Footbath dimensions and management on California dairies

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Introduction

Lameness is a common disease on dairy herds with implications on animal welfare and herd production. Digital dermatitis is one of most common infectious causes of lameness. Footbaths (FB) are commonly used on California dairies to prevent infectious foot diseases. However, few studies have evaluated FB design, dimensions, and hoof bath solution management. Based on current industry recommendations, the FB volume should be 1 liter per cow. The objective of this study was to describe footbath dimensions and management practices on California dairies.

Materials and Methods

Twenty-one dairies located in the San Joaquin Valley of California ranging in size from 800 to 10,000 cows were enrolled in the study. The length and width of footbaths was measured using a measuring tape. To calculate FB depth, measurements were taken at 6 different locations and averaged. Information on the type of solution used and the frequency fresh solutions were added was obtained through interviews with hoof trimmers and dairy managers. Data collected was entered into spreadsheets for data analysis (Microsoft Office Excel; 2010).

Results

Nineteen dairies had 1 to 4 functional FB (total 39). One dairy had a FB structure but did not use it and another dairy lacked a FB. One dairy was fitted with a jet FB that sprayed solution to front and rear feet. Four dairies had pre-baths separated by less than 12 inches (30 cm) from the FB. All FB were located at the milking parlor exit. On 1 dairy, dry cows were forced to walk through the FB once a week. No information was obtained on FB frequency of use from 1 dairy. Foot-baths were used 7 (n=2), 5 (n=6), 4 (n=4), 3 (n=5) or 2 (n=1) days a week. Cows walked through the FB at 1 (n=12), 2 (n=6) or 3 (n=1) milkings per day. The maximum FB length was 1.5 to < 2 m (18%), 2 to < 2.5 m (38%), 2.5 to < 3 m (10%). The width of FB was < 1m (39%), 1 to < 2 m (20%) and ≥ 2 m (41%). The depth of FB ranged from 5.4 to 15 cm (average depth was 10.0 cm). The FB volume ranged from 109 to 1,095 liters (average: 399 liters). Dairies used $CuSO_4$ (n=3), $ZnSO_4$ (n=2), formaldehyde (n=3), $CuSO_4$ and formaldehyde (n=9), $CuSO_4$ and chlorine (n=1) or $CuSO_4$ and glutaraldehyde (n=1). The number of cows walking through the FB prior to adding fresh solution ranged from 185 to 2000 cows (average: 921 cows). Only 6 FB (18%) used fresh solution to provide at least 1 liter per cow and 36% had less than 0.5 L.

Significance

Across dairies there was a wide variation on design and management of FB. On most dairies the number of cows walking through the FB prior to adding a fresh solution exceeded industry recommendations. Further research is needed to establish the implications of various management practices and FB designs on hoof health.