

(no implant), 24 mgs. stilbestrol implant, 36 mgs. stilbestrol implant, and Synovex implant. All implants were made at the base of the ear.

#### Results and Observations

Results of this test are shown in Table 4. All implants greatly improved rate of gain; however, Synovex-S showed a greater increase in this test. Average daily gains in a previous test were 1.94, 2.54, 2.31, and 2.22 pounds, respectively, for control, 24 and 36 mgs. of stilbestrol and Synovex-S. When both tests are considered, implants of 24 mgs. of stilbestrol produced the highest rate of gain followed by Synovex and 36 mgs. of stilbestrol. It is interesting that carcass conformation scores tended to be higher for animals implanted with stilbestrol; however, there was a tendency for carcasses from all implanted animals to grade slightly lower. The differences were small, but they did show up when average value per 100 pounds of carcass was calculated. The design of the test did not permit feed efficiency data to be gathered.

**Table 4**  
Results of implanting beef steer calves on fattening rations with 24 and 36 mgs. of stilbestrol and Synovex-S pellets.  
March 17, 1958, to August 2, 1958—138 days.

Treatment	Control	24 mgs. stilbestrol	36 mgs. stilbestrol	Synovex-S <sup>7</sup>
Number animals per treatment	12	10	10	10
Av. initial wt., lbs.	615.4	630.0	632.5	631.0
Av. final wt., lbs.	859.2	932.5	931.0	955.0
Av. daily gain, lbs.	1.77	2.19	2.16	2.35
Av. carcass conformation grade <sup>1</sup>	13.1	13.4	13.6	13.0
Av. carcass grade before ribbing <sup>1</sup>	11.3	11.5	11.3	11.4
Av. carcass grade after ribbing <sup>1</sup>	11.1	10.6	10.3	10.7
Av. fat thickness at 12th rib, vis. est. <sup>2</sup>	3.8	3.4	3.9	3.5
Av. uniformity of fat distribution <sup>3</sup>	3.8	3.7	4.0	4.0
Av. degree of marbling <sup>4</sup>	7.3	7.8	7.9	7.8
Av. size of ribeye, vis. est. <sup>5</sup>	4.3	4.5	4.7	4.3
Av. size ribeye, sq. in.	10.0	10.2	10.2	10.2
Av. degree of firmness <sup>6</sup>	4.7	4.8	4.7	4.5
Av. value carcass per cwt., Ch 41¢ and G 38¢	\$38.77	38.34	38.00	38.00

1. Based on top choice 15, av. choice 14, low choice 13, top good 12, av. good 11, low good 10.

2. Based on thick 2, moderate 3, modest 4, slightly thin 5.

3. Based on uniform 2, moderately uniform 3, modestly uniform 4, slightly uneven 5.

4. Based on modest amount 6, small amount 7, slight amount 8, traces 9.

5. Based on large 2, moderately large 3, modestly large 4, slightly small 5.

6. Based on firm 2, moderately firm 3, modestly firm 4, slightly firm 5.

7. 200 mgs. progesterone and 20 mgs. estradiol benzoate.

#### Fundamental Studies of Sorghum Roughages and Grains. A Study of the Value of Pelleting Sorghum Grain. Project 222.

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

A previous test with steers indicated improved efficiency of sorghum grain in a fattening ration when it was finely ground and pelleted. This test was an effort to further evaluate finely-ground, pelleted sorghum grain in beef cattle rations.

#### Experimental Procedure

Forty Hereford steer calves from the same herd were divided as equally as possible, on the basis of weight and conformation, into four lots of 10

animals each. Two additional steers became available 10 days after the test started and they were added to lot 3. The daily wintering ration consisted of 1 pound soybean oil meal, 5 pounds grain, 2 pounds alfalfa hay, and all the sorghum silage they would clean up. Salt and a mineral mixture of 2 parts steamed bonemeal and 1 part salt were fed free choice. The grain used was as follows: Lot 1, rolled sorghum grain; lot 2, cracked corn; lot 3, finely-ground, pelleted sorghum grain; lot 4, finely-ground sorghum grain. The fattening ration was the same except silage was removed after 32 days. An attempt was made to maintain the same level of grain in all lots.

#### Results and Observations

Results of this test are shown in Table 5. Rate of gain and feed efficiency during the wintering phase were exceptionally good. The slightly lower rate of gain in lot 4 was caused primarily by two animals which had to be treated for foot rot.

The results of the fattening phase are shown; however, there is some doubt as to their value because of a severe outbreak of foot rot in lot 3 about midway of the fattening period. Seven animals were affected and several lost as much as 40 pounds before recovering. There was one case in each of lots 1 and 2, and also a chronic bloater in lot 1.

**Table 5**

Comparative results with cracked corn, cracked sorghum grain, finely-ground sorghum grain and finely-ground, pelleted sorghum grain in beef steer calf rations.

Wintering phase—December 7, 1957, to March 17, 1958—100 days.

Lot number	1	2	3	4
Number calves per lot	10	10	12	10
Av. initial wt., lbs.	431	432	426.3	432
Av. final wt., lbs.	636	628	623.3	620
Av. daily gain per calf, lbs.	2.05	1.96	2.00	1.88
Av. daily ration, lbs.:				
Sorghum silage	19.2	17.6	17.7	17.8
Alfalfa hay	2.0	2.0	2.0	2.0
Soybean oil meal	1.0	1.0	1.0	1.0
Cracked sorghum grain	5.0			
Corn		5.0		
Pelleted sorghum grain			5.0	
Finely-ground sorghum grain				5.0
Lbs. feed per cwt. gain:				
Sorghum silage	938	897	870	945
Alfalfa hay	97.6	102	100	106.4
Soybean oil meal	48.8	51.0	50.0	53.2
Cracked sorghum grain	243.9			
Corn		255.1		
Pelleted sorghum grain			250.0	
Finely-ground sorghum grain				266.0
Feed cost per cwt. gain <sup>1</sup>	\$10.57	11.54	10.76	11.26

Fattening phase—March 17, 1958, to August 2, 1958—138 days.

Lot number	1	2	3	4
No. steers per lot	10	10	12	10
Av. initial wt., lbs.	636.0	628.0	623.3	620.0
Av. final wt., lbs.	891	931.5	904.6	941.5
Av. total gain, lbs.	255	303.5	281.3	321.5
Av. daily gain per steer, lbs.	1.85	2.20	2.04	2.33
Av. daily ration, lbs.:				
Sorghum silage <sup>2</sup>	16.7	14.5	11.1	14.5
Alfalfa	6.2	5.2	3.4	5.5

1. Based on silage \$7 per ton, alfalfa hay \$16 per ton, soybean oil meal \$70 per ton, ground sorghum grain \$2 per cwt., pelleted sorghum grain \$2.10 per cwt., mineral mixture \$50 per ton, salt \$20 per ton.

2. Sorghum silage fed only first 32 days.

Table 5 (Continued)

Cracked sorghum grain .....	13.3			
Corn .....		13.0		
Pelleted sorghum grain .....			12.6	
Finely-ground sorghum grain .....				13.2
Soybean oil meal .....	1.0	1.0	1.0	1.0
Mineral mixture .....	0.04	0.03	0.03	0.04
Salt .....	0.04	0.03	0.03	0.03
Lbs. feed per cwt. gain, lbs.:				
Sorghum silage .....	210	153	126	145
Alfalfa .....	336	238	167	238
Cracked sorghum grain .....	720			
Corn .....		591		
Pelleted sorghum grain .....			619	
Finely-ground sorghum grain .....				569
Soybean oil meal .....	54	45	49	43
Mineral mixture .....	2.2	1.5	1.6	1.6
Salt .....	2.4	1.5	1.4	1.2
Cost per cwt. gain <sup>1</sup> .....	\$19.80	17.67	16.55	15.35

Summary—Wintering and fattening—December 7, 1957, to August 2, 1958—238 days.

Av. total gain, lbs. ....	460	499.5	478.3	509.5
Av. daily gain, lbs. ....	1.93	2.10	2.01	2.14
Av. feed cost per cwt. gain .....	\$15.69	15.27	14.17	13.84
Av. initial cost per animal (27¢ per lb.) .....	\$116.37	116.64	115.10	116.64
Av. total feed cost per animal ....	\$72.16	76.25	67.75	70.52
Av. total cost, animals and feed .....	\$188.53	192.89	182.85	187.16
Av. carcass value (Ch 41¢ and G 38¢) .....	\$192.51	214.70	202.28	211.73
Net per animal .....	\$3.98	21.81	19.43	24.57
Percent shrink to market .....	3.6	3.5	3.5	3.7
Av. dressing % (inc. 2% cooler shrink):				
Based on final feedlot wt. ....	56.9	60.1	58.1	58.7
Based on market wt. ....	59.0	62.3	60.2	61.0
Av. carcass grade before ribbing <sup>3</sup>	10.5	11.7	11.7	11.6
Av. carcass grade after ribbing <sup>3</sup>	9.9	10.7	11.0	11.1
Av. fat thickness at 12th rib, vis. est. <sup>4</sup> .....	4.2	3.4	3.5	3.6
Av. uniformity of fat distribution <sup>5</sup> .....	4.2	3.8	3.6	4.0
Av. degree of marbling <sup>6</sup> .....	8.2	7.6	7.6	7.4
Av. size ribeye, vis. est. <sup>7</sup> .....	4.7	4.5	4.4	4.2
Av. size ribeye, sq. in. ....	10.3	10.2	9.9	10.2
Av. degree of firmness <sup>8</sup> .....	5.0	4.5	4.5	4.7

3. Based on top choice 15, av. choice 14, low choice 13, top good 12, av. good 11, low good 10.

4. Based on thick 2, moderate 3, modest 4, slightly thin 5.

5. Based on uniform 2, moderately uniform 3, modestly uniform 4, slightly uneven 5.

6. Based on modest amount 6, small amount 7, slight amount 8, traces 9.

7. Based on large 2, moderately large 3, modestly large 4, slightly small 5.

8. Based on firm 2, moderately firm 3, modestly firm 4, slightly firm 5.

#### Self-Feeding Ammoniated Blackstrap Molasses to Beef Heifers. Project 537.

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

This is the second test to study the value of ammoniated blackstrap molasses when self-fed in beef cattle rations.

#### Experimental Procedure

Forty Hereford heifer calves from the same herd were divided as equally as possible on the basis of weight and conformation into four lots of 10

(10)

animals each. Animals in all lots received all the sorghum silage they would clean up each day. The remainder of the daily ration for the wintering phase was as follows:

Lot 9. Control, 1 pound soybean oil meal and 2 pounds sorghum grain.

Lot 10. Free-choice ammoniated blackstrap molasses (16 percent protein equivalent) and 0.5 pound soybean oil meal.

Lot 11. Free-choice ammoniated blackstrap molasses (16 percent protein equivalent), 0.5 pound soybean oil meal, and 1.5 pounds sorghum grain.

Lot 12. Free-choice ammoniated blackstrap molasses (16 percent protein equivalent) and 2 pounds sorghum grain. At the beginning of the fattening phase, sorghum grain was added in all lots. The grain was increased until the animals were on full feed and then the grain was fed free choice. After 25 days, prairie hay replaced sorghum silage as the roughage and was fed free choice. The protein supplement portion of the ration was continued the same as in the wintering phase.

Salt and a mineral mixture of equal parts limestone, steamed bonemeal, and salt were fed free choice in all lots. Water was provided by electrically-heated water fountains.

#### Results and Observations

Results of this test are shown in Table 6. No unusual behavior or toxic effects were observed even though the rate of consumption of ammoniated molasses was high during the wintering phase. Rate of gain was very satisfactory in all lots receiving ammoniated molasses; however, results indicate that a small amount of natural protein concentrate improves the ration.

Rate of gain during the fattening phase was the same in all lots except number 11. Lots 10 and 11 were fed identical rations; however, there was a difference of 0.17 pound average daily gain between the lots. This points out differences that may be observed even when the same ration is used, and the fallacy of forming a conclusion from one test. There were no significant differences in shrink to market, dressing percentage, or carcass grade. This and previous tests show that ammoniated molasses is a safe and satisfactory product to use in beef cattle rations.

Table 6

Results of self-feeding ammoniated blackstrap molasses to beef heifer calves.

Wintering phase—December 12, 1957, to March 21, 1958—100 days.

Lot number .....	9	10	11	12
No. calves per lot .....	10	10	10	10
Av. initial wt., lbs. ....	441	441.5	442.5	440.5
Av. final wt., lbs. ....	585	574	591	567
Av. daily gain, lbs. ....	1.44	1.32	1.48	1.26
Av. daily ration, lbs.:				
Sorghum silage .....	25.9	24.5	23.3	23.2
Sorghum grain .....	2.0		1.5	2.0
Soybean oil meal .....	1.0	0.5	0.5	
Amm. blackstrap molasses <sup>1</sup> ....		4.58	5.11	5.09
Salt .....	.09	.07	.07	.12
Mineral mixture <sup>2</sup> .....	.12	.09	.08	.08
Lbs. feed per cwt. gain:				
Sorghum silage .....	1799	1851	1569	1832
Sorghum grain .....	138.9		101	158.1
Soybean oil meal .....	69.4	37.7	33.7	
Amm. blackstrap molasses <sup>1</sup> ....		345.4	344.1	402.7
Salt .....	6.1	5.5	4.5	9.2
Mineral mixture .....	8.7	6.9	4.4	6.6
Cost per cwt. gain .....	\$11.71	15.77	16.55	18.92

Fattening phase—March 21, 1958, to August 2, 1958—134 days.

Av. initial wt., lbs. ....	585.0	574.0	591.0	567.0
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1. 16% protein equivalent.

2. Equal parts steamed bonemeal, limestone and salt.

(11)