A SELF-FED MONENSIN-CONTAINING ENERGY SUPPLEMENT FOR STOCKER CATTLE GRAZING WHEAT PASTURE[1]

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Story in Brief

A 120-day trial using 71 steers was conducted to determine intake of a self-fed, energy supplement containing 75 mg monensin/lb and effect of the supplement on performance of stocker cattle grazing wheat pasture. Mean daily intake of supplement and monensin was 4.07 lb and 306 mg/head for one pasture versus 2.42 lb and 181 mg/head for a second. Weight gain of the steers was increased about .5 lb/day by the monensin/energy supplement. Apparent supplement conversion was 6.75 lb of supplement per lb of increased gain. At a feed cost of $140/ton, profits were increased by $14 to $20/head depending on the profit potential that existed during the 10-year period, 1980-89.

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

Introduction

Wheat forage commonly contains 75% digestible dry matter (DM) and 25 to 30% crude protein (CP) during the fall and early spring grazing periods. Supplemental energy would widen this narrow DOM:CP ratio as discussed by Hogan (1982). Monensin and lasalocid increase daily gains of growing cattle on wheat pasture by .18 to .24 lb/day over that of the carrier supplement (Horn et al., 1981; Andersen and Horn, 1987) and improve the economics of supplementation programs. In addition, producer experience and research (Grigsby, 1984; Bagley and Feazel, 1989; Branine and Galyean, 1990) indicate that monensin decreases the incidence and severity of bloat of

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grazing steers. The objective of this research was to develop a self-fed monensin-containing energy supplement with a target level of intake of 2 to 3 lb/day. Results of two initial trials were reported by Horn et al. (1990). Data from the third trial conducted during the 1990-91 wheat pasture year are presented here.

Materials and Methods

Seventy-one crossbred steers of exotic breeds were allotted to four groups of 16, 17 17 and 21 head per group according to breed and initial weight. The steers were placed on four pastures of Pioneer 2157 wheat pasture at a stocking density of about 2 acres per head for a 120-day performance trial beginning November 13, 1990 and ending March 14, 1991. These cattle, purchased in northern Arkansas and central Oklahoma, were received in September. The cattle grazed Bermudagrass until the start of the wheat pasture trial. The two treatments assigned to the four pastures, were 1) no energy supplement and 2) a self-fed monensin-containing energy supplement. The supplement was fed in covered feeders with 20 linear feet of bunk space per pasture located near the water source. Composition of the supplement is shown in Table 1. The supplement contained 75 mg monensin per pound and was fed as a 3/16 inch pellet. Supplement intake was measured twice weekly (at 3 and 4 day intervals). At the beginning of the trial, the supplement contained 4.00% salt, but because consumption was excessive in one of the pastures, the salt content of the supplement was increased to 6.00% for that pasture on November 27, 1990. The control steers had free choice access to a commercial salt and mineral mix. Mineral intake was measured weekly. Steers were weighed at 35 to 43-day intervals after a 16 to 18 hour shrink in drylot without water.

Results and Discussion

Mean consumption of the monensin-containing energy supplement and the mineral mixture by groups steers is shown for each pasture in Table 2. Mean intake of supplement and monensin by steers of pasture 2 was 2.42 lb/head and 181 mg/head, respectively. Consumption of supplement by steers of pasture 1 was greater (4.07 lb/day and 306 mg monensin). No explanation for this difference in supplement consumption between the two pastures is apparent. Mean daily consumption of the commercial mineral mixture by control steers was .20 and .22 lb/head for pastures 3 and 4, respectively. This is very close to the target amount (.25 lb/day) for this mineral mixture.

Table 1. Composition (as-fed basis) of energy supplements fed to steers on wheat pasture.

Ingredient	First formula	Second formula
Ground milo, %	63.18	60.78
Wheat middlings, %	20.89	20.99
Sugarcane molasses, %	4.80	4.80
Calcium carbonate, %	4.00	4.00
Dicalcium phosphate, %	2.25	2.55
Magnesium oxide, %	.75	.75
Salt[a], %	4.00	6.00
Rumensin 60 Premix, %	.125	.125
Calculated nutrient content, as-fed basis		
NE_{gain}, Mcal/cwt	38.0	37.0
Crude protein, %	9.2	8.9
Calcium, %	2.15	2.22
Phosphorus, %	.85	.90
Magnesium, %	.63	.63
Monensin, mg/lb	75	75

[a] Fine mixing salt (99.5% NaCl).

Performance of the cattle was excellent (Table 3). The monensin-containing energy supplement increased daily gain of the steers by .48 lb (2.90 vs 2.42; $P<.003$). In the initial trial (1989-90), the monensin/energy supplement increased daily gain of steers by .53 lb. Therefore, the weight gain response to the monensin/energy supplement has been very consistent from year-to-year. Supplement conversion, expressed as lb of supplement per lb of increased gain, was 6.75 (i.e., 3.24 lb of supplement divided by .48 lb of increased gain). At a feed cost of $140/ton, profits were increased by $14 to $20/head (1990 dollars) depending on the profit potential that existed during the 10-year period, 1980-89. Reduction of death loss from bloat due to feeding the monensin/energy supplement would further increase the economic returns from this supplementation strategy.

Although this supplement is designed to be self-fed, this program requires close management. Monensin in large amounts can kill cattle. However, if one considers the LD_1 for monensin to be 2.5 mg/lb body weight

Table 2. Mean daily supplement, mineral and monensin consumption by groups of 16 to 21 steers grazing wheat pasture.

	Mean	Standard deviation	Minimum[a]	Maximum[a]	Obs.[b]
Pasture 1					
Supplement, lb/head	4.07	1.28	1.47	6.41	33
Monensin, mg/head	306	96	110	480	
Pasture 2					
Supplement, lb/head	2.42	1.19	1.02	5.10	33
Monensin, mg/head	181	89	76	382	
Pasture 3					
Mineral mixture, lb/head	.20	.078	.081	.37	16
Pasture 4					
Mineral mixture, lb/head	.22	.100	.091	.39	16

a Minimum or maximum for 3- or 4-day periods (pastures 1 and 2) or weekly periods (pastures 3 and 4).
b Number of observations.

Table 3. Weights and daily gains of steers.

	Treatment					
	Control		Energy supplement		Means	
Pasture:	3	4	1	2	Control	Energy Supplement
	November 13, 1990 to March 14, 1991 (120 days)					
Number steers	17	21	16	17		
Initial weight, lb	535	517	538	544		
Final weight, lb	826	808	890	890		
Daily gain, lb	2.42	2.42	2.93	2.88	2.42	2.90[a]

[a] Different from control (P<.003).

(Potter et al., 1984) or 1250 mg/head/day for a 500-lb steer, the theoretical safety ratio is 4.17 for 500-lb cattle consuming 300 mg monensin/day. Hay should be fed during periods of low wheat forage availability and(or) snow or ice cover of wheat to curb appetite and prevent over consumption of the self-fed supplement.

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