

### Observations

1. The rate of gain and feed efficiency were essentially the same for the four lots of steers.
2. The digestibility of the rations, which included the yeast suspensions, was no higher than that of the control ration.
3. The fecal excreta of the yeast-fed steers in both the digestion stalls and the feed lots contained as much coarse grain as did that of the control steers. A more pungent fecal odor was observed among the yeast-fed steers during the digestion study.

Table 51.—Feeding live yeast cultures in wintering rations of steer calves.

(Nov. 16, 1954-April 5, 1955—140 days)

Experimental treatment	None		Torula utilis yeast	Saccharomyces cerevisiae yeast
	None	None		
Lot number .....	10	15	13	14
Number steers per lot .....	10	10	10	10
Av. initial wt., lbs. ....	454	457	454	456
Av. final wt., lbs. ....	723	714	712	713
Av. total gain, lbs. ....	269	257	258	257
Av. daily gain, lbs. ....	1.92	1.84	1.84	1.84
Av. daily ration, lbs.:				
Soybean meal .....	1.00	1.00	1.00	1.00
Ground milo .....	4.00	4.00	4.00	4.00
Atlas sorgho silage .....	29.05	29.04	28.93	29.04
Salt .....	.10	.11	.10	.12
Mineral .....	.09	.10	.10	.10
Lbs. feed per cwt. gain:				
Soybean meal .....	52.12	54.45	54.24	54.52
Milo .....	208.49	217.81	216.97	218.07
Atlas sorgho silage .....	1514.89	1581.09	1569.15	1582.94
Salt .....	5.14	5.72	5.58	6.31
Mineral .....	4.80	5.60	5.66	5.69
Feed cost per cwt. gain* .....	\$13.38	\$13.99	\$13.93	\$14.02

\* Feed prices listed on page 3 of this publication.

Table 52.—Digestion coefficients for cattle fattening rations that contained live yeast suspension.

	Crude protein	Ether extract	Crude fiber	Nitrogen-free extract	Total digestible nutrients
Control .....	66.1	64.0	57.5	79.6	69.0
Torula utilis .....	66.31	60.38	52.54	80.82	68.49
Saccharomyces cerevisiae .....	58.34	54.60	57.45	75.98	65.17

Adapting Roughages Varying in Quality and Curing Processes to the Nutrition of Beef Cattle: Prairie Hay vs. Corn Cobs; A Special Supplement vs. Milo Grain and Soybean Meal, 1954-1955.

### PROJECT 370

E. F. Smith, D. Richardson, F. H. Baker, and R. F. Cox

This is the third test in an experiment designed to compare the value of certain roughages and supplements in the wintering ration of beef calves. A three-year summary of this experiment is given in Table 54.

### Experimental Procedure

Forty choice-quality Hereford heifers were divided as equally as possible into four lots of 10 animals each. The heifers originated in Barber county, Kansas. The rations used are shown in Table 53. An attempt was made to equalize the protein and total digestible nutrient intake between the lots receiving prairie hay and lots receiving corn cobs as roughages. The animals receiving corn cobs were given 50,000 International Units of vitamin A per head daily. The 3 pounds of special supplement fed daily to Lot 7 was composed of 2.25 pounds soybean meal, 0.50 pound molasses, 0.18 pound steamed bone meal, 0.06 pound salt, and 0.01 pound vitamin supplement (2,250 International Units of vitamin A and 400 International Units of vitamin D per gram). A mineral mixture of 1 part salt and 2 parts steamed bone meal and salt were fed free choice. Water was available at all times.

### Results and Discussion

The results of this test are shown in Table 53. The animals receiving the special supplement gained faster than the control lot. There were no differences in the first two years' tests. It is believed that the difference in this test was due to chance. Even though animals on the special supplement gained faster, their cost per 100 pounds of gain was greater because of the higher cost of the supplement. The animals receiving corn cobs as the only roughage did not gain quite so well as those receiving prairie hay but their gains were more economical. This shows that corn cobs can be used as the only roughage when properly supplemented.

Table 53.—A comparison of roughages and supplements for wintering beef heifer calves.

(Nov. 15, 1954-April 4, 1955—140 days)

Lot number .....	Atlas sorghum silage, soybean meal, milo grain	Atlas sorghum silage, special supplement	Prairie hay, soybean meal, milo grain	Corn cobs, soybean meal, milo grain, vit. A*
Lot number .....	8	7	1	2
Number heifers per lot .....	10	10	10	10
Av. initial wt., lbs. ....	430	431	432	432
Av. final wt., lbs. ....	647	695	641	622
Av. total gain, lbs. ....	217	264	209	190
Av. daily gain, lbs. ....	1.55	1.89	1.50	1.36
Av. daily ration, lbs.:				
Soybean meal .....	1.00		1.00	1.50
Ground milo .....	2.00		3.00	2.50
Special supplement .....		3.00		
Atlas sorghum silage .....	29.46	29.54		
Prairie hay .....			11.46	
Corn cobs .....				8.56
Salt .....	.10	.11	.04	.07
Mineral (bone meal + salt) .....	.12	.11	.11	.07
Lbs. feed per 100 lbs. gain:				
Soybean meal .....	64.50		66.79	110.47
Ground milo .....	129.00		200.38	184.11
Special supplement .....		158.79		
Atlas sorghum silage .....	1900.00	1563.32		
Prairie hay .....			765.12	
Corn cobs .....				630.45
Salt .....	6.10	5.90	2.43	5.21
Mineral (bone meal + salt) .....	7.40	5.78	7.11	5.21
Feed cost per 100 lbs. gain ....	\$13.77	\$13.87	\$15.56	\$14.75

\* 50,000 I.U. per head daily. Total cost of vitamin A, \$18.20.

**Table 54.—Three-year summary comparing roughages and supplements for wintering beef heifer calves.**

Average 120 days					
	Trial number	Atlas sorghum silage, 2 lbs. grain, 1 lb. S.B.M.	Atlas sorghum silage, 3 lbs. special supplt.	Prairie hay, grain, protein	Corn cobs, grain, protein
Av. initial wt., lbs. ....	1	424	419	419	419
	2	296	296	294	296
	3	430	431	432	432
	Av.	383.3	382.0	382.0	382.0
Av. final wt., lbs. ....	1	610	602	592	573
	2	483	491	438	437
	3	647	695	641	622
	Av.	580.0	596.0	557.0	544.0
Av. gain per heifer, lbs.	1	186	183	173	154
	2	187	195	144	141
	3	217	264	209	190
	Av.	196.7	214.0	175.3	161.7
Av. daily gain per heifer, lbs. ....	1	1.72	1.69	1.60	1.43
	2	1.65	1.73	1.27	1.25
	3	1.55	1.89	1.50	1.36
	Av.	1.64	1.77	1.46	1.35
Av. feed per 100 lbs. gain:					
Soybean meal, lbs. ....	1	58.1		77.5	133.1
	2	60.4		77.2	120.2
	3	64.5		66.8	110.5
	Av.	61.0		73.8	121.3
Grain, lbs. ....	1	116.1		228.3	210.4
	2	120.9		203.0	181.5
	3	129.0		200.4	184.1
	Av.	122.0		210.6	192.0
Special supplement, lbs. ....	1		177.0		
	2		173.8		
	3		158.8		
	Av.		169.9		
Atlas sorghum silage, lbs. ....	1	1763.4	1808.7		
	2	1418.4	1355.1		
	3	1900.0	1563.3		
	Av.	1693.9	1575.7		
Prairie hay, lbs. ....	1			611.8	
	2			508.3	
	3			765.1	
	Av.			628.4	
Corn cobs, lbs. ....	1				590.1
	2				499.5
	3				630.5
	Av.				573.4
Minerals (bone meal + salt), lbs. ....	1	6.1	6.2	8.1	5.2
	2	3.6	3.5	4.6	4.0
	3	7.4	5.8	7.1	5.2
	Av.	5.7	5.2	6.6	4.8

**Table 54 (Continued).**

Salt, lbs. ....	1	2.4	3.8	1.3	2.8
	2	1.6	1.5	3.1	2.8
	3	6.1	5.9	2.4	5.2
	Av.	3.4	3.7	2.3	3.6

**Alfalfa Silage vs. Alfalfa Hay for Wintering Heifer Calves**

**PROJECT 370**

**F. H. Baker, D. Richardson, E. F. Smith, and R. F. Cox**

Studies conducted at several experiment stations have demonstrated that alfalfa silage will not produce satisfactory gains for wintering young beef cattle, unless it is supplemented with grain or a protein concentrate. This experiment was designed to determine if a combination of alfalfa silage and hay would equal alfalfa hay as a roughage for wintering young beef heifers.

**Experimental Procedure**

Twenty choice-quality Hereford heifer calves, average weight of 438 pounds each, were used. The heifers were purchased as calves from the Lonker and the Hall-McNally ranches in Barber county, Kansas. Allotment of the heifers was based on weight, feeder grade, and origin.

The alfalfa hay and silage were harvested from the first-cutting growth on the Animal Husbandry farm. The silage was allowed to wilt from one to two hours in the harvesting process.

In the feeding trial, 3 pounds of alfalfa hay was fed to the cattle of Lot 3 to provide readily available protein and dry roughage. The heifers of Lot 3 were maintained at maximum consumption of alfalfa silage, whereas the heifers of Lot 6 were restricted to the same dry matter intake as Lot 3.

**Observations**

The rate of gain of the heifers fed alfalfa silage was significantly less than that of those fed alfalfa hay. Likewise, the cost of gains of the alfalfa hay-fed cattle was distinctly less.

**Table 55.—Alfalfa silage versus alfalfa hay for wintering heifer calves.**

(Nov. 15, 1954-April 4, 1955—140 days)

Lot number .....	3	6
Number heifers per lot .....	10	10
Av. initial wt., lbs. ....	438	438
Av. final wt., lbs. ....	635	673
Av. total gain, lbs. ....	197	235
Av. daily gain, lbs. ....	1.41	1.68
Av. daily ration, lbs.:		
Ground milo .....	4.00	4.00
Alfalfa hay .....	3.00	11.95
Alfalfa silage .....	26.78	.....
Salt .....	.05	.04
Mineral .....	.11	.10