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Sources of roughage and milo for finishing steers

Abstract

One hundred five yearling steers were used to evaluate seven milo treatments: (1) dry, (2) micronized, (3) steam flaked +.2% propionic acid (acid-flake), (4) field harvested high moisture (F-HM) ensiled whole in an 02 -limiting silo, (5) F-HM rolled and ensiled in a concrete stave silo, (6) reconstituted, high moisture (R-HM) ensiled whole in an 02 -limiting silo and (7) R-HM rolled and ensiled in a concrete stave silo; and three roughages: (1) corn silage, (2) equal parts sorghum silage and milo stover silage and (3) milo stover pellets. The complete mixed rations fed during the 92-day trial were 80% milo, 15% roughage and 5% supplement. Steers fed micronized or acid-flake milo gained 16 and 20% more efficiently, respectively, than steers fed dry-rolled milo. Efficiencies of gain were similar for steers fed dry-rolled milo and those fed any one of the four high moisture milo treatments. Rates of gain and carcass characteristics were not significantly affected by milo treatment. Corn silage supported faster (P<.05) and more efficient (P<.05) gains than sorghum-mile stover silages or milo stover pellets.

Keywords

Cattlemen's Day, 1976; Report of progress (Kansas State University. Agricultural Experiment Station); 262; Beef; Roughage; Milo; Finishing steers

Sources of Roughage and Milo for Finishing Steers

Keith Bolsen and Jack Riley

Summary

One hundred five yearling steers were used to evaluate seven milo treatments: (1) dry, (2) micronized, (3) steam flaked +.2% propionic acid (acid-flake), (4) field harvested high moisture (F-HM) ensiled whole in an 0_2 -limiting silo, (5) F-HM rolled and ensiled in a concrete stave silo, (6) reconstituted, high moisture (R-HM) ensiled whole in an 0_2-limiting silo and (7) R-HM rolled and ensiled in a concrete stave silo; and three roughages: (1) corn silage, (2) equal parts sorghum silage and milo stover silage and (3) milo stover pellets. The complete mixed rations fed during the 92-day trial were 80% milo, 15% roughage and 5% supplement.

Steers fed micronized or acid-flake milo gained 16 and 20% more efficiently, respectively, than steers fed dry-rolled milo. Efficiencies of gain were similar for steers fed dry-rolled milo and those fed any one of the four high moisture milo treatments. Rates of gain and carcass characteristics were not significantly affected by milo treatment.

Corn silage supported faster ($P<.05$) and more efficient ($P<.05$) gains than sorghum-mile stover silages or milo stover pellets.

Introduction

Previous feedlot research at KSU evaluating milo storing and processing indicated: (1) steam-flake, F-HM ensiled in an 0_2-limiting silo or F-HM treated with commercial grain preservatives is superior in feeding value to dry-rolled milo but (2) comparisons between F-HM or reconstituted milo and dry-rolled milo have been inconclusive.

In one previous trial, milo stover was as effective as prairie hay in providing roughage in feedlot rations.

Our objective in this trial was to continue studying milo treatments and roughage sources for feedlot cattle.

Experimental Procedure

One hundred five yearling Hereford steers averaging 795 lbs. were allotted by weight to 21 pens of five steers each. Three pens were assigned to each of these milo treatments: (1) dry, (2) micronized, (3) steam-flaked

treated with 0.2% propionic acid, (acid-flake), (4) field harvested, high moisture ensiled whole in an oxygen-limiting silo, (5) field harvested, high moisture, rolled and ensiled in a concrete stave silo, (6) reconstituted, high moisture ensiled whole in an oxygen-limiting silo and (7) reconstituted, high moisture, rolled and ensiled in a concrete stave silo. Seven pens (one from each milo treatment) were assigned to each of these roughage treatments: (1) corn silage, (2) equal parts forage sorghum silage and milo stover silage and (3) milo stover pellets.

All grain was harvested in the fall of 1974 from as uniform a source as possible. Dry milo for treatments 1, 2, 3, 6, and 7 was field-dried. Micronized milo was processed at Kansas Feed Yard, and Brookover Feed Yard, both at Scott City, Kansas.

The 92-day trial began January 21 and ended April 23, 1975. For 90 days before the trial, the steers had received a full-feed of wheat, barley or corn silages. An adjustment ration containing 60% of the appropriate milo, 35% of the appropriate roughage and 5% supplement[1] on a dry-matter basis was fed the first 8 days of the trial. Final rations were 80% milo, 15% roughage and 5% supplement; formulated to 11.5% crude protein, mixed twice daily and fed free-choice. Milo in treatments 1, 4, and 6 was rolled before being mixed into the ration.

Individual weights were taken at the beginning and end of the, trial after steers were without feed or water 15 hours. Final live weights were adjusted to a constant dressing percentage. Carcass data were obtained at Wilson and Co., Kansas City, Mo.

Results

Effects of milo treatments on feedlot performance are shown in Table part a. Steers fed micronized or acid-flake milo gained more efficiently ($P<.05$) than steers fed dry-rolled milo. Only one of the four high moisture milo treatments (field harvested ensiled whole in an oxygen-limiting silo) produced more efficient gains (8%) than dry-rolled milo. In previous research at KSU, both field harvested and reconstituted high moisture milo rolled and ensiled in a stave silo produced 6% more efficient gains than dry-rolled milo. However, in this trial, those high moisture milos were used 6 to 10% less efficiently than dry-rolled milo. Average daily gain and dressing percentages were not significantly affected by milo treatment.

Effects of roughage treatments on feedlot performance are shown in table 16.1, part b. Steers fed corn silage gained 16 to 24% faster and 17 to 21% more efficiently than steers fed sorghum-milo stover silages or milo stover pellets. Only one-third of the additional gain produced by corn silage could be due to its higher grain content.

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[1] lbs. per ton, air-dry basis; rolled milo, 988; soybean meal, 340; limestone, 210; dicalcium phosphate, 56; potassium chloride, 36; urea, 234; salt, 92; trace minerals, 9; aureomycin, 13; vitamin A, 4 and soybean oil, 18.

Table 16.1 Performances of Steers Fed Indicated Rations.[1]

Part a: Milo treatments

Item	Dry	Micron-ized	Acid flakes	Field high moisture		Reconstituted high moisture	
				O_2-limiting	stave	O_2-limiting	stave
No. of steers	15	15	15	15	15	15	14
Initial wt., lbs.	796	794	791	793	794	797	799
Final wt., lbs.[3]	1021	1036	1019	1039	1007	1022	1027
Avg.,daily gain, lbs.	2.45	2.63	2.48	2.68	2.32	2.45	2.48
Avg. daily feed lbs.[2]	21.86[a]	19.71[a,b]	17.37[a]	22.17[a]	22.37[a]	22.68[a]	23.42[a]
Feed/lb. of gain lbs.[2]	9.02[b]	7.58[a]	7.23[a]	8.35[a,b]	9.88[b]	9.41[b]	9.51[b]
Dressing %	58.1	57.4	57.8	58.0	57.9	57.6	57.3
Grain moisture, %	14.1	16.1	9.0	24.2	25.7	21.8	22.7

Part b: Roughage treatments

	Corn silage	Milo stover/sorghum silage	Milo stover pellets
No. of steers	34	35	35
Initial wt., lbs.	796	794	795
Final wt., lbs.[3]	1061	1017	996
Avg. daily gain, lbs.	2.88[a]	2.43[b]	2.19[b]
Avg. daily feed lbs.	21.52	21.88	20.71
Feed/l+ of gain lb.	7.50[a]	9.11[b]	9.54[b]
Dressing %	58.5	57.5	57.3
Roughage dry matter, %	33.6	33.2	91.5

[1] 92 days (January 21 to April 23, 1975).

[2] 100% dry matter basis.

[3] Adjusted to a 57.5% dress.

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