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Effect of Ralgro® on Performance of Steers Grazing
High and Low Endophyte
Fungus-Infested Tall Fescue Pastures¹

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Summary

Steers were either not implanted or implanted with 36 or 72 mg of Ralgro, then allowed to graze on both high and low endophyte fungus tall fescue pastures. Ralgro had a greater effect on improving gains of steers grazing high endophyte fungus pastures than on those grazing lowly infected fescue pastures.

Introduction

Tall fescue pastures infested with high levels of the endophytic fungus (*Acremonium coenophialum*) have resulted in poor gains by grazing animals. Ralgro has been shown to increase blood prolactin levels, whereas the endophyte fungus reduces blood prolactin levels in grazing animals. Research with cow-calf pairs grazing tall fescue pastures has shown a 52 lb increase in calf weaning weight due to Ralgro implants, or about twice the response typically obtained with calves grazing native grass. The objective of this study was to determine if Ralgro has a greater effect on gains of cattle grazing high endophyte- or low endophyte-infected fescue pastures.

Experimental Procedures

In trial 1, 150 mixed breed steers, averaging 541 lbs, were allotted on August 18 to either a high (70%) endophyte fungus, tall fescue pasture or a low (30%) endophyte-infected pasture. Within each pasture, 75 steers were randomly allotted to Control (no implant), 36 mg Ralgro, or 72 mg Ralgro treatments. The steers were weighed and their hair coats were scored at the start, after 30 days on trial, and at the end of the grazing period on November 17. The steers were bled for serum prolactin analysis and body temperatures were recorded at the start and at 30 days.

In trial 2, 150 mixed breed steers, averaging 614 lbs, were allotted to either a high (93%) or a low (9%) endophyte fungus-infected pasture on September 17. Within each pasture, 75 steers were randomly allotted to either Control, 36 mg Ralgro, or 72

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mg Ralgro treatments. The steers were weighed and hair was scored at the start, after 33 days, and again at the end of the grazing period on December 9. The steers were bled for prolactin analysis at the start and after 33 days on trial.

Results and Discussion

The results of Trials 1 and 2 are shown in Table 15.1. When the results of the two trials were combined, daily stocker gains on the low endophyte fungus, fescue pastures were 1.29, 1.43, and 1.48 lbs for the Control, 36 mg Ralgro, and 72 mg Ralgro, respectively. This represents a 10% improvement ($P < .05$) in gain with 36 mg Ralgro and a 17% increase ($P < .05$) with 72 mg of Ralgro over the Controls. Daily gains of steers grazing the high endophyte fungus pastures were .95, 1.29, 1.38 lbs for the Control, 36 mg Ralgro, and 72 mg Ralgro, respectively. This was a 37% improvement ($P < .001$) for 36 mg Ralgro steers and a 47% boost ($P < .001$) for the 72 mg Ralgro-implanted cattle. Body temperatures were higher ($P < .001$) at 33 days for steers grazing the high endophyte pasture in trial 2 compared to cattle on the low endophyte pasture. Prolactin levels at 30 and 33 days were higher ($P < .001$) in steers grazing the low endophyte pastures. Ralgro had little effect on serum prolactin levels. In trial 2, hair scores at 33 days were higher (rougher) for steers grazing the high endophyte pasture. This research suggests that Ralgro reduces the detrimental effects on steer gains from grazing tall fescue pastures with high levels of endophyte fungus.

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"Fescue foot," "summer syndrome," and "fescue toxicity" are all names for a condition frequently seen in cattle grazing tall fescue. Symptoms include erratic performance, lameness, rough hair coats, and reduced tolerance to heat. The problem is a toxic endophyte fungus, so named because it grows within the fescue plant. The fungus is concentrated in the plant stalk and seed head, so the symptoms are most prevalent when cattle are grazing mature fescue. The fungus is transmitted only through the seed, so fungus-free stands can be established by planting certified endophyte fungus-free seed.

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Table 15.1. Effect of Ralgro on Performance of Steers Grazing Low or High Endophyte-Infected Fescue Pastures

Trial 1		Low - 30% Endophyte Fungus			High - 70% Endophyte Fungus		
Item		Control	36 mg Ralgro	72 mg Ralgro	Control	36 mg Ralgro	72 mg Ralgro
Daily Gain:							
First 30 Days		1.81 ^a	1.74 ^b	1.78 ^b	1.45 ^a	1.56 ^a	1.49 ^a
Overall, 90 Days		1.33 ^b	1.52 ^{bc}	1.62 ^c	1.02 ^a	1.35 ^b	1.41 ^b
Rectal Temp., F							
Day 30		104.3	103.9	103.8	104.8	104.3	104.6
Hair Score ¹ :							
Day 30		4.9	4.8	4.9	5.3	4.8	5.4
Day 90		5.8	5.3	5.5	5.8	5.3	5.4
Serum Prolactin, ng/ml							
Day 30		125.9 ^a	51.9 ^b	54.6 ^{ab}	24.6 ^{ab}	15.0 ^b	4.37 ^b
Trial 2		Low - 9% Endophyte Fescue			High - 93% Endophyte Fescue		
Item		Control	36 mg Ralgro	72 mg Ralgro	Control	36 mg Ralgro	72 mg Ralgro
Daily Gain:							
First 33 Days		1.23 ^a	1.46 ^a	1.12 ^a	.36 ^c	.70 ^b	.75 ^b
Overall, 83 Days		1.24 ^a	1.33 ^a	1.34 ^a	.87 ^b	1.23 ^a	1.34 ^a
Rectal, Temp., F							
Day 33		103.3 ^a	103.1 ^a	103.1 ^a	104.5 ^b	104.3 ^b	104.3 ^b
Hair Score ¹ :							
Day 33		5.2 ^a	5.0 ^a	5.3 ^a	6.0 ^b	5.9 ^b	5.6 ^b
Day 83		5.9	5.4	5.7	5.8	5.7	5.7
Serum Prolactin, ng/ml							
Day 33		139.9 ^{ab}	227.1 ^a	97.0 ^{ab}	10.0 ^c	13.2 ^c	8.9 ^c

¹Higher scores indicate rougher hair coats.

^{abc}Means in the same row not sharing the same superscript are significantly different (P<.001).