Table 17

Vegetation yields, disappearance of vegetation, botanical composition, and range condition of bluestem pasture under different management practices, 1961.

Pasture no.		1	2	3	4, 5, 6	9	10	11
Range site	Yield of vegetation in pounds of air-dry forage per acre, 1961							
Ordinary upland	—Forage	4658	3102	5655	4227	2952	2454	2681
	Weeds	247	406	273	225	247	203	101
	Mulch	2892	1019	2037	1697			
Limestone breaks	—Forage	2795	1814	3580	3448	1803	1874	1916
	Weeds	229	366	101	97	238	137	163
	Mulch	1453	739	2478	1408			
Range site	Disappearance of vegetation in pounds of air-dry forage per acre, 1961							
Ordinary upland	—Forage	1978	2154	2231	1951	1581	1093	1530
	Weeds	88	236	141	158	112	148	7
	Mulch	520	392	194	254			
Limestone breaks	—Forage	1206	1155	741	1308	798	944	946
	Weeds	73	236	.....	52	86	46	117
	Mulch	452	419	1283	248			
Range site	Remainder after grazing							
Ordinary upland—	Forage	2680	948	2424	2276	971	1361	1151
	Weeds	186	170	132	97	135	55	194
	Mulch	2372	672	1843	1453			
	Total	5238	1790	4399	3826	1106	1416	1345
Limestone breaks	—Forage	1589	659	2839	2140	1005	930	970
	Weeds	156	130	101	45	152	91	46
	Mulch	1001	320	1195	1160			
	Total	2746	1109	4135	3345	1157	1021	1016
Range site	Botanical composition and range condition, 1961							
Ordinary upland—	% decreasers	57.4	45.4	43.6	54.3	43.0	67.2	69.7
	% increasers	26.1	29.3	33.7	31.2	24.5	15.6	15.8
	% range condition	69.8	57.2	56.6	65.6	55.9	83.2	83.3
Limestone breaks—	% decreasers	62.4	49.1	65.1	72.4	58.6	66.2	75.3
	% increasers	21.1	32.7	17.0	15.4	20.1	17.5	17.7
	% range condition	80.5	72.1	82.7	90.5	79.3	85.8	90.5

Supplemental Cobalt for Heifers on Fattening Rations, 1961-62, Progress Report (Project 253-6).

E. F. Smith, F. W. Boren, D. Richardson and C. L. Drake

The 40 heifer calves, 10 per lot, used in this experiment were good to choice grade Herefords from near Ft. Davis, Texas, and were assigned on a random weight basis to their treatments. All lots received all the prairie hay they would consume, and ground corn was gradually increased until they were on full feed. Soybean meal was fed as the protein supplement, with ground limestone added to supply a tenth of a pound per head daily and enough vitamin A was added to supply 10,000 I.U. per head daily. In addition to the above ration two of the lots received cobalt, in the form of cobalt sulfate, in their soybean meal to supply 1 mg. of cobalt per head daily.

The results of the trial to date are reported in Table 18. The cobalt added to the diets of lots 21 and 22 apparently had no effect.

Table 18

The value of supplemental cobalt[1] in the ration of fattening heifers.

December 4, 1961, to March 24, 1962—110 days.

Lot no.	19	20	21	22
Treatment	Control	Control	Cobalt	Cobalt
No. heifers per lot	10	10	10	10
Initial wt. per heifer, lbs.	379	379	378	381
Daily gain per heifer	1.63	1.64	1.70	1.63
Daily ration per heifer, lbs.:				
Ground corn	6.9	7.3	7.3	7.3
Soybean meal[2]	1.4	1.4	1.4	1.4
Prairie hay	6.4	6.6	6.9	6.9
Salt, free choice				
Feed per cwt. gain, lbs.:				
Ground corn	423	445	429	448
Soybean meal	86	85	82	86
Prairie hay	393	402	406	423
Feed costs per cwt.[3] gain	$15.54	$16.07	$15.64	$16.34

1. Cobalt was mixed with the soybean meal fed to lots 21 and 22 in the form of $CoSO_4 \cdot 7H_2O$ at the rate of 1 mg. of cobalt daily.

2. The soybean meal of all lots was fortified to furnish per head daily a tenth of a pound of ground limestone and 10,000 I.U. of vitamin A daily.

3. Feed prices may be found on inside back cover.

The Value of Chlortetracycline[1] for Steers on a Wintering, Grazing and Fattening Program (Project 5-603 and 253-6).[2]

E. F. Smith, B. A. Koch, D. Richardson and F. W. Boren

Twenty good to choice Hereford steer calves from near Ft. Davis, Texas, were randomly divided into two lots. One group served as the control; the other was treated in a similar way except that each animal received 70 mgs. of chlortetracycline (aureomycin) daily.

All of the animals were implanted with 24 mgs. of stilbestrol in the ear at the start of the wintering period. Both groups were fed in dry-lot during the winter and received all the prairie hay they would eat—4 pounds of alfalfa hay and 5 pounds of sorghum grain per head daily. The chlortetracycline was mixed with the sorghum grain for lot 21. The steers were grazed on bluestem pasture during the early summer with no other feed. Chlortetracycline was fed to lot 21 mixed with the salt. The

1. This project was partially supported by a grant from the American Cyanamid Company, Pearl River, N.Y., and the chlortetracycline (aureomycin) was also supplied by it.

Table 19

The value of chlortetracycline for steer calves on a wintering, grazing and fattening program.

Lot no.	20	21
Treatment	Control	Chlortetracycline
No. steers per lot	9[1]	10
Initial wt. per steer, lbs.	526	519
Daily gain per steer, lbs.	0.79	0.92
Daily ration per steer, lbs.:		
Sorghum grain	5.0	5.0
Alfalfa hay	4.0	4.0
Prairie hay	8.3	8.4
Salt	.05	.05
Stilbestrol implant, 24 mgs.	Yes	Yes
Chlortetracycline, 70 mgs. per head daily	No	Yes
Feed per cwt. gain, lbs.:		
Sorghum grain	633	543
Alfalfa hay	506	435
Prairie hay	1051	913
Feed cost per cwt. gain[2]	$22.74	$19.59
Phase II—Grazing, May 11 to August 7, 1961—88 days.		
Initial wt. per steer, lbs.	653	666
Daily gain per steer, lbs.	1.36	1.07
Chlortetracycline, 70 mgs. per steer, supplied in the salt	No	Yes
Phase III—Fattening, August 7 to November 9, 1961—94 days.		
Initial wt. per steer, lbs.	773	761
Daily gain per steer, lbs.	3.39	3.27
Daily ration per steer, lbs.:		
Ground corn, self-fed	17.3	17.2
Soybean meal	1.0	1.0
Prairie hay	2.8	2.1
Alfalfa hay	8.2	8.2
Salt	.05	.05
Stilbestrol implant, 24 mgs.	Yes	Yes
Chlortetracycline, 70 mgs. per steer	No	Yes
Feed per cwt. gain, lbs.:		
Corn	510	526
Soybean meal	29	31
Hay	324	315
Feed cost per cwt. gain[2]	$14.81	$15.15
Summary of Phases I, II and III, December 2, 1960, to November 9, 1961—342 days.		
Final wt. per steer, lbs.	1092	1068
Daily gain per steer, all phases	1.65	1.61
Feed cost per cwt. gain[2]	$16.07	$16.45
Dressing %	60.1	61.3
Carcass grades:[3]		
Av. choice	.....	2
Low choice	1	.....
High good	5	2
Av. good	3	5
Av. carcass grade[4]	7.2	7.1
Marbling score[5]	6.8	7.2

1. One steer died during the summer and was omitted from the results.
2. Feed prices may be found on page 2; summer bluestem pasture cost was $15 per steer.
3. Carcass data not obtained on one steer in lot 21.
4. The U.S.D.A. grade, av. choice, was assigned a numerical grade of 5; low choice, 6; high good, 7; av. good, 8.
5. Degree of marbling: a score of 7 indicates small amount; the higher the number, the less marbling.

steers were finished on grain in drylot from August 7 to November 9, 1961. All steers were reimplanted with 24 mgs. of stilbestrol August 7. The steers were self-fed corn after they reached their maximum grain intake. Some difficulty was experienced in getting lot 21 on feed, and one steer in this lot foundered. His performance was average and he remained in the test; this may have affected the performance data of this group.

Observations

Results of this test are reported in Table 19.

The chlortetracycline (aureomycin) increased gains slightly during the winter, but the gains were lower for this lot during the summer, with no difference in fattening or total gain. There was no statistically significant difference in any of the period gains. Other information collected on the two groups did not show any apparent benefit from aureomycin.

Improvement of Beef Cattle Through Breeding Methods (Project 286).

W. H. Smith, J. D. Wheat, H. Spies and H. A. Gottlieb

The purebred Shorthorn cattle breeding program was continued during 1961 according to the breeding program initiated in 1949. Inbreeding of the two lines has been continued. The Wernacre Premier line is in its fourth generation, and the Mercury line will enter its fourth generation of inbreeding during 1962. The inbreeding plan has been basically to continue successive generations of half-sibbing in both lines.

This experimental project was initiated to study the inheritance of production traits in beef cattle, to evaluate the effects of inbreeding in cattle, and to explore the feasibility of using inbred lines of beef cattle for the breeding improvement of their production traits. Many production data have been collected on each of the inbred lines as it has progressed; however, no extensive line crossing has been attempted because of the relatively low level of inbreeding which has prevailed to date and the limited number of breeding animals in the project during its progress.

The management of these experimental cattle includes weighing each cow and calf immediately following parturition. Summer pasture breeding is practiced and the calves are born during the spring and summer each year. The calves are not creep fed during the suckling period. All calves are weaned, weighed, and scored for type when they are approximately six months of age and the standardized weaning age for weaning weight correction is 180 days. Calves are placed on individual feeding trials for record-of-performance tests for 182 days shortly after they are weaned. The final age upon completion of the feeding trial is near 365 days. Body weight gain and feed consumption records are maintained on all individual calves during the feeding period. The calves are scored for type or conformation as yearlings when they are taken off the prescribed feeding test.

The full-feed ration for the bulls consists of 75% cracked corn and 25% chopped alfalfa hay; that for the heifers, 55% cracked corn and 45% chopped alfalfa hay. All calves are fed twice daily by means of individual feeders while the feed test is in progress.

Production data for the 1960 calves are summarized in Table 20. The Wernacre Premier line was established and committed to inbreeding earlier than the Mercury line; hence the Wernacre Premier calves have been somewhat more highly inbred than the Mercury calves during the project's progress. The 1961 calves have not completed their feeding tests at the time of this report, so production data for them are not included. Twenty-six calves of the 1961 calf crop are being individually fed.

No abnormality that definitely can be attributed to inbreeding has occurred in either of the inbred lines. The incidence of still-born calves has been higher in the Mercury line during the last two years than during previous periods. No definite conclusions yet can be made regarding this observation, as one sire and many of the dams involved as parents of