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The effect of copper sulfate and zinc oxide in a drench on the gain and health of newly arrived calves

Abstract

One hundred and fifty-four, newly arrived, bull calves averaging 295 lb were either drenched with a copper-zinc (Cu-Zn) solution or water at arrival. The Cu-Zn drench did not affect gains during a 56-day trial. Additionally, no differences occurred in morbidity or the number of antibiotic treatments required per animal.

Keywords

Cattlemen's Day, 1994; Kansas Agricultural Experiment Station contribution; no. 94-373-S; Report of progress (Kansas State University. Agricultural Experiment Station and Cooperative Extension Service); 704; Beef; Copper; Zinc; Trace minerals

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THE EFFECT OF COPPER SULFATE AND ZINC OXIDE IN A DRENCH ON THE GAIN AND HEALTH OF NEWLY ARRIVED CALVES

F. K. Brazle¹ and G. Stokka²

Summary

One hundred and fifty-four, newly arrived, bull calves averaging 295 lb were either drenched with a copper-zinc (Cu-Zn) solution or water at arrival. The Cu-Zn drench did not affect gains during a 56-day trial. Additionally, no differences occurred in morbidity or the number of antibiotic treatments required per animal.

(Key Words: Copper, Zinc, Trace Minerals.)

Introduction

Copper and zinc are important for certain enzymes in the immune system. Also, there have been reports that highly stressed calves may have higher requirements than healthy calves for copper and zinc. Therefore, our objective was to determine if a Cu-Zn drench at arrival would improve the health and gain of highly stressed calves.

Experimental Procedures

One hundred and fifty-four bull calves shipped from Georgia were allotted randomly to receive 40 ml of either a water (control) or a Cu-Zn drench treatment. The Cu-Zn treatment contained 250 mg Cu from copper sulfate, 650 mg Zn from zinc oxide, and 400 IU of Vitamin E. Additionally, they were dewormed with Inomec®, implanted with Ralgro®, and mass medicated with Micotil®.

The calves were weighed on days 1, 14, 28, and 56. The calves were vaccinated at arrival with modified-live IBR+BVD+PI₃, 7-way blackleg, and Presponse®. On day 28, they were surgically castrated. The calves were fed an average of 6.25 lbs per day of a 16% crude protein milled ration plus prairie hay to appetite (average consumption of 3.7 lb/day).

Results and Discussion

Table 1. Effect of Copper Sulfate and Zinc Oxide on Health and Gain of Newly Arrived Calves

Item	Control	Cu-Zn
No. calves	77	77
Starting wt, lb	295	295
ADG, lb		
1 to 14 d	1.36	1.39
15 to 28 d	1.35	1.11
1 to 28 d	1.36	1.25
29 to 56 d	1.90	2.00
1 to 56	1.61	1.64
Health		
Morbidity, %, 1 to 28 d	29.8	32.4
Morbidity, %, 29 to 56 d	27.7	18.5
Treatments/animal, 1 to 28 d	9.0	7.1
Treatments/animal, 29 to 56 d	7.2	5.5

The Cu-Zn drench at arrival did not affect gains through 56 days (Table 1), although the Cu-Zn drench group tended to gain slower during the first 28 days. No difference occurred in morbidity or number of treatments required per animal.

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