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Milo stover and forage sorghum silages for growing heifers

Abstract

Ninety-six heifer calves were used to compare four silage combinations: (1) 100% milo stover, (2) 67% milo stover and 33% forage sorghum, (3) 33% milo stover and 67% forage sorghum and (4) 100% forage sorghum. Each ration was fed to four pens of six heifers each during the 88-day trial. Heifers fed 100% forage sorghum made the fastest and most efficient gains ($P < .05$); those fed 100% milo stover, the slowest and least efficient gains ($P < .05$). Based on gains obtained from these two rations, the 67% milo stover silage ration produced 16% faster gain than predicted; the 33% milo stover ration, a 5% faster gain than predicted.

Keywords

Cattlemen's Day, 1976; Report of progress (Kansas State University. Agricultural Experiment Station); 262; Beef; Milo stover silage; Forage sorghum silage; Heifers

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K**Milo Stover and Forage Sorghum Silages for
Growing Heifers****S****Keith Bolsen, Jack Riley, Larry Corah,
and Chuck Grimes****U**

Summary

Ninety-six heifer calves were used to compare four silage combinations: (1) 100% milo stover, (2) 67% milo stover and 33% forage sorghum, (3) 33% milo stover and 67% forage sorghum and (4) 100% forage sorghum. Each ration was fed to four pens of six heifers each during the 88-day trial. Heifers fed 100% forage sorghum made the fastest and most efficient gains ($P < .05$); those fed 100% milo stover, the slowest and least efficient gains ($P < .05$). Based on gains obtained from these two rations, the 67% milo stover silage ration produced 16% faster gain than predicted; the 33% milo stover ration, a 5% faster gain than predicted.

Introduction

Milo stover silage and dehydrated milo stover pellets were compared with forage sorghum silage in two previous heifer growing trials at this station (Prog. Rept. 210, Kan. Agr. Expt. Sta., 1974 and Prog. Rept. 230, Kan. Agr. Expt. Sta., 1975). Results showed: (1) milo stover had a feeding value of 63 to 67% that of forage sorghum, (2) cattle consumed 12 to 14% less milo stover silage than forage sorghum silage, and (3) growing calves fed milo stover silage as the major energy source should gain about 1.0 lb. per day and require about 10 to 14 lb. of dry matter per lb. of gain, less than acceptable performance for most cattle feeders.

Could milo stover provide only a part of the energy in growing rations? Our objective in this trial was to measure performances obtained with various percentages of milo stover and forage sorghum silages.

Experimental Procedure

Milo stover and forage sorghum (high-grain variety) each was obtained from a single source in October, 1974. The forage harvester was equipped with a two-inch recutter screen and both forages were ensiled in upright concrete stave silos (10 ft. x 50 ft.). Moisture content of the milo stover was about 65%; that of the forage sorghum, about 30%.

Ninety-six heifer calves of Angus, Hereford, Angus x Hereford and Simmental x Hereford breeding were used in the 88-day trial (December 10, 1974 to March 10, 1975). They were allotted by breed and weight into 16 pens of six heifers each. Four pens (two light-weight, averaging 430 lbs. and

two heavy-weight, averaging 577 lbs.) were assigned to each silage combination: (1) 100% milo stover, (2) 67% milo stover and 33% forage sorghum, (3) 33% milo stover and 67% forage sorghum and (4) 100% forage sorghum.

Compositions of the four experimental rations and their supplements are shown in table 18.1. All rations were formulated to be equal in crude protein (12.5%), minerals, vitamins and additives. Rations were mixed twice daily and fed free-choice. Initial and final weights of the heifers were taken after they went 15 hours without feed or water.

Results

Dry matter (%) and crude protein (% on a dry matter basis) for the milo stover were 33.6 and 4.25; for the forage sorghum silage, 29.8 and 7.1.

Heifer performances are shown in table 18.2. Heifers fed the 100% forage sorghum silage ration gained faster ($P < .05$) and more efficiently ($P < .05$) than heifers fed any of the other three rations. Heifers receiving 100% milo stover silage had the slowest ($P < .05$) and least efficient ($P < .05$) gain. As forage sorghum increased and milo stover decreased in the ration, rate of gain increased and feed required per lb. of gain decreased. Dry matter consumption tended to increase as forage sorghum replaced milo stover.

Light-weight and heavy-weight calves had similar gains, but light-weight calves gained more efficiently (7.98 lbs. vs. 9.60 lbs. of feed per lb. of gain).

Estimated net energies for the two silages were calculated from gains and feed intakes obtained from the 100% milo stover and 100% forage sorghum silage rations. The estimates gave predicted daily gains for heifers fed the 67% and 33% milo stover rations to be 1.29 and 1.58 lbs., respectively, but actual daily gains were 1.50 and 1.66 lbs., respectively. These results suggest that milo stover silage may have greater value than expected when it is fed in combination with a higher-energy forage.

Table 18.1 Compositions of the Rations and Supplements used to compare Milo Stover and Forage Sorghum Silages.

Ingredient	Rations ¹			
	100% MSS	61% MSS 33% FSS	33% MSS 67% FSS	100% FSS
Milo stover silage	73.0	48.9	24.1	--
Forage sorghum silage	--	24.1	48.9	73.0
Milo	7.0	7.0	7.0	12.0
Soybean meal	5.0	5.0	5.0	--
Supplement A	15.0	--	--	--
Supplement B	--	15.0	--	--
Supplement C	--	--	15.0	--
Supplement D	--	--	--	15.0

	Supplements ²			
	A	B	C	D
Soybean meal	1793	1524	1264	1688
Milo	87	361	640	208
Dicalcium phosphate	36	45	13	30
Limestone	28	13	27	10
Salt	30	30	30	30
Fat	18	18	18	18
Aureomycin ³	6	6	6	6
Trace mineral premix	1	1	1	1
Vitamin A premix ⁴	+	+	+	+

¹ % on a dry matter basis.

² lbs./ton on an as-mixed basis.

³ added to supply 70 mg per heifer per day.

⁴ added to supply 30,000 IU per heifer per day.

Table 18.2 Performances of Heifers fed Indicated Rations.

	Ration			
	100% MSS	67% MSS 33% FSS	33% MSS 67% FSS	100% FSS
No. of heifers	24	24	24	24
Initial wt., lbs.	502	503	505	502
Final wt., lbs.	591	635	651	667
Avg. 88-day gain, lbs.	89	132	146	165
Avg. daily gain, lbs.	1.01 ^d	1.50 ^c	1.66 ^b	1.88 ^a
Avg. daily feed, lbs.	12.12 ^b	12.38 ^{a, b}	12.94 ^a	12.92 ^a
Feed/lb. of gain, lbs.	12.08 ^c	8.35 ^b	7.85 ^{a, b}	6.88 ^a

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

¹ 100% dry matter basis.