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Effects of Amaferm® (*Aspergillus oryzae* fermentation extract) on performance and body temperature of stockers fed diets with or without fescue endophyte

Abstract

Sixty-four stocker steers were offered endophyte-free fescue hay ad libitum, with either bromegrass or high-endophyte fescue seed screenings and supplements with or without Amaferm8 (*Aspergillus oryzae* fermentation extract). Steers offered bromegrass seed screenings gained faster ($P < .01$), consumed more feed ($P < .01$), and converted feed dry matter to gain more efficiently ($P < .01$) than those fed fescue seed screenings. Amaferm did not affect stocker performance or reduce rectal temperature. Therefore, feeding high-endophyte fescue screenings reduced intake and daily gain, and Amaferm did not offset those effects.

Keywords

Cattlemen's Day, 1990; Kansas Agricultural Experiment Station contribution; no. 90-361-S; Report of progress (Kansas State University. Agricultural Experiment Station and Cooperative Extension Service); 592; Beef; Amaferm®; *Aspergillus oryzae*; Fescue; Endophyte; Stockers

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K**S** EFFECTS OF AMAFERM® (*ASPERGILLUS ORYZAE* FERMENTATION
EXTRACT) ON PERFORMANCE AND BODY TEMPERATURE
OF STOCKERS FED DIETS WITH OR WITHOUT
FESCUE ENDOPHYTE¹**U**K. P. Coffey², F. K. Brazle³, and J. L. Moyer²

Summary

Sixty-four stocker steers were offered endophyte-free fescue hay ad libitum, with either bromegrass or high-endophyte fescue seed screenings and supplements with or without Amaferm® (*Aspergillus oryzae* fermentation extract). Steers offered bromegrass seed screenings gained faster ($P < .01$), consumed more feed ($P < .01$), and converted feed dry matter to gain more efficiently ($P < .01$) than those fed fescue seed screenings. Amaferm did not affect stocker performance or reduce rectal temperature. Therefore, feeding high-endophyte fescue screenings reduced intake and daily gain, and Amaferm did not offset those effects.

(Key Words: Amaferm®, *Aspergillus oryzae*, Fescue, Endophyte, Stockers.)

Introduction

Tall fescue is one of the most important cool-season forages in the United States, providing over 35 million acres of forage for livestock. Cattle grazing fescue typically exhibit a number of symptoms including reduced feed intake, weight gain, and milk production; higher rectal temperature and respiration rate; and reduced serum prolactin level. These symptoms have been attributed to the presence of the endophytic fungus *Acremonium coenophialum*. *Aspergillus oryzae* fermentation extract (Amaferm) has been shown to reduce rectal temperature and improve dry matter digestibility in cattle. The objective of our experiment was to evaluate the effects of Amaferm on cattle consuming forage diets supplemented with high endophyte and endophyte-free grass seed screenings.

Experimental Procedures

Sixty-four black or black-baldy steers averaging 569 lb were allotted by weight to 16 groups of four head each and placed in drylot pens located at the Mound Valley research facility. All groups were offered endophyte-free tall fescue hay ad libitum for 90 d beginning on June 30. The pen replicates were assigned randomly to receive either fescue or bromegrass seed screenings offered at 4 lb/head daily. Pens of cattle within each screening type were

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offered 2 lb per head daily of a soybean hull supplement, which contained essential macro and trace minerals, either with or without 2 g of Amaferm.

Initial and final weights are the means of weights taken in the morning on 2 consecutive days. Rectal temperatures were measured at 14-d intervals throughout the study beginning at 7 A.M., with the exception of September 7, when measuring began at 1 P.M.

Results and Discussion

Steers offered brome seed screenings were 32 lb heavier ($P < .01$) at the end of the 90-d feeding period, gained .39 lb/d faster ($P < .01$), consumed 1.5 lb more ($P < .01$) feed dry matter per day, and produced each pound of gain on 12 lb less ($P < .01$) feed dry matter than steers offered fescue seed screenings (Table 34.1). Amaferm did not affect those parameters, and there were no interactions with screenings type.

Rectal temperatures were higher ($P < .01$) from steers offered fescue screenings on July 27 and tended to be higher ($P < .10$) on September 7 and September 21 than those from steers offered brome screenings (Table 34.2). Steers offered Amaferm tended ($P < .10$) to have higher temperatures than control steers on July 13 and August 11. Otherwise, temperatures were similar among treatments.

In this study, feeding endophyte-infected fescue screenings reduced weight gain, forage intake, and feed conversion, and Amaferm did not offset these adverse effects.

Table 34.1. Performance of Steers Offered Fescue or Brome-grass Screenings with or without Amaferm

Item	Screenings type		Supplement	
	Brome	Fescue	Control	Amaferm
Initial wt., lb	568	571	568	571
Final wt., lb ^a	645	613	629	629
Total gain, lb ^a	77.1	42.7	61.1	58.7
Daily gain, lb ^a	.86	.47	.68	.65
DM intake, lb/d ^a	14.3	12.8	13.7	13.4
Feed/gain ^a	16.9	28.9	23.5	22.3

^aBrome vs. fescue screenings ($P < .01$).

Table 34.2. Rectal Temperatures From Steers Offered Fescue or Brome-grass Screenings with or without Amaferm

Date	Screenings type		Supplement	
	Brome	Fescue	Control	Amaferm
June 30	103.4	103.3	103.3	103.4
July 13 ^c	102.6	102.7	102.5	102.8
July 27 ^a	103.1	103.9	103.4	103.6
August 11 ^c	101.5	101.6	101.3	101.7
August 24	103.2	103.0	102.9	103.3
September 7 ^b	105.1	105.7	105.3	105.5
September 21 ^b	100.9	101.4	101.2	101.1
September 28	102.0	102.5	102.2	102.3

^aBrome vs fescue screenings ($P < .01$).

^bBrome vs fescue screenings ($P < .10$).

^cControl vs Amaferm ($P < .10$).