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Beef Cattle

Improvement of Beef Cattle Through Breeding.

PROJECT 286

Walter H. Smith, Lewis A. Holland, and John Wheat

The purebred Shorthorn cattle breeding project, established to study the production traits and the effects of inbreeding, was continued during the last year. Two inbred lines were established by the use of the two herd sires, College Premier 29th 2368167 and Gregg Farm's Hoarfrost 2492499. The two breeding groups are referred to as the Wernacre Premier and the Mercury lines, respectively, in reference to the foundation sires. The Wernacre Premier line has entered the third generation of inbreeding and the Mercury line is as yet in the first generation of inbreeding.

The calves of the Wernacre Premier line for 1954 were sired by College Premier 29th and one of his inbred sons, KSC Premier C 11th. This inbred son and another, KSC Premier C 14th, were used during the 1954 and 1955 breeding seasons. The 1955 Wernacre Premier calf crop represents progeny of both of these sires.

The noninbred calves in the Mercury line for 1954 were sired by Gregg Farm's Hoarfrost. The inbred calves were sired by one of his sons, KSC Mercury. The 1955 Mercury line calves were sired by KSC Mercury 4th, another son of Gregg Farm's Hoarfrost. The inbreeding program in the Mercury line was initiated by mating the daughters of Gregg Farm's Hoarfrost to his sons.

The females in the project produce calves in the spring of each year as a result of pasture breeding. The calves are not creep fed during the suckling period while the cows are on grass. All calves are weaned at approximately 182 days of age and placed on individual feeding trials for 182 days after a three-week adjustment period following weaning.

The full-feed ration for the bulls and steers 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.

The feeding trial data for the 1954 calf crop are summarized in Table 1, and a partial summary of the 1955 calf crop is presented in Table 2. Since the feeding trials for the 1955 calves are not complete, the number of days of feeding as of April 1, 1956, is designated for each calf.

Table 1
Summary of the 1954 Shorthorn Calves of the Wernacre Premier and Mercury Lines.

Tag number	Coefficient of inbreeding ¹	Birth weight	Weaning weight	Weaning score	Days fed	Initial weight	Final weight	Total gain	Average daily gain, lbs.	Final score	Lbs. corn per 100 lbs. gain	Lbs. alfalfa per 100 lbs. gain
Wernacre Premier Line²												
Steers												
82	15.62	75	401	3	182	416	805	389	2.14	3	452	221
9	23.44	82	380	3—	182	388	835	447	2.46	3	414	202
108	14.06	82	445	3+	182	449	857	408	2.24	3	444	223
18	23.44	58	351	3	182	443	835	392	2.15	3	449	261
Av.	19.14	74	394	3	182	424	833	409	2.25	3	440	227
Heifers												
10	14.06	75	332	3—	182	335	535	200	1.10	3—	343	300
Mercury Line												
Bulls												
30	00.00	61	430	1	182	413	917	504	2.77	1	395	192
79	00.00	65	402	1—	182	400	858	458	2.52	1—	348	186
61	25.00	69	382	2	182	350	755	405	2.23	2	360	184
Av.	8.33	65	405	1—	182	388	843	456	2.51	1—	368	187
Steers												
14	00.00	61	435	2+	182	424	830	406	2.23	3	458	221
180	3.12	72	365	2—	182	361	709	348	1.91	4+	467	216
23	12.50	69	331	2—	182	341	780	439	2.41	3	410	204
Av.	5.21	67	377	2	182	375	740	398	2.18	3—	445	214
Heifers												
105	00.00	70	372	1—	182	435	777	342	1.88	1	325	292
58	14.06	67	315	2	182	313	620	307	1.69	2+	321	293
22	3.12	64	320	2	182	314	650	336	1.85	1—	347	310
90	12.50	67	331	2	182	350	673	323	1.77	1—	406	359
134	7.81	53	305	2—	182	285	605	320	1.76	2	383	356
56	12.50	48	261	3+	182	255	557	302	1.66	3+	337	315
760	00.00	56	261	2—	182	268	563	295	1.62	1—	369	353
Av.	7.14	61	309	2	182	317	635	318	1.75	2+	355	325

1. The coefficient of inbreeding means the percentage of inbreeding. Individuals from full brother-sister matings are 25 percent inbred. Individuals produced from mating half-brothers and -sisters are 12.5 percent inbred.

2. No bulls were fed from this group of calves.

Table 2

Partial Summary of the 1955 Shorthorn Calves of the Wernacre Premier and Mercury Lines.

Tag number	Coefficient of inbreeding	Birth weight	Weaning weight	Weaning score	Initial weight	Weight on 4-1-55	Days on trial	Daily gain during trial
Wernacre Premier Line								
Bulls								
154	32.03	77	446	2—	486	863	166	2.27
760	23.56	64	310	3	332	410	82	.95
Av.	27.80	71	378	3+	409	637		1.61
Steers								
(9) 11	22.98	56	310	2—	345	610	131	2.02
Heifers								
68	23.44	79	370	2—	425	702	166	1.67
14	15.35	75	360	3+	395	655	166	1.57
23	15.45	60	370	2+	425	681	166	1.54
18	15.09	76	311	3	360	620	166	1.57
10	23.74	59	290	3	330	582	166	1.52
7	20.70	69	305	3	340	580	131	1.83
50	23.40	56	300	3	320	522	131	1.54
Av.	19.60	68	329	3+	371	620		1.61
Mercury Line								
Bulls								
82	6.44	72	450	2+	500	894	166	2.37
15	14.18	57	340	1—	410	847	166	2.63
30	1.76	61	350	1—	402	750	131	2.66
8	14.45	60	365	2+	400	835	131	3.32
Av.	9.21	63	376	1—	428	832		2.75
Steers								
184	14.26	66	360	2—	445	835	166	2.35
108	12.92	61	305	2+	350	675	166	1.96
58	12.50	57	308	2	350	710	166	2.17
12	14.30	57	260	3+	300	502	131	1.54
(7) 61	13.48	71	325	2—	325	453	82	1.56
Av.	13.49	62	312	2—	354	635		1.92
Heifers								
9	1.80	62	356	2	372	625	166	1.52
180	1.68	59	395	2+	420	590	166	1.02
31	14.30	55	326	1—	365	595	166	1.39
1	4.01	57	310	2—	325	530	131	1.56
49	13.48	62	312	2	340	582	131	1.85
55	25.00	62	300	2+	300	505	131	1.56
2	1.96	66	283	3+	290	530	131	1.83
90	16.50	72	355	2+	375	466	82	1.11
22	15.72	71	330	2+	352	471	82	1.45
Av.	10.49	63	330	2	349	544		1.48

Methods of Wintering Steer Calves That Are To Be Grazed on Bluestem Pasture the Following Summer, 1954-55.

PROJECT 253-1

E. F. Smith, F. H. Baker, R. F. Cox, D. L. Good, and G. L. Walker

This test is to compare methods of winter management and supplements for steer calves that are to be grazed the following summer. Results of the test are measured primarily by the combined winter and summer performances.

The following comparisons are being made:

1. Wintering in dry lot on prairie hay with wintering on dry bluestem pasture.
2. Different levels of protein feeding on dry bluestem pasture.
3. A combination of grain and a protein supplement with a protein supplement on dry bluestem pasture.

Experimental Procedure

Forty good to choice Hereford steer calves, from the Lonker Ranch at Medicine Lodge, Kan., were divided into four lots of 10 each. One lot was wintered in dry lot at the experimental barn, while the other three lots were wintered on dry bluestem pasture. The pastures had been stocked the previous summer but sufficient grass remained to winter the steers. The steers on pasture during the winter were moved from pasture to pasture the first day of each month to minimize pasture differences. All steers received mineral (steamed bonemeal and salt) and salt free choice.

The treatment each lot received was as follows:

Lot 1—(Dry lot) Prairie hay and 1 pound of soybean pellets per head daily.

Lot 2—Dry bluestem pasture, 1 pound of soybean pellets per head daily.

Lot 3—Dry bluestem pasture, 1 pound of soybean pellets and 1 pound of corn per head daily.

Lot 4—Dry bluestem pasture, 2 pounds of soybean pellets per head daily.

Prairie hay was fed when snow covered the grass.

Observations

1. On the basis of winter and summer gain combined the most economical method of wintering steer calves was on dry bluestem pasture, with 2 pounds of supplemental feed.

2. Apparently in this test 1 pound of 41 percent protein supplement did not furnish quite enough protein or protein and energy combined for calves wintered on dry grass.

3. One pound of corn and 1 pound of soybean pellets were equal to 2 pounds of soybean pellets. This was also true in a previous test reported in Circular 308.

Table 3

Methods of Wintering Steer Calves That Are To Be Grazed on Bluestem Pasture the Following Summer.

Phase 1, Wintering, November 10, 1954, to April 6, 1955—147 days.

Lot number	1	2	3	4
Number of steers	10	10	10	10
		Bluestem	Bluestem	Bluestem
		pasture	pasture	pasture
Place of wintering	Dry lot			
Initial wt. of steer	519	519	520	516
Final wt. of steer	653	534	561	561
Gain per steer	134	15	41	45
Daily gain per steer91	.10	.28	.31

Table 8 (Continued).

Daily ration per steer:				
Soybean pellets	1.00	1.00	1.00	2.00
Prairie hay	12.11	1.59 ¹	1.59 ¹	1.59 ¹
Corn			1.00	
Dry bluestem pasture				
Salt	Free choice	Free choice	Free choice	Free choice
Minerals ²	Free choice	Free choice	Free choice	Free choice
Feed cost per steers ³	\$24.11	\$11.17	\$14.99	\$17.49
Feed cost per cwt. gain ³	18.00	74.46	36.56	38.86

Phase 2, Grazing, April 6 to August 2, 1955—118 days.

Initial wt. of steer	653	534	561	561
Final wt. per steer	816	776	813	802
Gain per steer	163	242	252	241
Daily gain per steer	1.38	2.05	2.14	2.04
Cost per 100 lbs. pasture gain ³	\$9.81	\$6.61	\$6.34	\$6.63

Summary of Phases 1 and 2

November 10, 1954, to August 2, 1955—265 days.

Initial wt. per steer	519	519	520	516
Final wt. per steer	816	776	813	802
Gain per steer	297	257	293	286
Daily gain per steer	1.12	.97	1.11	1.08
Feed cost per 100 lbs. gain ³	\$13.50	\$10.57	\$10.57	\$11.70
Feed cost per steers ³	\$40.11	\$27.17	\$30.99	\$33.49

1. Prairie hay was fed lots 2, 3, and 4 only when snow covered the grass.
2. Mineral was 2 parts steamed bonemeal and 1 part salt.
3. Feed prices are found on inside back cover.

Supplements for Yearling Steers on Bluestem Pastures During the Latter Part of the Grazing Season, 1955.

PROJECT 253-1

E. F. Smith, F. H. Baker, and G. L. Walker

The nutritive value of bluestem pasture usually declines rapidly after mid-summer. This test is an attempt to find ways to economically increase the rate of gain after mid-summer with small quantities of concentrate feed.

Experimental Procedure

Thirty-six head of good-quality yearling Hereford steers were used in this test. They had been grazing together on bluestem pasture previous to the test. The steers were divided into three lots of 12 steers each, in a manner to equalize any difference due to previous winter treatments. They were grazed on bluestem pasture and received the following treatment from August 2, 1953, to October 17, 1955.

Lot 1—No supplement.

Lot 2—Two pounds of soybean pellets per head daily.

Lot 3—Two pounds of corn per head daily.

The steers were rotated on the pastures every 15 days to help equalize any differences that might be due to pastures.

Observations

1. Both supplements increased the rate of gain. The soybean pellets increased the rate of gain enough to make their feeding profitable, which the corn failed to do.

2. The grass was brown for the most part and the late summer season was dry. July was dry with 2.45 inches of rainfall; effective rainfall was 1.3 inches on July 1 and .84 on July 19. No moisture of any consequence was received in August, or until September 26 and 27, when 1.35 inches fell.