Objective – Year one: 2011

• How can veterinarians and dairy producers quickly and accurately estimate the prevalence of lameness in a large dairy herd?

Materials & Methods

Five dairies, 3 in Western Washington, 1 in Eastern Washington, and 1 in Western Oregon, were visited in the summer of 2011.

• All lactating cows were locomotion scored as they exited the parlor (n=4,431) or in their pen (n=160) using a 5 point scale (Table 1).

• Cows with a locomotion score ≥3 were considered lame.

• All cows caught in headlock at regularly scheduled times for management (breeding, pregnancy diagnosis, sorting) were observed as they stood in the lock-up.

Table 1. Locomotion Scoring System (Based on Sprecher, 1997).

<table>
<thead>
<tr>
<th>Score</th>
<th>Gait Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cow stands and walks with a level-back posture. Gait is normal.</td>
</tr>
<tr>
<td>2</td>
<td>Cow stands with level-back posture but develops an arched-back posture while walking. Her gait remains normal.</td>
</tr>
<tr>
<td>3</td>
<td>An arched-back posture is evident while standing and walking. Gait is affected and described as short-striding one or limbs.</td>
</tr>
<tr>
<td>4</td>
<td>An arched-back posture is always evident and gait is best described as one deliberate step at a time. The cow favors one or more limbs but is able to walk.</td>
</tr>
<tr>
<td>5</td>
<td>The cow can not stand or bear weight on one or more of her limbs/hind feet.</td>
</tr>
</tbody>
</table>

Results

• 3+ lactation cows were 6.2 times more likely to be lame than first lactation heifers (P=0.001).

• Holstein cows were 4.6 times more likely to be lame than Jerseys (P=0.001).

• Cows exiting the milking parlor in the last 40% of the pen were 1.5-1.7 times more likely to be lame than cows in the first 80% of the pen (P<0.001).

Table 2: Comparison of true lameness prevalence to prevalence estimated from two different sampling methods: all cows in high production, low production, and hospital pens (a) and a sample of cows exiting the parlor in the middle of their time in the pen (b).  

Introduction

Lameness:

• Reduces milk production (Juarez, 2003; Hernandez 2005)

• Requires reproductive performance (Sprecher, 1997; Hernandez, 2001)

• Increases culling (Booth, 2004; Sprecher, 1997).

• Indicates limb pain and therefore has a negative impact on animal welfare (O’Callaghan, 2003, Whay, 1997).

How much lameness is too much?

• The Dairy Farmers Assuring Responsible Management (F.A.R.M.) program includes an animal welfare assessment: requires that <10% of cows have a locomotion score ≥3 on the 0 to 5 point scale (National Milk Producers Federation 2010).

• Temple Grandin recently stated that less than 5% of dairy cows should be lame (Dairy Herd Network).

• Previous studies in the US estimate lameness prevalence near 20% (Cook, 2003, Espejo, 2006).

Monitoring prevalence and detecting lameness in individual cows is the first step to reducing lameness. If monitoring is to be more widely adopted, an efficient, validated strategy for assessing lameness that is compatible with current dairy management is necessary.

The goal of this project was to test three methods of sampling cows to estimate herd prevalence and compare these methods to the true herd prevalence obtained by locomotion scoring all cows. Additionally, data was gathered to evaluate the detection of lameness in individual cows using observation of back and hind leg posture while cows stand in lock-ups.

Discussion

• The sampling strategy based on the National F.A.R.M. program was most effective at accurately estimating herd lameness prevalence. Therefore, this strategy could be used to determine herd level lameness prevalence for a particular farm.

• Evaluation of current lameness prevalence to compare with the dairy producer’s current goals.

• Monitoring changes in herd level prevalence over time.

• The lock-up postural observations were not sensitive or specific enough to predict locomotion score ≥3 in individual cows.

• However, a numerically greater proportion of cows with some of these postural abnormalities, especially arched back, were lame. Therefore, it may be useful as a screening method for managers and employees to use to identify cows in need of treatment.

• Future research is needed to determine the influencing factors, significance, and relation to lameness of these postural changes.

Acknowledgements

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References


Espejo, M., 2005. Locomotion scoring a calculated number of cows in the middle of the parlor exit order estimated prevalence within 2 percentage points of true prevalence on all farms. However, prevalence varied by pen (data not shown) so using this strategy still requires locomotion scoring a sample of cows from all pens.