

Kansas Agricultural Experiment Station Research Reports

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

Article 745

1993

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Recommended Citation

Brazle, F.K. (1993) "Effect of Zinpro 100® in a mineral mixture on gain and incidence of footrot in steers grazing native grass pastures," *Kansas Agricultural Experiment Station Research Reports*: Vol. 0: Iss. 1. <https://doi.org/10.4148/2378-5977.2148>

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Abstract

In a 3-year study, crossbred steers averaging 585 lb were allotted to groups given either a control or zinc methionine-supplemented mineral mixture while grazing burned native pastures in early summer. The steers were monitored for weight gain and incidence of footrot. The addition of 100 lb Zinpro 100® (50% zinc methionine) per ton of free-choice mineral mixture improved ($P < .06$) steer daily gain .08 lb. and reduced the incidence of footrot 55% (5.38 vs. 2.45%; $P < .06$). The gain benefit could not be attributed entirely to reduced footrot, but appeared to also have a nutritional basis.

Keywords

Cattlemen's Day, 1993; Kansas Agricultural Experiment Station contribution; no. 93-318-S; Report of progress (Kansas State University. Agricultural Experiment Station and Cooperative Extension Service); 678; Beef; Zinc methionine; Zinpro; Footrot; Native grass; Stocker cattle

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EFFECT OF ZINPRO 100® IN A MINERAL MIXTURE ON GAIN AND INCIDENCE OF FOOTROT IN STEERS GRAZING NATIVE GRASS PASTURES¹

F. K. Brazle²

Summary

In a 3-year study, crossbred steers averaging 585 lb were allotted to groups given either a control or zinc methionine-supplemented mineral mixture while grazing burned native pastures in early summer. The steers were monitored for weight gain and incidence of footrot. The addition of 100 lb Zinpro 100® (50% zinc methionine) per ton of free-choice mineral mixture improved ($P < .06$) steer daily gain .08 lb. and reduced the incidence of footrot 55% (5.38 vs. 2.45%; $P < .06$). The gain benefit could not be attributed entirely to reduced footrot, but appeared to also have a nutritional basis.

(Key Words: Zinc Methionine, Zinpro, Footrot, Native Grass, Stocker Cattle.)

Introduction

The incidence of footrot in cattle grazing native grass can range from 0 to 10%. Because these cattle are typically grazed in large pastures, treatment with injectable antibiotics also entails catching and restraining affected animals. Therefore, the best treatment is a preventative program. Zinpro 100 (zinc methionine) has been fed to feedlot cattle to reduce footrot and enhance performance. Therefore, our objective was to determine the influences of Zinpro 100® in a free-choice

mineral mixture on weight gain and incidence of footrot in grazing cattle.

Experimental Procedures

In three consecutive years, two hundred and forty-one crossbred steers averaging 585 lb were weighed and allotted randomly in late April to eight pastures and offered either a Zinpro 100 or control mineral supplement. The two mineral treatments were rotated by year through the native grass pastures. After grazing for an average of 93 days, steers were gathered from the pastures in early morning and commingled in pens before final weights were obtained. The mineral mixtures were fed in open wooden boxes, and intake was recorded weekly. Compositions of the free-choice mineral mixtures are shown in Table 1. The steers were observed once each week for visible signs of footrot, typically lameness. Twenty-seven steers were removed from the study over the 3-year period for lump jaw, respiratory problems, death, or in response to hail that reduced the available forage in one pasture (12 animals).

Results and Discussion

Adding zinc methionine to the mineral supplement of steers grazing native grass improved ($P < .06$) daily gain .08 lb as shown in Table 2. The incidence of footrot was reduced ($P < .06$) from 5.38% in control steers

¹Sincere appreciation is expressed to Zinpro Corp., Edina, MN for supplying zinc methionine (Zinpro-100®) and partial funding of this study. Sincere thanks also for use of the Bressner Field Research Pastures and to Dale Lanham, Woodson Country Extension Agricultural Agent, for assistance in data collection.

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to 2.45% in Zinpro-supplemented steers.

The average daily consumption of Zinpro 100 was 5.4 grams, or 2.7 grams of zinc methionine. This provided 540 mg of zinc in addition to 23 mg of zinc from the standard trace mineral pack, for a total of 563 mg/day of supplemental zinc. The control mineral mixture provided only 23 mg of zinc/day. Our best estimate of zinc provided by the grass is 226 mg/day, assuming 21 lb dry forage per day, 15.4 mg zinc/lb dry grass, and 70% zinc availability. Thus, total zinc consumption for the control steers averaged about 249 mg compared to about 789 mg for the Zinpro-supplemented cattle. The NRC zinc requirement for cattle is 30 ppm, or

286 mg/day. Therefore, zinc consumption by the control steers likely was 37 mg below NRC requirements, but steers offered the Zinpro mineral consumed almost 3 times the requirement.

Only a portion of the improvement in gain could be attributed to the lowered incidence of footrot. Cattle that had footrot gained 2.30 lb/day, whereas those not affected gained 2.76 lb/day. Multiplying that difference in gain by the percentages of steers that had footrot in the two mineral treatments only accounted for .013 lb/day difference in gain. Therefore, the benefits of supplemental zinc methionine for steers grazing native grass pastures appear to be nutritional as well as therapeutic.

Table 1. Composition of Control and Zinpro 100 Added Mineral Supplements

Ingredient	Control	Zinpro 100
	-----lb per ton-----	
Dried molasses	300	300
White salt	600	600
Trace mineral pack ^a	5	5
Monocalcium phosphate	500	500
Mineral oil	20	20
Bovatec [®] premix (68 grams/lb) ^b	21	21
Vitamin A premix (30,000 IU/g)	2	2
Limestone	300	250
Magnesium mica ^c	252	202
Zinpro 100 [®] (10% zinc from zinc methionine)	---	100

^aTrace mineral pack contained 35,000 ppm manganese, 7,500 ppm copper, 1500 ppm cobalt, 85,000 ppm zinc, and 45,000 ppm iron.

^bHoffmann-LaRoche, Inc., Nutley, NJ.

^cMicro-Lite Corp., Chanute, KS.

Table 2. Effect of Zinpro 100 in a Mineral Mixture on Gain and Incidence of Footrot of Steers Grazing Native Grass

Item	Zinpro 100	Control
No. steers	342	354
Starting wt, lb	583	587
Daily gain, lb	2.79 ^a	2.71 ^b
Incidence of footrot, %	2.45 ^b	
5.38 ^a		
Daily mineral intake, lb	.24	.22
Daily Zinpro 100 intake, g	5.40	-----

^{ab}Means in the same row with unlike superscripts are different (P < .06).