

Alternate Day Feeding of a Monensin-Containing Energy Supplement on Weight Gains of Steers Grazing Winter Wheat Pasture

Pages 132-135

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Story in Brief

One-hundred ten steers and eight winter wheat pastures were used to measure weight gain of steers offered 4 lb of a monensin-containing energy supplement every other day versus steers given free-choice access to a high-calcium mineral supplement. Steers continuously grazed wheat pasture from October 30, 1997 to March 7, 1998 (127 d; Marshall, OK, four pastures) or from November 7, 1997 to February 28, 1998 (113 d; Stillwater, OK, four pastures). Pastures ranged in size from 18 to 23 acres, and were stocked with 11 to 15 steers/pasture to achieve similar forage allowances across all eight pastures. Daily consumption of the supplements averaged 0.30 and 1.83 lb/steer for the mineral and monensin-containing energy supplements, respectively. The energy supplement increased daily gain by .39 lb, and resulted in a supplement conversion of 4.69 lb/lb of added weight gain. These results, combined with our previous research, indicate that alternate-day feeding of this monensin-containing energy supplement increases weight gains of wheat pasture stocker cattle similarly to the self-limited formulation.

(Key Words: Wheat Pasture, Growing Cattle, Supplementation, Monensin.)

Introduction

Previous research (Horn et al., 1990, 1992; Beck, 1993) has consistently shown a .4 to .5 lb/d increase in daily gains of steers offered a self-limited (4% salt), monensin-containing energy supplement compared with cattle receiving a mineral supplement. In addition to improving animal gains, the energy supplement provides additional calcium for growth, as well as monensin, which has been shown to decrease the incidence and severity of bloat in cattle grazing winter wheat (Branine and Galyean, 1990; Paisley et al., 1998). While self-limited supplements reduce the labor and equipment costs associated with daily feeding, some producers prefer to hand feed supplements, allowing them to monitor cattle more frequently. In a previous trial (Andrae et al., 1994), alternate-day feeding of a monensin-containing energy supplement increased daily gains .56 lb/d over unsupplemented steers. The objective of this study was to obtain additional data relative to the effect of this supplementation strategy on weight gain of wheat pasture stocker cattle.

Materials and Methods

Study site. Four clean-tilled winter wheat pastures near Stillwater, OK and four winter wheat pastures located at the Wheat Pasture Research Unit near Marshall, OK were assigned to one of two treatments, with both treatments replicated within each site. Treatments consisted of 1) free-choice access to a high-calcium mineral supplement⁴ that was fed in covered mineral feeders and 2) alternate day feeding of the monensin-containing energy supplement. Stocking densities were the same for both treatments. Forage mass available for grazing in all eight pastures was determined by hand-clipping wheat forage to ground level inside six 2 ft² quadrants systematically selected across each pasture. Clipping dates were: October 24 (Marshall only), December 5, January 20, and February 20.

Cattle. Eighty-eight steers were initially allotted to the eight pastures on October 30, 1997 (Marshall) and November 7, 1997 (Stillwater) with 20 steers added on December 5 (8 Marshall, 12 Stillwater) and two steers added on December 17 (Marshall) to maintain similar forage availability across the eight pastures. Final weights were recorded on February 28, 1998 (Stillwater) and March 7, 1998 (Marshall) resulting in 127 and 113 grazing days for the Marshall and Stillwater locations, respectively. Initial and final weights were recorded at each site following an overnight shrink (approx. 14 h) without feed or water. Steers added on December 5, 1997 were included in the animal performance data; however, the two steers added

on December 17, 1997 were omitted from performance data. One of the mineral-supplemented steers at the Stillwater location died of bloat.

Supplement. Steers began receiving either the alternate day supplement or Wheat Pasture Pro Mineral[®] on October 31, 1997 (Marshall, OK) and November 10 (Stillwater, OK). Steers receiving the alternate day supplement were initially hand-fed 2 lb/steer every day for the first 7 d until they were accustomed to going to the feeders. After this initial period, they were fed 4 lb/steer every other day for the duration of the trial. Prior to each feeding, supplement remaining from the previous feeding was removed and weighed to determine actual supplement intakes for each pasture. The supplement was manufactured as a 11/64-inch pellet and consisted mainly of ground milo and wheat middlings (Table 1). Supplements were offered in uncovered feed bunks (Marshall) and self-feeders (Stillwater).

Statistics. Animal performance, available forage, and supplement intake data were analyzed using the GLM procedure of SAS (1990) as a randomized complete block design with location (Marshall or Stillwater) used as the blocking factor. Because steers were hand-fed a predetermined amount of supplement, there were only small differences in consumption of the energy supplement between pastures. In addition, animal performance was similar between Stillwater and Marshall locations. Consequently, only least squares means for treatments are presented.

Results and Discussion

Available forage, as determined from clipping data, was similar ($P>.05$) for both treatments on all three clipping dates (Table 2). Supplement consumption by steers fed the monensin-containing energy supplement on alternate days ranged from 1.68 to 1.95 lb/d across all pastures and averaged 1.83 lb/d resulting in a daily monensin intake of 183 mg/steer. Intake of the mineral mixture by mineral-supplemented steers ranged from .24 to .46 lb/d across all pastures and averaged .30 lb/d. Supplement and mineral intakes resulted in similar ($P>.05$) calcium, phosphorous, and magnesium intakes/steer for both treatments based on calculated or guaranteed mineral contents of the two supplements.

Initial weights of steers were similar ($P>.05$) for both treatments (Table 2). Although weight gains of the steers of both treatments were excellent, alternate day feeding of the monensin-containing energy supplement increased ($P<.05$) daily gains by .39 lb (2.92 vs 2.53 lb) and increased final weights of the steers. Conversion of the monensin-containing energy supplement was 4.69 lb of supplement/lb of added weight gain.

These data, combined with previous research, indicate that the alternate-day feeding of this monensin-containing energy supplement increases weight gains of wheat pasture stocker cattle similarly to the self-limited formulation.

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Table 1. Feedstuff composition of monensin-containing energy supplement.

Ingredient	% as-fed
Milo, ground	62.15
Wheat middlings	21.00
Molasses	5.00
Limestone	4.30
Dicalcium phosphate, 21% P	2.55
Magnesium mica (Smectite)	4.00
Fine mixing salt	.50
Magnesium oxide	.22
Rumensin 80 premix ^a	.125
Vitamin and trace-mineral premix	.10
Vitamin A-30	.05
^a Added to result in 100 mg monensin/lb of supplement	

Table 2. Forage availability, supplement intake, and performance of steers grazing winter wheat and receiving either the alternate day energy supplement or mineral.^a

Item	Mineral-supplemented ^b	Monensin/energy supplement ^c	SE
Pastures	4	4	
----- Forage availability-----			
Dec. 5, lb DM/ac	2681	2565	334.5
Jan. 20, lb DM/ac	2378	2351	196.6
Feb. 20, lb DM/ac	2059	1989	201.1
----- Supplement intake-----			
Supp. intake, lb/d	.30	1.83	--
Monensin, mg/d ^d	0	183	--
Calcium, g/d ^e	21.9	18.7	2.73
Phosphorous, g/d ^e	5.5	7.5	.67
Magnesium, g/d ^e	7.5 ^j	5.6 ⁱ	.95
----- Cattle performance-----			
No. of steers	52	53	
Initial wt, lb ^f	512	515	11.9
Final wt, lb	802 ^j	848 ⁱ	2.8
Daily gains, lb ^g	2.53 ^j	2.92 ⁱ	.029
Supp. conversion ^h	--	4.69	--

^aLeast squares means for treatment.

^bSteers had free-choice access to Wheat Pasture Pro Mineral[®] (Farmland Industries, Inc.).

^cSteers were fed 4 lb/steer every other day.

^dBased on supplement monensin concentration of 100 mg/lb.

^eCalculated from supplement and mineral analysis.

^fWeights included initial steers as well as steers added December 5, 1997.

^gCalculated based on 127 and 113 grazing days, respectively, for Marshall and Stillwater locations.

^hSupplement conversion, lb of supplement/lb of added weight gain.

^{i,j}Means within a row with uncommon superscripts differ ($P < .05$).

[1998 Research Report - Table of Contents](#)