Kansas Agricultural Experiment Station Research Reports

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

Article 1346

1975

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Abstract

We used 75 yearling steers in a 92-day trial to evaluate three sources of roughage: (1) chopped prairie hay; (2) milo stover silage; and (3) milo stover pellets; and five milo treatments: (1) dry, 85.5% dry matter (DM); (2) field harvested, high moisture (F-HM), 72.6% DM, ensiled in an O2-limiting structure; (3) F-HM, 79.5% DM, treated with 1.75% ammonium isobutyra1te on a wet basis and stored in a metal bin; (4) F-HM, 73.6% DM, rolled and ensiled in a 10 ft. x 50 ft. concrete stave silo; and (5) harvested at 85.5% DM and reconstituted to 73.3% DM, rolled and ensiled in a 10 ft. x 50 ft. concrete stave silo. Neither performance or carcass characteristic differences could be attributed to source of roughage when it was fed at 15% of the ration dry matter, which indicates that milo stover can be effectively used in finishing rations. Steers fed high-moisture milo treated with AIB or stored in an O2 -limiting structure performed similarly and gained faster (P<.05) and more efficiently (P<.05) than steers fed dry milo.

Keywords

Cattlemen's Day, 1975; Report of progress (Kansas State University. Agricultural Experiment Station); 230; Beef; Roughage; Milo; Finishing steers

Sources of Roughage and Milo for Finishing Steers

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Summary

We used 75 yearling steers in a 92-day trial to evaluate three sources of roughage: (1) chopped prairie hay; (2) milo stover silage; and (3) milo stover pellets; and five milo treatments: (1) dry, 85.5% dry matter (DM); (2) field harvested, high moisture (F-HM), 72.6% DM, ensiled in an O_2-limiting structure; (3) F-HM, 79.5% DM, treated with 1.75% ammonium isobutyrate[1] on a wet basis and stored in a metal bin; (4) F-HM, 73.6% DM, rolled and ensiled in a 10 ft. x 50 ft. concrete stave silo; and (5) harvested at 85.5% DM and reconstituted to 73.3% DM, rolled and ensiled in a 10 ft. x 50 ft. concrete stave silo

Neither performance or carcass characteristic differences could be attributed to source of roughage when it was fed at 15% of the ration dry matter, which indicates that milo stover can be effectively used in finishing rations.

Steers fed high-moisture milo treated with AIB or stored in an O_2-limiting structure performed similarly and gained faster ($P<.05$) and more efficiently ($P<.05$) than steers fed dry milo.

Introduction

The high cost of typical roughages and grains fed to cattle has created a need for information on the acceptability of crop residues as roughage in finishing rations and additional up-to-date performance data on selected sources of milo available to Kansas cattle feeders. Previous research at KSU, including articles in this publication, has shown milo stover to be most beneficial in rations for nonlactating beef cows and to be less beneficial in wintering rations for growing beef heifers.

In this trial we evaluated milo stover (silage or pellets) as a roughage source and compared five typical milo sources in steer finishing rations.

Experimental Procedure

We allotted 75 crossbred yearling steers averaging 812 lbs. by weight to 15 pens of five steers each. Five pens were assigned to each of the three sources of roughage: (1) chopped prairie hay; (2) milo stover silage;

[1]Ammonium isobutyrate and partial financial assistance provided by W. R. Grace and Company, Clarksville, Maryland.

and (3) milo stover pellets. One pen from each roughage source was assigned to each of the five sources of milo: (1) dry, 85.5% dry matter (DM); (2) field harvested, high moisture (F-HM), 72.6% DM, ensiled in an O_2-limiting structure; (3) F-HM, 79.5% DM, treated with 1.75% ammonium-isobutyrate on a wet basis and stored in a metal bin; (4) F-HM, 73.6% DM, rolled and ensiled in a 10 ft. x 50 ft. concrete stave silo; and (5) harvested at 85.5% DM and reconstituted to 73.3% DM, rolled and ensiled in a 10 ft. x 50 ft. concrete stave silo. Milo in treatments 1, 2, and 3 was rolled before being fed.

The trial was 92 days (February 7 to May 10, 1974). All rations contained 80% of the specific milo, 15% roughage and 5% supplement on a dry matter basis. All contained equal crude protein and non-protein nitrogen. All were mixed and fed free choice twice daily. Individual initial and final weights were taken after steers had been 15 hours without access to feed or water. Performance data were adjusted to a constant dressing percentage basis. Individual slaughter and carcass data were obtained at Wilson and Co., Kansas City, Missouri,

Results and Discussion

Effects of roughage sources on feedlot performance of steers are shown in table 14.1. Differences were not significant; however, steers fed milo stover silage gained slower and were the least efficient. Steers consuming milo stover pellets consumed less daily feed and were the most efficient.

Effects of milo sources on feedlot performance are given in table 14.2. Steers fed field harvested, high-moisture milo treated with AIB and those fed milo stored in an O_2-limiting structure performed similarly and gained faster ($P<.05$) than steers fed dry milo, and were more efficient ($P<.05$) than steers fed dry milo or either of the two high moisture milos stored in concrete stave silos. Steers fed the dry-rolled milo gained 17% slower and 22% less efficiently than steers fed milo from an O_2-limiting structure. High-moisture silos produced higher daily gains than dry milo did, but the high-moisture milos produced gains approximately 6% slower and 18% less efficiently than milo stored in the O_2-limiting structure.

Effects of milo sources on carcass characteristics are shown in table 14.3. None of the carcass characteristics measured differed significantly.

Table 14.1. Effects of Roughage Sources on Performance of Finishing Steers.

	Roughage		
	Chopped hay	Milo stubble pellets	Milo stubble silage
No. steers	25	25	25
Initial wt., lb.	812	814	817
Final wt., lb.	1056	1056	1052
Gain, lb.	243	241	235
A.D.G., lb.	2.65	2.62	2.56
Daily D.M., lb.	22.93	21.48	22.36
D.M./gain, lb.	8.65	8.20	8.73

Table 14.2. Effects of Milo Sources on Performance of Finishing Steers, 92 Days.

	Milo				
Item	Dry[1]	AIB[3]	O_2 L[2]	H-M-S[4]	Recon-S[5]
No. steers	15	15	15	15	15
Initial wt., lb.	813	815	814	812	819
Final wt., lb.	1027	1073	1070	1052	1060
Gain, lb.	214	258	256	240	242
A.D.G., lb.	2.32[a]	2.80[b]	2.78[b]	2.60[a,b]	2.62[a,b]
Daily D.M., lb.	22.42[a,b]	22.14[a,b]	20.77[a]	22.05[a,b]	23.90[b]
D.M./gain, lb.	9.66[a]	7.91[b]	7.47[b]	9.08[a]	9.12[a]

[a,b] Different superscripts indicate significant ($P<.05$) differences.

[1] 85.5% dry matter (DM), rolled prior to feeding.

[3] Field harvested, high moisture (F-HM), 79.5% DM, treated with 1.75% AIB and stored in metal bin, rolled prior to feeding.

[2] F-HM, 72.6% DM, ensiled in an O_2-limiting structure, rolled prior to feeding.

[4] F-HM, 73.6% DM, rolled and ensiled in a 10 ft. x 50 ft concrete stave silo.

[5] Harvested at 85.5% DM and reconstituted to 73.3% DM, rolled and ensiled in a 10 ft. x 50 ft. concrete stave silo.

Table 14.3. Effects of Milo Sources on Carcass Characteristics of Steers.

Item	Milo				
	Dry[1]	AIB[3]	O_2L[2]	H-M-S[4]	Recon-S[5]
No. steers	15	15	15	15	15
Dressing %	59.8	59.5	58.5	59.1	59.0
Fat, in.	0.49	0.45	0.53	0.58	0.46
LEA, in.[2]	11.00	11.60	11.20	10.90	11.40
USDA grade[6]	11.5	11.6	11.7	11.6	11.5

[1] 85.5% dry matter (DM), rolled prior to feeding.

[3] Field harvested, high moisture (F-HM), 70.5% DM, treated with 1.75% AIB and stored in metal bin, rolled prior to feeding.

[2] F-HM, 72.6% DM, ensiled in an O_2-limiting structure, rolled prior to feeding.

[4] F-HM, 73.6% DM, rolled and ensiled in a 10 ft. x 50 ft. concrete stave silo.

[5] Harvested at 85.5% DM and reconstituted to 73.3% DM, rolled and ensiled in a 10 ft. x 50 ft. concrete stave silo.

[6] 11 = high good; 12 = low choice; etc.