Note: Due to weather conditions, corn for lots 8 and 9 could not be harvested until November 24 and 30.

Lot 8. Harvested November 24, initial moisture 19.3%, final moisture 13.2%. Dried in 250-bushel Tox-O-Wik Batch Dryer with air heated to 180° F.

Lot 9. Harvested November 30, initial moisture 21.2%, final moisture 12.7%. Dried in 250-bushel Tox-O-Wik Batch Dryer with air heated to 230° F.

All corn was sacked and stored. It is ground as needed.

Observations

There was very little scorching of grain even at the highest temperature. However, corn dried with heated air, especially at the higher temperature, tended to lose some of its bright yellow color and also to separate from the outer coat upon cracking. The animals did not care for the corn dried at 230° F.; however, they started eating satisfactorily on the second day and no further trouble has been experienced. Animals in lots 8 and 9, fed corn dried at 180° F. and 230° F., respectively, did not gain so well the first 84 days as those in lot 7. However, there are no significant differences at present. The results for the first 112 days are shown in Table 24. The test will continue until the animals are marketed for slaughter.

Table 24

The effect of artificially drying corn.

December 10, 1959, to March 31, 1960—112 days.

Lot number	7	8	9
Number heifers per lot	10	10	10
Av. initial wt., lbs.	466.5	466.5	465.5
Av. final wt., lbs.	669.5	658.0	670.0
Av. daily gain per animal, lbs.	1.81	1.71	1.83
Av. daily ration, lbs.:			
Atlas sorghum silage	10.0	10.0	10.0
Corn—no supplemental heat	10.1		
Corn—dried at 180° F.		10.1	
Corn—dried at 230° F.			10.1
Soybean oil meal	1.0	1.0	1.0
Feed per cwt. gain, lbs.:			
Atlas sorghum silage	550	584	543
Corn—no supplemental heat	560		
Corn—dried at 180° F.		592	
Corn—dried at 230° F.			555
Soybean oil meal	55	58	55
Feed cost per cwt. gain	$15.75	$16.65	$15.63

The Value of Enzymes Added to Cattle Rations, Project Com. 5-662.[1] Progress Report

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

Feed is stored nutrients for animals. The value of the feed depends on the nutrients it contains and the ability of animals to obtain these nutrients for their bodies to use. Enzymes are organic catalysts that have the primary responsibility of breaking down food so it can be absorbed and used. The more efficiently this work is done, the greater the value of the feed. This test is being conducted to determine the value of enzymes added to cattle-fattening rations.

Three lots of 10 animals each are being fed the same ration except for the added enzymes. The average daily ration is shown in Table 25, as are results of the test for the first 112 days. There are no significant differences in gains at present; however, lot 12, which receives a combination of enzymes that act upon carbohydrates and protein, has a slightly higher rate of gain. Animals in lot 12 also have a tendency to clean up their feed better than those in either other lot. This test will be continued until the animals are ready for slaughter.

1. We wish to acknowledge Rohm & Haas Company, Philadelphia, Pa., for partial support of this project and for supplying the enzymes.

Table 25

The value of enzymes added to cattle rations.

December 10, 1959, to March 31, 1960—112 days.

Lot number	10	11	12
		Added enzymes to act upon	
	Control	Carbohydrate	Carbohydrate + protein
Number heifers per lot	10	10	10
Av. initial wt., lbs.	466.0	466.0	467.0
Av. final wt., lbs.	666.5	668.5	676.0
Av. daily gain per animal, lbs.	1.79	1.81	1.87
Av. daily ration, lbs.:			
Alfalfa hay	1.0	1.0	1.0
Atlas sorghum silage	10.0	10.0	10.0
Corn	9.9	9.8	10.2
Soybean oil meal	1.0	1.0	1.0
Feed per cwt. gain, lbs.:			
Atlas sorghum silage	562.0	547.0	542.0
Alfalfa hay	52.0	52.0	50.0
Corn	555.0	543.0	546.0
Soybean oil meal	56.0	55.0	54.0
Feed cost per cwt. gain	$16.13	$15.80	$15.80

The Value of Grain Sorghum Harvested as Silage and as Dehydrated Pellets. Project 567.

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

Combine-type sorghum grain is widely grown in Kansas, and normally only the grain is harvested. In many instances, moisture conditions at harvest time are such that the grain cannot be stored without artificial drying. Sometimes there is danger of losing immature grain because of early frost. This test was planned to study the value of the entire grain sorghum plant harvested as silage and as dehydrated pellets.

Experimental Procedure

Twenty Hereford steer calves from the same herd were divided as equally as possible on the basis of weight and conformation into two lots of 10 animals each. Grain sorghum (Martin) from the same field, estimated to yield 45 bushels per acre, was harvested half as silage and half as dehydrated grain sorghum pellets. The yield was approximately 6 tons silage or 2½ tons of dehydrated pellets per acre. The test involved a wintering and fattening phase. During the wintering phase, both lots received 4 pounds alfalfa hay, 0.5 pound soybean oil meal, and minerals free choice. Lot 1 received the dehydrated pellets and lot 2 received silage. Dry matter intake was maintained as near the same level as possible. At the end of the 100-day wintering phase, the hay was removed from the ration and replaced by 1 pound of dehydrated alfalfa pellets. The soybean oil meal was increased to 1 pound and the pellets and silage were increased to the quantity that the animal would clean up each day.

Results and Observations

Results of the wintering phase and the first 84 days of fattening are shown in Table 26. The fattening phase had to be terminated for the animals on silage at this time because of warm weather and excessive silage spoilage. Those receiving pellets continued for a total of 209 days with an over-all average daily gain of 1.93 pounds. The silage produced economical gains but the cost of dehydrating and pelleting made the gains very costly with the pellets. Weight gains were essentially the same for