Farm managers underestimate lameness prevalence in Czech dairy herds

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Abstract

Lameness is one of the most serious health and welfare problems faced by dairy cattle. The aim of this study was to assess how aware Czech farm managers were of this problem. The project was carried out on 14 Czech dairy farms. The proportion of lame cows observed (ie prevalence of moderate and severe lameness) on a farm varied between 9 and 64% while the farm managers' estimation ranged between 0 and 20%, showing that lameness prevalence was under-perceived by the Czech farm managers. There were no correlations between the farm managers' estimations and the observed total or severe lameness on each farm. Also, the observed prevalence of lameness did not differ between farms with managers who considered lameness to be a major problem in their herds and managers who did not, although their estimations did differ. The large variation in observed lameness prevalence between farms indicates that there is a large potential for reduction, which must start with increasing the farm managers' awareness of dairy cow lameness.

Keywords: animal welfare, awareness, dairy cows, lameness, on-farm assessment, prevalence

Introduction

Lameness is one of the most serious health problems faced by dairy cows. Notwithstanding the negative impact on cow welfare due to pain (Whay *et al* 1998), lower body condition score (Ozsvari *et al* 2007), shorter grazing time (Walker 2008b) and restlessness while being milked (Hassall *et al* 1993), lameness also causes economic losses for farmers directly, through the need for increased veterinary treatment (Zeddies *et al* 1997; Ozsvari *et al* 2007), reduced milk production (eg Warnick *et al* 2001; Green *et al* 2002; Juarez *et al* 2003), reduced oestrus intensity (Walker 2008a,b), longer calving interval (eg Collick *et al* 1989; Kilic *et al* 2007) and premature culling (eg Booth *et al* 2004; Sogstad 2006; Bicalho 2007).

Despite the fact that lameness is a serious ethical and economic problem, there are several reports that farmers under-perceive the lameness prevalence on their farms (Whay *et al* 2003). In the Czech Republic, the situation is specific, in that farms are owned mostly by corporations or co-operatives and the farm managers are not owners of the farm. Moreover, approximately 40% of farms have more than 200 lactating cows.

The aim of this study was to assess how farm managers' attention to lameness relates to the actual lameness prevalence on their individual farms.

Materials and methods

Data collection

Cow lameness was recorded on 14 Czech dairy farms in 2007 within the European Welfare Quality® project on welfare assessment. Seventeen farms, reflecting the frequency distribution of dairy farm sizes throughout the Czech Republic, were invited to participate in this project, three farms declined. Herd size ranged between 100 and 640 (mean 280 [± 177], median 250) and consisted of predominantly Holstein Friesian cows. All farms had a loose-housing system. Cows on all farms were regularly claw-trimmed at least once a year (three farms once a year, eight farms twice a year, two farms three times per year and one farm manager did not answer this question).

Each farm was visited once. Lameness was evaluated visually by a trained observer while the cows were encouraged to walk in the barn. Cows to be examined were randomly selected in the barn, prior to them walking, and the sample size was between 40 and 80 cows per herd, depending on the number of cows in a herd. Sample size was selected according to the methodology of Welfare Quality® (confidence interval 90%, absolute precision 10%: Cochran 1977; Welfare Quality® 2009). There were three levels on the scale: 0 (not lame); 1 (moderately lame); or 2 (severely lame) (Welfare Quality® 2009; see Table 1).

Table 1   Descriptions of the levels of lameness.

Score	Level name	Description
0	Not lame	Timing of steps and weight-bearing equal on all four feet
1	Moderately lame	Imperfect temporal rhythm in stride creating a limp irregular foot fall, uneven temporal rhythm between hoof-beats, weight not borne for equal time on each of the four feet
2	Severely lame	Strong reluctance to bear weight on one limb, or more than one limb affected

Figure 1
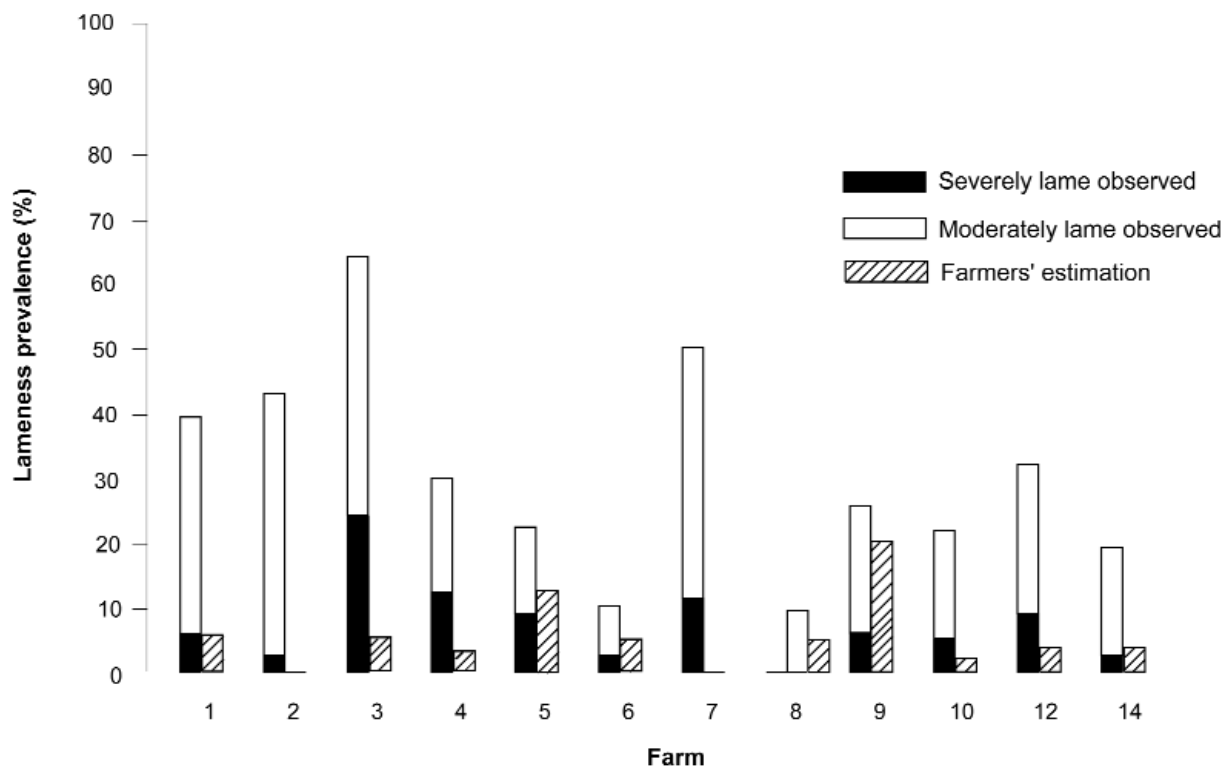
Comparison of observed lameness and farmers' estimation (%).

During the farm visit, farm managers were interviewed about lameness in their herd and the questions included the following: i) Do you consider you have a problem with lameness in your dairy cows at present — major problem; minor problem; no problem?; ii) How many lame cows do you have in your herd today?

Statistical analysis

Some managers did not answer all the questions and therefore the number of farms evaluated varies between 12 and 14 for individual questions. Two-tailed, non-parametric statistical tests were used for hypothesis testing.

Results

On average, we evaluated 53 cows per farm, 807 cows in total. The observed prevalence of lameness (proportion of cows scored 1 and 2) varied between 9 and 64% (mean 31 [± 15]%, n = 14) on individual farms and the prevalence of severe lameness (cows scored 2 only) ranged between 0 and 24% (mean 7 [± 6]%, n = 14) (Figure 1). The farm managers' estimations of lameness ranged between 0 and 20% (mean 6 [± 6]%, n = 12) and were lower than observed lameness (Figure 1; Wilcoxon paired test, $S = 39$, $P = 0.0014$, n = 12). Farm managers' average estimations were rather in the range of observed severe lameness and

Figure 2
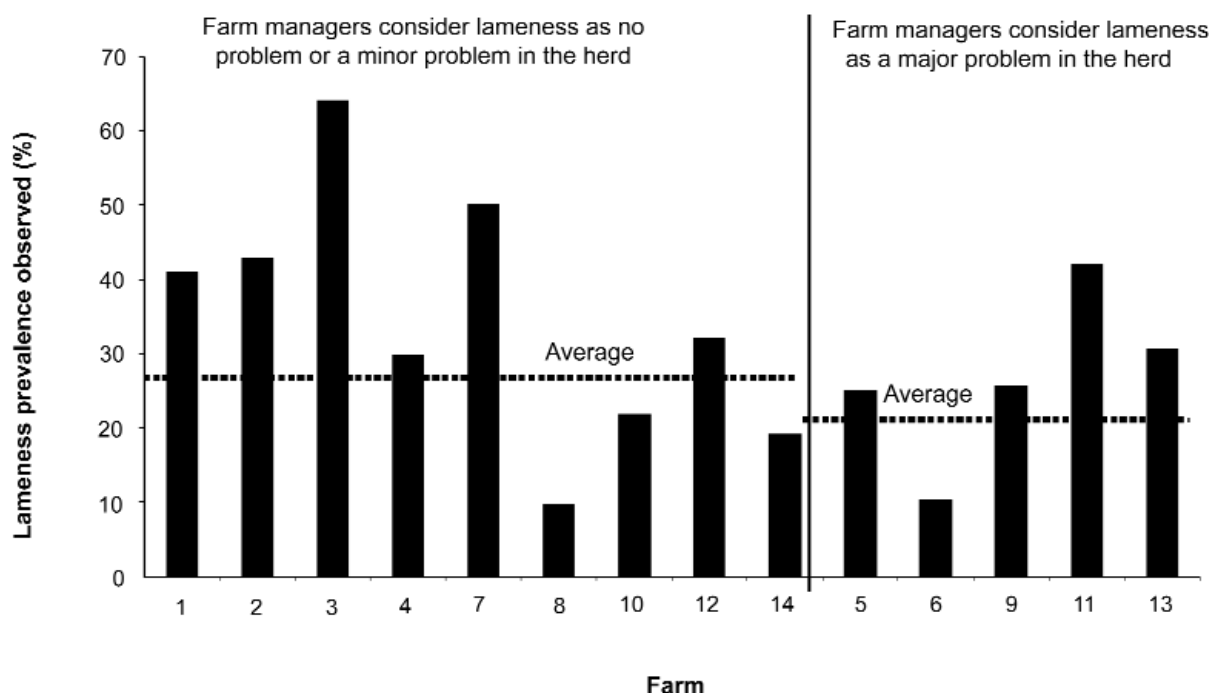
Comparison of observed lameness (moderate and severe) with the farm managers' description of the scale of the herd lameness problem (%, average is the average lameness prevalence in the category).

did not differ from it significantly (Figure 1; Wilcoxon paired test, $S = 10$, $P > 0.05$, $n = 12$). However, there was no correlation between farm managers' lameness estimation and either the actual total — cows scored 1 and 2 (Spearman correlation, $r_s = -0.21$, $P > 0.05$, $n = 12$) or severe — cows scored 2 only (Spearman correlation, $r_s = 0.09$, $P > 0.05$, $n = 12$) lameness prevalence. Furthermore, the observed lameness on farms for which farm managers stated that lameness was no problem or a minor problem in their herds, did not differ significantly ($34 [\pm 17]\%$, $n = 9$) from farms for which farm managers saw lameness as a major problem in their herds ($26 [\pm 12]\%$, $n = 5$) (Figure 2; Mann-Whitney U test, $Z = -0.54$, $P > 0.05$, $n = 14$). However, the former farm managers gave a lower estimation of lameness prevalence on their farms (3 vs 8%) (Mann-Whitney U test, $Z = 1.9$, $P = 0.056$, $n = 12$).

Discussion

The prevalence of lameness on Czech dairy farms found both in this study (median 30.5%) and in a previous Czech study (median 22%; Dembele *et al* 2006) is comparable to that seen in, eg the UK (over 20%; Whay *et al* 2003) or Austria (34%; Dippel *et al* 2009). An under-perception of lameness prevalence was also observed by Whay *et al* (2002) in the UK and Wells *et al* (1993) in the US, who reported that the prevalence of lameness recorded by observers was 2.5 to 5 times higher than the level estimated by the herd managers. Conversely, Mills and Ward (1994),

in their study of 15 dairy farms in the UK, found that six of 15 farmers correctly estimated the lameness level in their herds, while the remainder underestimated the level. In our study, all 12 farm managers underestimated the level, with the average estimate approximately five times lower than the observed state.

Farm managers who stated that the prevalence of the lameness was a small problem on their farms did not, surprisingly, have lower observed lameness, however their estimation of lameness prevalence was lower. This indicates a different perception of lameness among farm managers and the huge need for training for farmers. It has been already shown (March *et al* 2006) that training of farmers for early lameness detection can be very effective.

Animal welfare implications

The large variation in observed lameness prevalence between farms points to a large potential for improvement. The first step in this important task is to raise awareness of farmers and managers about the seriousness of cow lameness and draw their attention to specific problems on their own farms.

The available models that could help farm managers to improve decision-making on prevention and control of clinical lameness on farms (eg Ettema & Østergaard 2006; Leach 2009) can be applied.

Acknowledgements

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