Time of Onset, Location, and Duration of Lameness in Beef Cattle in a Commercial Feedyard

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Introduction

Bovine lameness presents itself in a variety of forms. A number of predisposing factors have been reported, such as increased amounts of wet feces and mud from high rainfall; limb trauma from rocks, sticks, or handling facilities; inappropriate animal handling; or improper facility design. Trauma causes lameness directly and often provides an avenue for bacterial agents to enter and colonize a wound. Performance of lame cattle is diminished due to impaired ambulation, resulting in decreased feed intake and decreased body weight. The objective of this study was to determine the timing of the onset of lameness in feeder cattle and to determine the association between lameness and feedlot performance.

Experimental Procedures

This study was conducted at a commercial feedyard with a one-time capacity of 90,000 animals. The majority of cattle arriving during the enrollment and observation period were auction market-derived and weighed 400 to 700 lb. During the months of July and August 2009, a total of 3,243 feedlot steers were observed for lameness prior to processing, immediately following processing, and for 3 weeks post-processing. Pre-processing observations were conducted immediately after calves were placed in a holding pen upon feedlot arrival. All cattle were given a 7-way clostridial vaccine, MLV IBR-BVD Type I & II-PI3-BRSV, and a metaphylactic antimicrobial treatment. Cattle then were placed into feedlot pens (n = 14), where they remained for the duration of the study. Animals were diagnosed as lame based on altered gait; the affected limb also was recorded. A single observer conducted all lameness evaluations.

Cattle were enrolled in our study continuously over 40 days. Because observations were recorded weekly, cattle enrolled late in the study were observed only twice for lameness, whereas cattle enrolled early in the study were observed 4 times for lameness.

Performance data and medical history were collected until approximately 100 days on feed. Treatment records were analyzed to determine the percentage of lameness attributable to foot rot, buller, musculoskeletal, and arthritis diagnoses. Cattle were diagnosed and treated according to established feedlot protocols. Statistical analysis was performed comparing the proportion of lame and non-lame cattle using R version 2.10.1. Cattle history factors (i.e., age, health risk, region of origin, state of origin, and month placed on feed) were included in the analysis as possible contributors to lameness.

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Results and Discussion

The proportion of cattle observed as lame pre-processing was 1.6%, which was less ($P = 0.02$) than the proportion of cattle observed as lame after processing (2.5%; Figure 1). Post-processing lameness peaked immediately (48 animals of 3,243 total cattle, week 0; Figure 2), although most lameness cases were resolved by the end of 3 weeks on feed (36/48 cases; 75.0%). In addition, 44% (21/48 cases) and 66% (32/48 cases) were resolved after 1 and 2 weeks on feed, respectively.

Cattle that were lame during weeks 0 and 1 had similar ($P > 0.15$) average daily gain compared with sound cattle (3.25 versus 3.60 lb/day; Figure 3). Cattle observed as lame at any time tended to have poorer ($P = 0.11$) average daily gain than cattle that were not lame (3.41 versus 3.60 lb/day; Figure 4). Age, risk, region of origin, state of origin, and month placed on feed were not useful for predicting the prevalence of lameness ($P > 0.05$).

Of the 3,243 head observed, 0.15% (5/3,243) had foot rot, 1.94% (63/3,243) were bullers, 1.39% (45/3,243) had musculoskeletal injuries, and 0.22% (7/3,243) had arthritis (Table 1). Four of five animals diagnosed with foot rot were recorded as lame (Table 2). No bullers were recorded as lame. Forty-five musculoskeletal injuries were diagnosed, and 7 were observed as lame. Seven animals were treated for arthritis, but only 2 were observed as lame. A total of 160 calves were diagnosed as chronics and marketed early, with 8 of the 160 chronics (5%) recorded as lame.

Implications

The majority of lameness appeared to be associated with handling events. Further study is warranted to determine if improving facilities or handling techniques can reduce the incidence of lameness.

Table 1. Percentage of animals treated according to diagnosis

Treatment	% diagnosed
Foot rot	0.15 (5/3243)
Buller	1.94 (63/3243)
Musculoskeletal	1.39 (45/3243)
Arthritis	0.22 (7/3243)

Table 2. Number of cattle observed lame by treatment

Treatment	Number observed as lame
Foot rot	4/5
Buller	0/63
Musculoskeletal	7/45
Arthritis	2/7

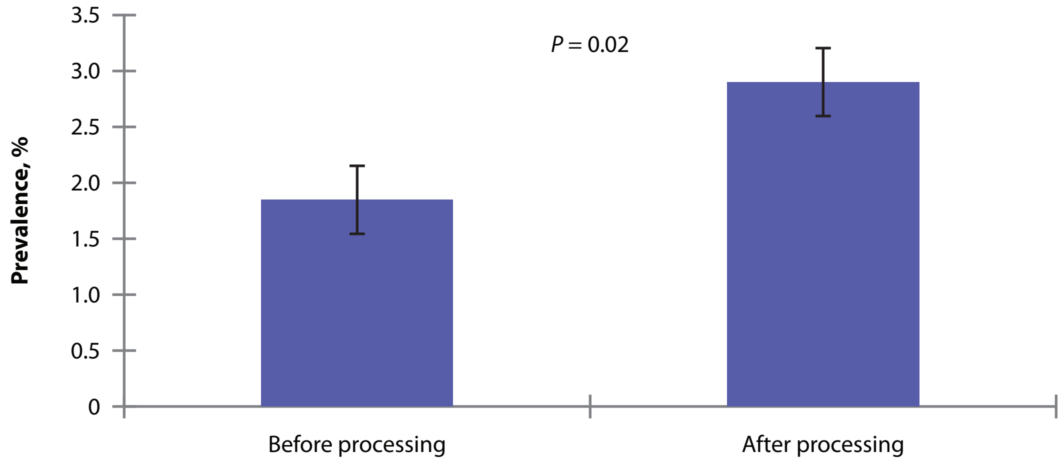

Figure 1. Lameness prevalence observed before and after processing in feeder cattle.

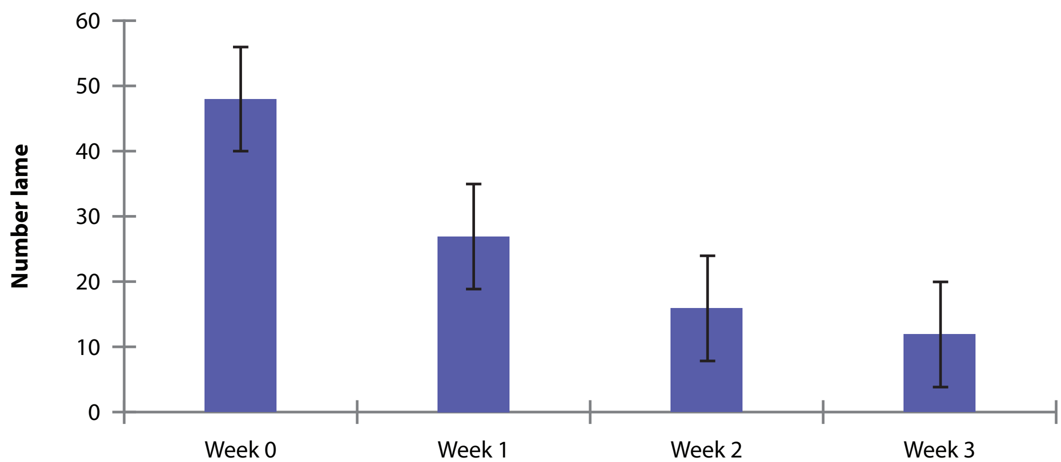

Figure 2. Prevalence of lameness cases post-processing through week 3, excluding new cases of lameness during those weeks.

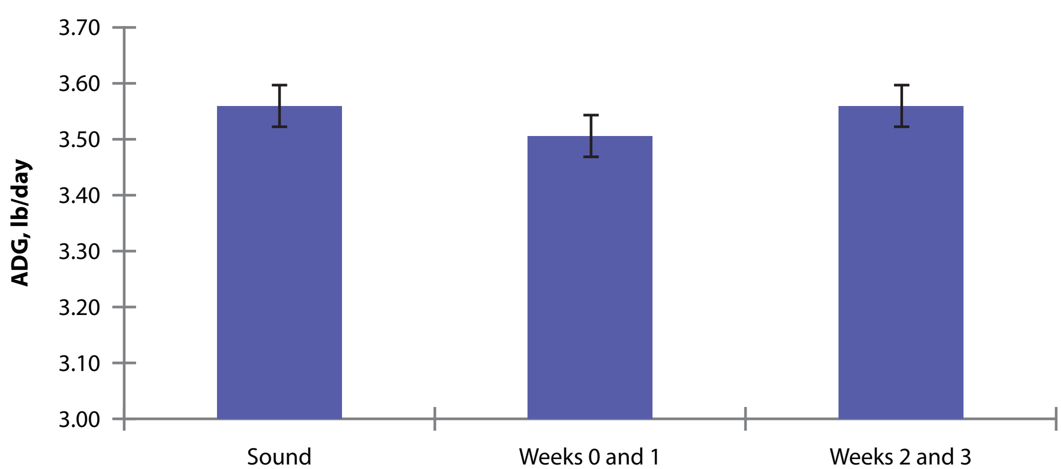

Figure 3. Average daily gain (ADG) in cattle never lame, lame in weeks 0 and 1, and lame in weeks 2 and 3.

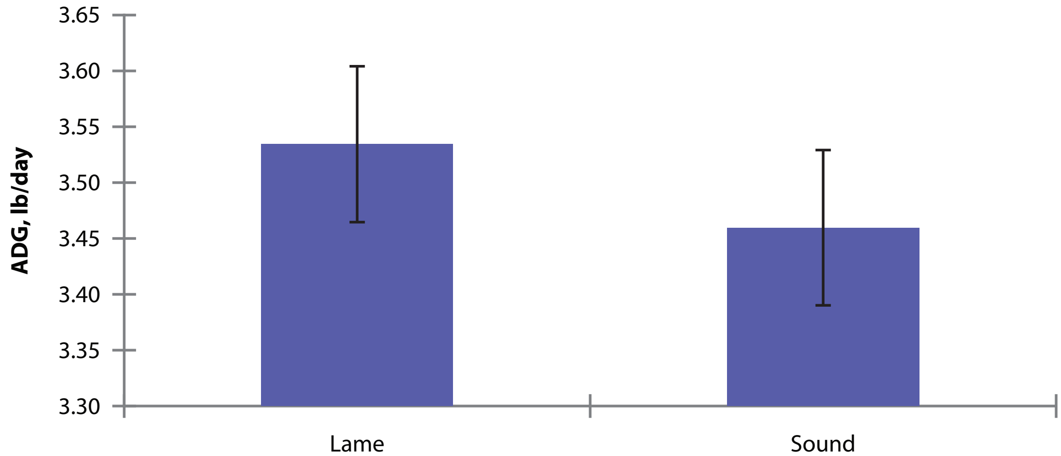

Figure 4. Average daily gain (ADG) in lame and non-lame animals.