Kansas Agricultural Experiment Station Research Reports

Volume 0
Issue 1 *Cattleman's Day (1993-2014)*

Article 1296

1977

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Recommended Citation

Bolsen, K.; Oltjen, J.; and Riley, Jack G. (1977) "Micronized milo, urea and prairie hay for growing beef heifers," *Kansas Agricultural Experiment Station Research Reports*: Vol. 0: Iss. 1. https://doi.org/10.4148/2378-5977.2699

Micronized Milo, Urea and Prairie Hay for Growing Beef Heifers

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Summary

Twenty-four individually fed heifers were used in two heifer trials to evaluate four combinations of micronized or dry-rolled milo and soybean meal or urea supplements in prairie hay growing rations. Feeding 4 to 5 lbs. of micronized milo produced an average of 17% faster and 16% more efficient gains than feeding 4 to 5 lbs. of dry-rolled milo.

Introduction

Previous research at Kansas State University and other midwest research stations has shown properly gelatinized milo superior to dry-rolled milo in high-grain, beef finishing rations. Also, soybean meal and urea supplements have generally given similar performance in high-grain rations; in high-roughage or silage rations, soybean meal has supported faster and more efficient gains than urea. Limited data are available comparing gelatinized milo and dry-rolled milo in high-roughage, beef cattle growing rations.

Our objective in this trial was to repeat a previous trial (Prog. Rpt. 262, Kan. Agr. Expt. Sta., 1976) evaluating four combinations of micronized or dry-rolled milo and soybean meal or urea supplements in hay rations for growing beef heifers.

Experimental Procedures and Results

Twenty-four Hereford and Hereford-Simmental heifers were allocated by breed and weight to sheltered, individual feeding pens. Six pens were assigned to each of these four treatments:

	Milo		Supplement
1.	dry-rolled	+	soybean meal (SBM)
2.	dry-rolled	+	urea
3.	micronized	+	soybean meal (SBM)
4.	micronized	+	urea

All heifers were fed twice daily and received chopped prairie hay to appetite, 4 lbs. of the appropriate milo and 2 lbs. of the appropriate supplement daily. Both supplements contained 32% crude protein (as-fed basis).[a] Initial and final weights of the heifers were taken after they

[a]Soybean meal supplement: rolled milo, 688 lbs.; soybean meal, 1186 lbs.; dicalcium phosphate, 54 lbs.; salt, 42 lbs.; trace minerals, 8 lbs.; soybean oil, 21 lbs.; and vitamin A, 1 lb. Urea supplement: urea mix (100% CP), 514 lbs.; cane molasses, 390 lbs.; calcium lignin sulfate, 423 lbs.; trace minerals, 2 lbs.; 10-34-0, 70 lbs.; distillers' solubles, 600 lbs. and vitamin A, 1 lb.

had gone 15 hrs. without feed or water. The 98-day trial was conducted during the summer of 1976 with results shown in Table 22.1 (parts a and b).

Data from the 1975 and 1976 trials are compared in Table 22.2. In the 1975 trial, the heifers received 5 lbs. of milo daily and were fed 84 days. Results of the two trials were similar, although differences between treatments were smaller in 1976. Over both trials, heifers fed micronized milo + SBM or micronized milo + urea gained faster than heifers fed dry-rolled milo + urea (Table 22.2; part a). Heifers receiving micronized milo + SBM were more efficient than those receiving dry-rolled milo + urea.

Heifers receiving micronized milo gained faster and more efficiently than heifers receiving dry-rolled over both trials (Table 22.2; part b). Heifers fed SBM gained .07 lb. per day faster and required .82 lb. less dry matter per lb. of gain than those fed urea. Heifers fed the urea-containing liquid supplement consumed more hay than heifers fed the SBM supplement (10.55 vs. 10.15 lbs. daily in 1975; 11.24 vs. 10.53 lbs. daily in 1976). However, the higher moisture content of the urea supplement compared with the SBM supplement (45% vs. 13%), resulted in similar total dry matter consumptions.

Table 22.1. Performance of yearling heifers fed dry-rolled or micronized milo with soybean meal (SBM) or urea.[1]

Part a:	Dry-rolled milo		Micronized milo	
	SBM	Urea	SBM	Urea
No. of heifers	6	6	6	6
Initial wt., lbs.	618.0	614.3	606.3	610.0
Final wt., lbs.	757.7	746.0	757.7	761.0
Avg. daily gain, lbs.	1.42	1.34	1.54	1.54
Avg. daily feed, lbs.[2]				
prairie hay	10.73	11.25	10.32	11.23
milo	3.63	3.75	3.66	3.80
supplement	1.59	1.10	1.55	1.08
Total	15.96	16.10	15.53	16.11
Feed/lb. of gain, lbs.[2]	11.72	12.72	10.35	10.50

Part b:	Milo		Supplement	
	Dry-rolled	Micronized	SBM	Urea
No. of heifers	12	12	12	12
Avg. daily gains, lbs.	1.38[b]	1.54[a]	1.48	1.44
Avg. daily feed, lbs.[2]				
prairie hay	10.99	10.78	10.53	11.24
milo	3.69	3.73	3.65	3.78
supplement	1.34	1.31	1.57	1.08
Total	16.02	15.82	15.75	16.10
Feed/lb. of gain, lbs.[2]	12.22[b]	10.43[a]	11.03	11.61

[1] 98 days (May 19 to August 25, 1976).

[2] 100% dry matter basis.

[a,b] Means on the same line with different superscripts differ significantly ($P<.05$).

Table 22.2. Comparison of the 1975 and 1976 heifer trials.

Part a:		Dry-rolled milo		Micronized milo	
		SBM	Urea	SBM	Urea
Avg. daily gain, lbs.	1975	1.31	1.25	1.66	1.50
	1976	1.42	1.34	1.54	1.54
	Avg.	1.36^{bc}	1.30^{c}	1.60^{a}	1.52^{ab}
Avg. daily feed, lbs.[1]	1975	15.62	15.77	16.01	15.86
	1976	15.95	16.10	15.53	16.11
	Avg.	15.78	15.92	15.77	15.99
Feed/gain[1]	1975	12.12	12.55	9.69	10.98
	1976	11.72	12.72	10.35	10.50
	Avg.	11.93^{ab}	12.63^{b}	10.02^{a}	10.74^{ab}

Part b:		Milo		Supplement	
		Dry-rolled	Micronized	SBM	Urea
Avg. daily gain, lbs.	1975	1.28	1.58	1.48	1.38
	1976	1.38	1.54	1.48	1.44
	Avg.	1.33^{b}	1.56^{a}	1.48	1.41
Avg. daily feed, lbs.[1]	1975	15.70	15.93	15.81	15.81
	1976	16.02	15.82	15.75	16.10
	Avg.	15.85	15.88	15.78	15.95
Feed/gain[1]	1975	12.55	10.33	10.92	11.96
	1976	12.22	10.43	11.03	11.61
	Avg.	12.38^{b}	10.38^{a}	10.97	11.79

[1] 100% dry matter basis.

a,b,c Means on the same line with different superscripts differ significantly ($P<.05$).