2.45	2+	442	245
8	12.50	70	415	182	418	840	422	2.32	2-	469	227
131	6.25	70	375	182	403	909	497	2.73	2+	367	152
68	20.31	56	348	182	362	824	462	2.54	2-	387	209
4	15.63	72	369	182	383	875	490	2.69	1	378	205
5	12.81	60	300	182	335	810	475	2.61	2-	448	220
7	18.75	60	350	182	360	805	445	2.45	2-	436	239
119	7.81	77	370	182	415	931	536	2.95	1-	326	213
52	9.38	67	305	182	350	850	500	2.75	1-	415	211
87	9.38	82	310	182	310	819	509	2.80	2	396	191
31	17.74	57	386	172	418	810	392	2.23	2-	432	276
19	9.38	76	380	172	445	860	415	2.39	2	563	278
12	9.84	73	353	182	372	833	511	2.81	1	401	207
Average	13.22	65	346	.....	373	831	458	2.53	2+	429	235
Heifers											
10	15.63	65	355	176	415	775	360	2.05	1-	442	389
56	18.75	59	345	182	357	712	335	1.95	1	370	406
11	18.75	65	340	182	357	729	365	1.99	1-	379	342
2	14.74	65	340	182	358	730	372	2.04	2	397	403
82	17.19	60	290	182	320	655	335	1.84	2+	354	394
71	9.38	50	328	182	368	705	337	1.85	2	427	332
21	7.18	75	353	182	380	755	375	2.06	1	388	357
2	7.81	70	332	182	351	703	352	1.93	1-	429	386
72	15.73	62	313	182	325	600	275	1.51	3+	451	407
9	15.92	60	255	182	264	455	191	1.05	4	455	429
114	7.81	65	320	182	333	599	255	1.40	2	449	408
81(a)	15.63	62	250	182	275	635	360	1.98	2	333	361
1	19.99	72	308	176	370	710	340	1.93	2-	432	382
36	15.92	71	401	176	472	783	313	1.78	1	527	466
Average	14.32	64	322	.....	363	681	327	1.81	2+	417	390
Wernacre Premier Line, Bulls											
191	33.03	61	320	182	362	840	478	2.36	3-	417	219
14	29.81	80	423	182	473	955	482	2.65	3+	480	227
Average	31.43	71	373	.....	418	893	480	2.51	3	449	223
Heifers											
13	28.27	68	345	182	385	670	285	1.57	2-	447	407
15	34.05	65	300	182	337	645	308	1.69	2-	425	357
81(b)	30.25	66	300	176	373	703	332	1.89	2-	434	404
Average	30.85	66	315	.....	365	673	308	1.72	2-	435	389