

Kansas Agricultural Experiment Station Research Reports

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

Article 775

1993

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Recommended Citation

Brazle, F.K. (1993) "Effect of mass medication on the health and gain of calves in grass paddocks or feedlot pens," *Kansas Agricultural Experiment Station Research Reports*: Vol. 0: Iss. 1. <https://doi.org/10.4148/2378-5977.2178>

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Abstract

Four hundred and ninety mixed-breed, long-hauled, bull calves averaging 275 lb were used in a winter study to determine whether mass medicating calves in grass paddocks or feedlot pens would reduce health problems and improve performance. All calves were started in feedlot pens for 3 days, then half of the calves were turned out into grass paddocks. Mass medication with injectable oxytetracycline did not improve health or gain of the calves. Calves housed in grass paddocks during the recurring period had less sickness ($P < .01$), fewer ($P < .05$) sick days per animal purchased, and lower ($P < .05$) drug treatment costs than their counterparts housed in feedlot pens.

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; Feedlot pens; Grass paddocks; Performance

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EFFECT OF MASS MEDICATION ON THE HEALTH AND GAIN OF CALVES IN GRASS PADDOCKS OR FEEDLOT PENS¹

F. K. Brazle²

Summary

Four hundred and ninety mixed-breed, long-hauled, bull calves averaging 275 lb were used in a winter study to determine whether mass medicating calves in grass paddocks or feedlot pens would reduce health problems and improve performance. All calves were started in feedlot pens for 3 days, then half of the calves were turned out into grass paddocks. Mass medication with injectable oxytetracycline did not improve health or gain of the calves. Calves housed in grass paddocks during the recurring period had less sickness ($P < .01$), fewer ($P < .05$) sick days per animal purchased, and lower ($P < .05$) drug treatment costs than their counterparts housed in feedlot pens.

Introduction

Factors affecting the health of newly arrived calves are important to all producers. The traditional method of receiving newly weaned calves had been to place them in small pens for at least 2 to 3 weeks, with the rationale that, if the calves are closer to feed and water, they should start eating sooner. However, stressful environmental conditions such as mud or dust can cause problems in small pens. Also, the higher population density encourages the spread of disease organisms. Therefore, the objective of this study was to compare housing newly received calves in grass paddocks vs. dirt pens, with or without mass medication.

Experimental Procedures

Four hundred and ninety mixed-breed, bull calves averaging 275 lb were purchased in the winter over a 5-day period from Tennessee and Mississippi and shipped to east central Kansas. The calves were allotted to four housing/medication treatments with two replications: 1) no medication in grass paddocks, 2) mass medication in grass paddocks, 3) no medication in feedlot pens, and 4) mass medication in feedlot pens. All calves were held in feedlot pens for the first 3 days, before assigned calves were turned onto grass paddocks. The 3-day period was necessary for the calves to settle down and become accustomed to feed bunks.

At arrival the calves were vaccinated against IBR, BVD, PI₃, and 7 clostridial organisms; treated for internal and external parasites with Ivomec®; implanted with Synovex-S®; and castrated. All calves, regardless of assigned treatment, were injected with long-acting penicillin (6 ml/100 lb body weight IM) at arrival. The experimental mass medication consisted of subcutaneously injecting the calves 12 times on days 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 24, and 27 with 10 ml/100 lb body weight of oxytetracycline hydrochloride (100 mg/ml).

Calves were offered a forage diet of one-half alfalfa and one-half prairie hay fed to appetite and were supplemented daily with 2.5 lb whole corn and .5 lb of a 40% protein pellet

¹Sincere appreciation is expressed to Richard Porter, Reading, KS for providing cattle and facilities.

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at the start of the 54-day receiving period. In 1 to 2 weeks, corn silage gradually replaced the prairie hay. All calves were fed the same amount of receiving ration per head daily. The 9-acre grass paddocks were long and narrow and had fence-line feedbunks at the front. The feedlot dirt pens contained 18,000 sq ft and also had fence-line bunks. About 60 head were allotted to each pasture or pen. During the 54-day study, cattle were treated when they appeared sick. The local veterinarian determined the choice of antibiotic therapy. The cost of mass medication was not included in the comparison of treatment drug costs.

Results and Discussion

Mass medication with injectable oxytetracycline hydrochloride at 2- to 3-day intervals did not improve ($P > .10$) the health or gain of newly received, highly stressed calves (Table 1). Indeed, mass medication reduced daily gain of calves in feedlot pens. The repeated stress of handling and injecting medicated calves may have influenced their performance compared to ungathered controls. Calves housed in grass paddocks had a lower incidence of sickness ($P < .01$) and fewer sick days per animal purchased ($P < .05$), resulting in fewer ($P < .05$) dollars spent on drugs. The reason for less sickness may be twofold. The calves in grass paddocks had more space to spread out and rest, which may have slowed the spread of respiratory disease. This may have allowed

calves time to develop some protection due to arrival vaccinations. However, perhaps more importantly, the calves in grass paddocks had a drier place to lie down with good wind protection during the wet winter weather.

Because the sick calves from both the drylot pens and grass paddocks were placed in the same sick pen, the observed reduction in sick days of calves from paddocks may have been attributable to their large size and shape. Calves that were reluctant to come to the feedbunk could be identified more easily, so sickness may have been detected earlier than in feedlot pens. The size of the grass paddocks also allowed sick cattle to move off by themselves, another early sign of illness. Because hay intake was not recorded and grass intake could not be measured, the effect of housing and mass medication on total feed intake was not determined.

Although responses in this study were measured using light-weight calves, it is likely that using grass paddocks also would reduce sickness in larger calves. However, there appear to be two keys for successful use of grass paddocks for receiving cattle. First, newly weaned calves should spend 2 to 4 days in tight pens to allow them to settle down and to reduce fence walking. Secondly, the design of the grass paddocks should be such that sick calves can be readily identified and easily sorted off for treatment with minimal stress.

Table 1. Effect of Mass Medication on the Health and Gain of Stressed Calves Housed in either Grass Paddocks or Feedlot Pens

Item	<u>Grass Paddocks</u>		<u>Feedlot Pens</u>	
	Control	Mass Medicated	Control	Mass Medicated
Daily gain, lb (54 day period)	1.80 ^a	1.74 ^a	1.74 ^a	1.50 ^b
Health criteria:				
Morbidity, %	35.30 ^d	27.20 ^d	50.30 ^c	51.80 ^c
Mortality, %	4.20	1.40	2.00	3.40
Medication cost, \$/head	5.91 ^b	5.01 ^b	12.05 ^a	9.80 ^a
Sick days/animal purchased	2.18 ^b	1.83 ^b	4.45 ^a	3.51 ^a

^{ab}Means in the same row with unlike superscripts are different ($P < .05$).

^{cd}Means in the same row with unlike superscripts are different ($P < .01$).