

Table 49
Experimental rations and average daily gain per head.²

Ration	Av. daily gain 4-15-61 9-15-61	Av. daily gain ² 4-15-62 9-15-62	Av. daily gain 9-15-61 4-15-62	Av. daily gain 9-15-62 3-15-63
Lot 1 (No mineral supplement) 1 lb. dried molasses	1.42	1.70	-0.32	-0.0
Lot 2 (Low mineral supplement) 1 lb. dried molasses 27.1 gms. dicalcium phosphate	1.44	1.65	-0.44	-0.10
Lot 3 (Average mineral supplement) 1 lb. dried molasses 54.1 gms. dicalcium phosphate	1.42	1.73	-0.48	-0.01
Lot 4 (High mineral supplement) 1 lb. dried molasses 81.1 gms. dicalcium phosphate	1.42	1.70	-0.53	-0.01

1. Heifers were pregnant during this period.

2. One pound of 41% corn gluten meal per head was fed daily during winter.

Supplying moderate amounts of dicalcium phosphate seemed to enhance reproductive performance. Failure to ovulate and increased early embryonic mortality accounted for the poorer reproductive performance in the no-supplemental and high-level lots. Low and average mineral supplementation gave the highest calf crop percentages, while birth weight was not affected. Too few animals were involved to draw definite conclusions before more work is completed.

The Effects of Adding Protein to Dry-rolled Sorghum Grain Fattening Rations (Project 370).

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Previous work (Bulletins 447 and 460) indicated sorghum grain fattening rations supplemented with 0.5 pound per head daily of soybean oil meal produced less efficient gains but carcasses about equal to those from heifers fed 1 pound of soybean oil meal per head daily. With each increase of 0.5 pound of protein (0.5 lb.-1.5 lbs.) came an increase in average daily gain and an increase in feed efficiency.

This experiment repeated a part of the previous experiment with the following modifications for a 140-day fattening period.

Lots 8 and 13—One half pound of soybean oil meal per head daily.

Lots 9 and 14—One pound of soybean oil meal per head daily.

Lots 10 and 15—One and one half pounds of soybean oil meal per head daily.

Lots 11 and 16—One half pound of soybean oil meal per head daily for the first 28 days, then increasing one half pound each 28 days for the 140 days.

Lots 12 and 17—Two and one half pounds of soybean oil meal per head daily for the first 28 days, then decreasing one half pound each 28 days for 140 days.

The heifers used in this experiment were good-to-choice Herefords from near Fort Davis, Texas, and were assigned on a random-weight basis to their treatments.

The amount of feed was increased gradually until they were on full feed. Half the ration was fed twice a day; any remaining feed was weighed back.

The sorghum grain used in the experiment contained an average of 10 percent protein.

Observations

Data collected in Trial 1 appear in Table 50. Average daily gain increased 0.13 and 0.07 pound, respectively, as daily soybean meal intake increased from 0.5 to 1.5 pounds. A daily intake of 1.5 pounds of protein fed in an increasing or decreasing manner resulted in an increased gain of 0.07 and 0.02 pound, respectively, compared with the half-pound level.

Feed efficiency increased as the protein intake increased from 0.5 to 1.5 pounds. A slight increase over the half-pound level was noted when 1.5 pounds of protein were fed in an increasing manner; however, 1.5

Table 50
Trial 1: Effects of adding protein to dry-rolled sorghum grain fattening rations, April 19, 1963, to September 6, 1963—140 days.

Lot no.	13	14	15	16	17
Protein feeding: Lbs. per head daily	.5	1	1.5	0.5 first 28 days plus 0.5 increase each 28 days	2.5 per day decreasing 0.5 each 28 days
No. heifers per lot	10	10	10	10	10
Av. initial wt., lbs.	650	656	648	650	650
Total gain, lbs.	200	218	210	210	203
Av. final wt., lbs.	850	874	858	860	853
Av. daily gain, lbs.	1.43	1.56	1.50	1.50	1.45
Av. daily ration, lbs.: ¹					
Sorghum grain	14.7	14.7	13.7	13.6	13.9
Soybean oil meal	.5	1.01	1.51	1.52	1.48
Sorghum silage	15.0	14.9	14.1	14.0	13.9
Prairie hay ³	.82	.82	.82	.82	.82
Feed required per cwt. gain, lbs.:					
Sorghum grain	1031	942	912	904	957
Soybean oil meal	35	65	101	101	103
Sorghum silage	1048	958	940	933	960
Prairie hay	58	53	55	55	57
Total	2172	2018	2008	1993	2076
Feed cost per cwt. gain: ²					
Sorghum grain	\$19.59	\$17.90	\$17.33	\$17.16	\$18.18
Soybean oil meal	1.56	2.93	4.55	4.55	4.59
Sorghum silage	3.40	3.11	3.06	3.03	3.12
Prairie hay	.55	.50	.52	.52	.54
Total	\$25.10	\$24.44	\$25.46	\$25.26	\$26.43
Carcass data					
Av. area rib eye, sq. in.	10.76	10.83	10.73	11.82	11.57
Av. fat thickness, 12th rib, in.	.89	.98	.92	.88	.88
Av. carcass grade:					
Prime	1				
Prime -		1			
Choice +		1	1	2	1
Choice	6	1	2	2	2
Choice -	3	6	4	6	4
Good +		1	3		2
Good					
Good -					1

1. Each animal received 0.1 lb. dicalcium phosphate and 19,000 I.U. vitamin A daily. Salt fed free choice; none of these included in feed costs.

2. Feed costs on page 78.

3. Prairie hay fed from August 15 to end of period; silage supply exhausted.

pounds of protein fed in a decreasing manner resulted in a feed efficiency between that of 0.5 and 1.0 constantly fed.

Table 51 shows data collected from Trial 2 with the same objectives. Feeding methods were the same.

Average daily gain was increased when the daily soybean meal intake increased from 0.5 to 1.5 pounds per head. Increasing the soybean meal intake every 28 days did not affect the average daily gain; however, decreasing the average daily protein intake every 28 days decreased average daily gain compared with that of the constant 1.5-pound level.

Table 51

Trial 2: Effects of adding protein to dry-rolled sorghum grain fattening rations, May 20, 1963, to October 10, 1963—143 days.

Lot no.	8	9	10	11	12
Protein feeding:					
Lbs. per head daily ..	0.5	1.0	1.5	6.5 first 28 days plus 0.5 each 28 days	2.5 per day decreasing 0.5 each 28 days
No. heifers per lot	10	10	10	9 ¹	10
Av. initial wt., lbs.	588	588	584	586	597
Total gain, lbs.	227	246	278	278	244
Av. final wt., lbs.	815	834	862	864	841
Av. daily gain, lbs.	1.59	1.72	1.94	1.94	1.71
Av. daily ration, lbs.: ²					
Sorghum grain	13.65	13.60	13.32	13.21	13.04
Soybean oil meal	0.5	1.00	1.50	1.44	1.61
Silage	9.97	9.94	9.60	9.88	9.16
Prairie hay ⁴	1.99	1.99	1.99	1.99	1.99
Feed required per cwt. gain, lbs.:					
Sorghum grain	860	793	685	680	764
Soybean oil meal	31	58	77	68	94
Silage	628	578	494	508	537
Prairie hay	126	116	103	103	117
Total	1645	1545	1359	1359	1512
Feed cost per cwt. gain: ²					
Sorghum grain	\$16.34	\$15.07	\$13.02	\$12.92	\$14.52
Soybean oil meal	1.40	2.61	3.47	3.06	4.23
Silage	2.04	1.88	1.61	1.65	1.75
Prairie hay	1.20	1.10	0.98	0.98	1.11
Total	\$20.98	\$20.66	\$19.08	\$18.61	\$21.61
Carcass data					
Av. area rib eye, sq. in.	9.73	9.53	9.61	9.81	8.78
Av. fat thickness, 12th rib, in.	.56	.67	.69	.67	.59
Av. carcass grade:					
Prime = 1			1		
Choice + = 2			1	1	
Choice = 3		1	1	2	1
Choice - = 4	4	2	1		2
Good + = 11	2	3	4	3	3
Good = 13	3	4	4	2	2
Good - = 1	1				1

1. Each animal supplemented with 0.1 lb. dicalcium phosphate and 10,000 I.U. vitamin A daily. Salt fed free choice; none of these included in feed costs.

2. Feed costs on page 78.

3. One animal died of pneumonia September 8, 1963.

4. Prairie hay fed from August 15 to end of period; silage supply exhausted.

Feed efficiency increased as average daily protein intake increased from 0.5 to 1.5 pounds. Increasing the average soybean oil meal intake each 28 days did not affect feed efficiency; decreasing the average daily protein intake each 28 days decreased feed efficiency.

Cane Molasses in Rations of Growing Beef Calves. The Value of Winter Shelter for Feedlot Calves, 1963-64 (Project 370).

E. F. Smith, D. Richardson, C. W. Deyoe, F. W. Boren, and R. G. Curtis

Choice grade Hereford steer calves in this test came from near Alden, Kansas, and were assigned to treatments on a random-weight basis.

All lots received the same experimental diet except 10 percent molasses was substituted for grain in the self-fed mixture for two lots. Small adjustments were made to equalize protein and energy intake between molasses and no-molasses lots. The composition of the roughage-concentrate mixture is listed in Table 52; it consisted primarily of ground rice

Table 52

1. The use of cane molasses in rations for growing beef calves. 2. The value of winter shelter for calves, December 17, 1963, to March 21, 1964—95 days.

Treatment	Molasses 10%		No molasses	
	Shed	No shed	Shed	No shed
Lot no.	17	15	16	14
Steers per lot	10	10	10	10
Initial wt., lbs.	479	482	480	481
Daily gain, lbs.	2.77	2.69	2.51	2.13
Daily ration per steer, lbs.:				
Roughage-concentrate mixture	16.68	17.54	15.85	14.94
Alfalfa wafers	3.83	3.83	3.83	3.87
Prairie hay	1.76	1.64	1.61	1.80
Salt	Free choice			
Feed per lb. of gain:				
Roughage-concentrate mixture	6.02	6.52	6.31	7.01
Prairie hay	.64	.61	.64	.85
Alfalfa wafers	1.39	1.42	1.53	1.82
Feed cost per lb. of gain ¹	\$0.1496	\$0.1598	\$0.1477	\$0.1676
Composition of roughage-concentrate mixture, %:				
Ground sorghum grain	40.4		49.0	
Ground rice hulls	42.0		45.0	
Cane molasses	10.0			
Soybean meal	4.6		3.0	
Urea	1.0		1.0	
Dicalcium phosphate	1.0		1.0	
Premix (supplying about 70 mgs. Aureomycin and 10 mgs. stilbestrol per steer daily)	1.0		1.0	

1. Feed prices used on page 78.