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DIFFERENT MANAGEMENT METHODS ON PREVALENCE OF LAMENESS IN 25 HOLSTEIN-FRIESIAN HERDS IN HUNGARY

GUDAJ R*, BRYDL E**, LEHOCZKY J*** and KOMLÓSI I*

**University of Debrecen, Faculty of Agricultural and Food Sciences and Environmental Management, Hungary ; **Szent István University, Faculty of Veterinary Science, Budapest, Hungary; ***Leholand Kft, Szegvár, Hungary*

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Lameness in dairy cattle is the third most expensive outbreak after mastitis and reproductive disorders. 25 Holstein-Friesian herds in Hungary were observed for two years to estimate the impact of different trimming methods and managements for the controll of the incidence of lameness. Professional trimming was found to be more effective on farms with no nutritional disorders and where refurnishment works were carried out. The greatest decrease in the prevalence of lameness was observed on farms which provided professional trimming, effective footbathing, improved walking and resting surfaces and which treated severely lame cows between regular trimmings. The greatest increase in occurrence of lameness was reported on farms with on-farm trimmers and where building projects were carried out and nutritional disorders found.

Key words: claw disorder, dairy cattle, lameness, locomotion, trimming method

INTRODUCTION

Lameness is prevalent in modern dairy herds. It reduces feed intake, live weight, milk yield, and milking duration (Enting *et al*., 1997). Claw disorders in dairy cows cause pain and are the main cause of impaired mobility in an environment that requires that cows move around on concrete floors. Pressure exerted to the claw reaches relatively high values during locomotion on a flat, hard surface, thus resulting in horn damage.

Hassall *et al*. (1993) claimed that most claw lesions develop around the time of calving. Cows with painful claw lesions eat less, are more reluctant to move, and might consequently produce less milk than cows without claw lesions. Hultgren *et al*. (2004) concluded that high milk yielding cows are more prone to lameness and claw lesions. Hoverwer, Fjeldaas *et al*. (2006) found lower milk yield in Norwegian herds with a relatively low prevalence of claw lesions and this might be due to differences in diets among herds. Reductions in milk yield associated with claw and limb disorders are likely to be caused by reductions in feed intake or

increased energy consumption because of pain, which can also be present without visible lameness (Whay, 2002). Cows with low milk yield, lameness and claw lesions are more likely to be culled (Sogstad *et al*., 2006). Correct hoof trimming can avoid culling and give the cow a chance to stay in the herd, so far she is producing the expected amount of milk and has no serious locomotiory problems (Gröhn *et al*., 1995).

Hoof trimming remains the most widely used method available to producers to prevent claw disorders from evolving from the subclinical to the clinical stage. Studies (Manske *et al*., 2002; Somers *et al*., 2005) had shown that long intervals between hoof trimmings, or a lack of routine hoof trimming, is associated with increased lameness. Experimental studies demonstrated that short-term effects of good trimming improve the traction force between the hoof and the floor (Phillips *et al*., 2000), as well as weight bearing by the hoof (Sprecher *et al*., 1997). On the other hand, Van der Tol *et al*. (2004) and Fjeldaas *et al*. (2006) claim that routine hoof trimming is related to poorer hoove health. De Passillé and Rushen (2006) also mentioned about affected locomotion after trimming. This is understandable, because as far cows are walking on concrete floors, on sharp surfaces, with holes and sharp concrete edges there will be always an irritating feeling for cows even for some time after trimming. The best solutions for cows would be if they were provided with straw bedding on every concrete surface or if there were rubber mats e.g. on sharp corners when traffic causes hoof damage (Telezhenko *et al*., 2004). Claw trimming cannot be the only answer to claw health problems in cattle kept on concrete floors.

Improper trimming has been already recognised as a factor contributing to the occurrence of other locomotiory disorders (Shearer and van Amstel, 2001). Fjeldaas *et al*. (2006) are sceptic about some trimming techniques and skills of people who are performing those treatments. A claw that is badly trimmed becomes unstable on concrete thus creating pain and discomfort for the cow. One of the risks is over trimming which can contribute to bruising, lameness and increased risk of future claw overgrowth particularly on farms with sharp, eroded concrete paving. Farm Animal Welfare Council (1997) and EFSA (2011) suggest that hoof-trimming should be carried out with care by professionally trained and certified personnel and when performed by farm employers specific training should be given. Small differences in trimming can have a major impact on claw health and so keeping up-to-date with the latest views on best practice is recommended and probably highly cost-effective. Reinemann *et al*. (1999) reported that cows found trimming procedures painful or unpleasant which was proved by increased cortisol level. This again confirms how important for cows' wellbeing is well performed hoof trimming. The most internationally accepted approach to effective claw trimming in the Northern hemisphere is the Dutch 5 step functional trimming method and should be a part of claw trimming regime:

Step 1. Trimming toe 'length' to 7.5 cm from coronary band and toe sole (8.0 cm) leaving (5-7 mm step at toe) in the front;

Step 2. Trimming second claw to match trimmed claw - matched rather than measured;

Step 3. Dishing out the ulcer site to help prevent dirt sticking between the claws;

Step 4. Relieving weight off a painful claw – trimming down the heel horn or fix a block to the healthy claw, and

Step 5. Removing loose/under-run horn and hard ridges.

The general aim of the trimming technique is to increase the claw angle to induce a forward shift in weight bearing, particularly in claws with overgrown toes (Toussaint-Raven, 1985). This restores the balance of weight between claws of the foot and reduces the forces on the sole ulcer site. Proper trimming requires the right enclosure and herding the cows into it should not take more than a few seconds.

Before trimming 80% of the cows' weight is forced on the outer claw and 20% on the inner claw. The proper trimming technique aims to make proportion of 60/40. In the study of Van der Tol *et al*. (2004) the weight bearing contact was assessed to increase in average during ordinary trimming from 27.5 to 41.0 cm^2 which decreases the pressure on the claw and its wearing. Unlike this study, Toussaint-Raven (1985) although measured an increase of the contact area by 45% and a concomitant decrease of the average pressure by 30% those results were not significant.

Aim of the study was to check which trimming methods and management strategies are used and which are the most effective on Hungarian dairy farms. In the time of cutting costs policies in dairy industry farmers have the temptation to save money by modifying trimming methods. There were a lot of investments in dairy facilities in Hungary, so functional trimming should be the first and the most important lameness prevention on the farms. What is more, due to the weather complications some farms reported poorer quality of forage, which might influence not only milk production, but also cows' locomotion.

MATERIALS AND METHODS

The project included dairy farms monitoring in Eastern and Southern Hungary as a part of PhD thesis 'Study of animal welfare status and lameness in dairy cow herds in Hungary'. 25 Holstein Friesian herds were visited twice, for the first time from May to November 2010 and for the second time from May to November 2011.

Firstly, all milking cows leaving the milking parlour were locomotion scored. Cows were checked when walking on flat, clean concrete free of mud, muck and other contaminations which could make cows movements. The locomotion scoring system developed by Sprecher *et al*. (1997) was used. This method has understandable objective descriptions of posture and gait for scoring, it also includes a subdivisions between healthy with imperfect locomotion and clinically lame cows. The system contains 5 categories of increasing severity. The first describes a normal locomotion and only considers the back position (flat while walking and standing). Another one describes a mild abnormality visible only when the animal walks when the back is arched. The last 3 scores classify a bovine as lame and the animals are arching of the back while standing and

walking with more visible gait abnormalities. Researchers consider lame cows to be the ones with scores 3-5 (Cook, 2003; Clarkson *et al*., 1996; Sprecher *et al*., 1997) (Table 1). During the next visit in the following year cows' locomotion was checked again and detailed records of changes were recorded.

Table 1. Locomotion score of dairy cattle (Sprecher *et al*., 1997)

Lameness score 1 Normal	Stands and walks normally with a level back. Makes long confident strides.
Lameness score 2 Mildly lame	Stands with the back flat, but arches when walks. Gait is slightly abnormal.
Lameness score 3 Moderately lame	Stands and walks with an arched back and short strides with one or more legs. Slight sinking of dew-claw in the limb opposite to the affected limb may be evident.
Lameness score 4 Lame	Arched back when standing and walking. Favouring one or more limbs, but can still bear some weight on them. Sinking of the dew-claws is evident in the limb opposite to the affected limb.
Lameness score 5 Severely lame	Pronounced arching of back. Reluctant to move, with almost complete weight transfer off the affected limb.

For measuring intra-observer variations a video camera was used and fifty cows were randomly recorded and their score noted. The recorded video was viewed after the farm visit. The results from that observation and the one on the farm were compared for estimating repeatability of lameness judgement ($r=0.83$, $p<0.05$). The following formula for calculating the repeatability coefficient with data obtained from Excel for Windows and SPSS 13.0 for Windows (SPSS, 2004) was used (Sokal and Rohlf, 2012): $r=S^2A/(S^2+S^2A)$; S^2A – variance between group; S^2 – variance within group. Lameness estimations were carried out using Excel for Windows. Results from 2010 and 2011 were compared using SPSS 13.0 for Windows by running a Chi^2 test using the number of cows in particular scales form 1 to 5.

Rank of farms regarding changes in the occurrence of lameness

The observations of the 25 farms in two years affected the rank of a farms in relation to its successes in dealing with lameness. Average lameness occurrence was put together in a rank from the greatest decrease to the greatest increase in an average percentage of lame cows on each farm with significant differences between 2010 and 2011 (Table 2).

Effectiveness of professional and on-farm hoof trimming in different conditions

Detailed investigations of trimming methods helped to rank farms according to their effectiveness in decreasing the number of lame cows in different circumstances. Two farms were found with no changes where cows were trimmed

by on-farm trimmers, as well as five farms with no changes with professional hoof trimmers employed. On four farms building projects were carried out (1 – milking parlour renewed, 1 – automatic scrapers and 2 – straw yards swapped for free stalls) and the farm a trimming team was employed. On three farms there were also building projects (1 – cubicles in one of the barns renewed and 2 – straw yards swapped for free stalls) but professional workers were employed. Two farms had exceeding levels of the following mycotoxins and the following were observed: *Aspergillus flavus* toxin total >0.005 mg/kg, T-2 >1 mg/kg, Zearlaenon >0.15 mg/kg, DON >2.5 mg/kg and an exceeded level of *Clostridium perfringens* $>1x10^2$ cfu/kg. On one farm a relatively high level of urea in milk was reported (43 mg/dl). Finally, on one farm, a probable TMR imbalance was observed. On three farms there were changes of trimming services. On the last four farms there were no changes (2), cubicles were renewed (1) and there was a change in trimming (1), but on those farms the differences were reported to be not significant. Eleven on-farm trimming teams and four professional teams (companies) were judged.

RESULTS

Rank of farms regarding changes in the occurrence of lameness

There was a highly significant increase in the occurrence of lameness between 2010 and 2011 considering the average percentage of lame cows observed on 25 farms (27.31% and 13.51 vs. 35.29% and 10.88, mean and S.D. of lameness in 2010 vs. mean and S.D. of lameness in 2011, respectively, $p<0.001$). Among the 25 farms taking part in the project, five were able to significantly decrease the number of lame cows between 4.0 and 13.6%. Another sixteen farms were found with significant to highly-significant greater proportion of cows with locomotion disorders ranging from 3.7% to up to 29.7%. Four farms did not show any significant changes in lameness distributions between the two observed years (Table 2). For the purpose of this paper the most five and the least five successful farms in decreasing order of lameness will be discussed with the noted changes reported.

The most successful farm managers in decreasing occurrence of lameness were those who took concrete actions for dealing with the outbreak. On 5 farms with the greatest decrease in lameness professional hoof trimmers were employed visiting farms 2-3 times a year and checking the most severely lame cows between visits. In comparison, among 5 farms with the greatest increase in lameness, 4 of them employed on-farm workers for claw trimming. Professional claw trimmers are trained people who work on many farms and have an experience with a number of different cases of lameness. Usually, owners of those companies are vets who are able to monitor quality of trimming and provide their workers with training if needed. What is more, hoof trimming service team is paid for an effective job, what in this case means less lame cows are expected after the trimmers' visits.

The farm with the greatest decrease in lameness occurrence was thought to gain this success due to a change from on-farm to professional trimming, as well as a more balanced ration with less non-structural carbohydrates in the diet. On the farm with the second best result new, clean and effective footbaths were introduced on the way out from the milking parlour. Severely lame cows were started to be treated by the vet (new farm manager) between visits of professional trimmers. Passageways were renewed between the barns and milking parlours. On the third farm there was no claw trimming for two years until a professional team was employed again. Grooved concrete was provided in all areas where the cows were exposed to increased traffic (corners, up/down the hill, narrow passageways). The new management provided extra corn stover bedding as a substitute of straw which was lacking on the farm. What is more, roofs with effective gutters were established between feeders and barns so the cows' hooves had limited contact with wet surfaces. On the fourth farm severely lame cows were treated between visits of professional claw trimmers and more effective footbaths were provided. Finally, on the fifth farm cubicles in one of the barns were renewed with a modern ergonomic design, providing lunge area, brisket board, softer straw bedded surface and space for hind limbs what was lacking in old cubicles.

The five least successful farms in decreasing lameness were those building refurnishments and feeding outages were reported. The first farm with the lowest increase in lame cows among five farms was the one where straw yards were swapped to freestalls. Greatest increase in the occurrence in lameness was reported on the farm where claw trimming was changed from professional to on-farm service and where dry and hard bedding was provided containing mixed lime and sawdust which increased cleanliness, but decreased comfort of resting in cubicles. On the third farm with the greatest increase in lameness the milking parlour was renewed what took almost 1.5 years. In that time, due to changes in everyday activities during milking, shortage of labour and increase of tasks for stockman trimming was not performed. On the fourth farm with the greatest increase in cases of lameness exceeded levels of mycotoxins were observed. Finally on the fifth farm straw yards were swapped for freestalls, however, before and after limited amounts of straw were provided.

Table 2. Rank of farms regarding their success with treating lameness

Farm ID/ Rank	Lameness in 2011 in comparison to 2010 (%)	Changes observed	Chi-Square Tests – Value	N of valid Cases	df	Asymp. Sig. (2-sided)
1	-13.6	change in claw trimming O*→P*, improved feeding regime	25.521	1115	4	0.001
2	-13.2	effective footbaths, treating severely lame cows, passageways between barns and milking parlour renewed, P	28.865	740	4	0.001

cont. Table 2.

Farm ID/ Rank	Lameness in 2011 in comparison to 2010 (%)	Changes observed	Chi-Square Tests – Value	N of valid Cases	df	Asymp. Sig. (2-sided)
3	-12.3	change in claw trimming N→P, grooved concrete, corn stover, roofs between feeders and barns	27.660	1005	4	0.001
4	-6.5	treating severely lame cows, more effective footbath, P	36.495	1627	4	0.001
5	- 4.0	cubicles in one of the barns renewed, P	26.633	908	4	0.001
6	+3.7	no change, O	27.272	675	4	0.001
7	+7.0	automatic scrapers, O	9.593	1218	4	0.048
8	+7.7	high level of urea, O	24.292	1599	4	0.001
9	+8.6	no change, P	38.466	1563	4	0.001
10	+9.4	no change, P	16.149	990	4	0.003
11	+9.7	no change, P	20.338	355	4	0.001
12	+11.5	no change, P	16.287	354	4	0.003
13	+12.4	mycotoxins, P	25.766	947	4	0.001
14	+14.4	straw yards swapped for free stalls, 1 year of engineering works, O	113.398	1882	4	0.001
15	+16.9	TMR imbalance, P	44.060	863	4	0.001
16	+17.9	no change, O	24.930	106	3	0.001
17	+20.6	straw yards swapped for free stalls, P	34.259	740	4	0.001
18	+21.6	change in claw trimming P→O, dry and hard bedding	124.013	1058	4	0.001
19	+24.4	milking parlour renewed, cows not trimmed for 1.5 years, O	90.231	688	4	0.001
20	+27.4	mycotoxins, O	81.260	560	4	0.001
21	+29.7	straw yards swapped for free stalls, O	132.305	633	4	0.001
22	-10.8	no change, O	7.493	215	4	NS
23	-1.7	cubicles renewed, P	6.754	664	4	NS
24	-0.2	no change, P	4.530	242	4	NS
25	-0.1	change in claw trimming N→P	7.823	467	4	NS

*) P – professional trimming, O – on-farm trimming, N – no trimming

Table 3. Changes in occurrence of lameness after on-farm and professional hoof trimming

Sig.	Claw trimming 2010	Claw trimming 2011	Lameness in 2011 in comparison to 2010 (%)	No. of farms and changes observed *(Farm ID from Table 2)*	*(Farm ID from Table 2)* – Comments/extra change
Yes	On-farm		+10.8	2 – no change (*6, 16*)	–
	Professional		+6.5	5 – no change *(4, 9, 10, 11, 12)*	*(4)* - treating lame cows, effective footbath
	On-farm		+18.9	1 – milking parlour renewed (*19*) 1 – automatic scrapers *(7)* 2 – straw yards swapped for free stalls *(14, 21)*	*(19)* - cows not trimmed for 1.5 years *(14)* - 1 year of engineering works
	Professional		+3.4	1 – cubicles in one of the barns renewed *(5)* 2 – straw yards swapped for free stalls/pass. renewed *(2, 17)*	*(2)* - effective footbaths, treating lame cows,
	On-farm		+17.6	1 – high level of urea *(8)* 1 – mycotoxins *(20)*	–
	Professional		+14.7	1 – mycotoxins *(13)* 1 – TMR imbalance *(15)*	–
	On-farm	Professional	-13.6	3 – change in claw trimming *(1, 18, 3)*	*(1)* - improved feeding regime
	Professional	On-farm	+21.6		*(18)* - dry and hard bedding
	No	Professional	-12.3		*(3)* - grooved concrete, corn stover, roofs between feeders and barns
No	On-farm		-0.2	1 – no change *(24)*	–
	Professional		-10.8	1 – no change *(22)*	–
			-1.7	1 – cubicles renewed *(23)*	–
	No	Professional	-0.1	1 – claw trimming *(25)*	–

Effectiveness of professional and on-farm hoof trimming in different conditions

On two farms where farm workers were performing hoof trimming and on five farms, where professional service was provided, there was an increase by an average of 10.8% and 6.5%, respectively (Table 3). When engineering projects were carried out the cows showed more locomotion problems. On four farms, where farm workers were working, there were on average 18.9% more cases and on farms where a professional company was working there were in average only 3.4% more lame cows. On one farm with mycotoxins present (*Aspergillus flavus* toxin total = 0.00727 mg/kg, Zearlaenon = 0.296 mg/kg, DON = 5.14 mg/kg and exceeded level of *Clostridium perfringens* $>5.5x10^3$ cfu/kg) and extreme drop in milk yield in all groups of cows (on average from 9456 to 5493 L/lactation checked between 2011.02.14 and 2011.03.26) and on one farm with a relatively high level of urea in milk (43 mg/dl) with an on-farm claw trimming team there was a growth in lameness by 17.6%. In comparison, on one farm with a probable energy imbalance caused by low-quality forage and on one farm with mycotoxins present in silage (*Aspergillus flavus* toxin total = 0.00639 mg/kg, Zearlaenon = 0.175 mg/kg, DON = 4.84 mg/kg) with a professional claw trimming service there was an average increase of occurrence of lame cows by 14.7%.

Change from on-farm to professional trimming team resulted in 13.6% decrease in occurrence of lameness. On the other hand, when farm employers were working in place of a professional claw trimming service, a 21.6% increase in prevalence of lameness was observed. Professional hoof trimmers employed on the farm where there was no hoof trimming for the last two years resulted in a 12.3% decrease in lameness between 2010 and 2011.

DISCUSSION

The average occurrence of lameness in the present study (27.31% in 2010 and 35.29% in 2011) was found to be similar to Huxley *et al*. (2004), Haskell *et al*. (2006) and Rutherford *et al*. (2009) with 19.3%, 24%, and 39% of cows found clinically lame, respectively. Out of 45 single measures, 30 were improved, 9 got worst and 6 did not change. There were changes for the worst with: more farms with steps 5cm in milking parlours, narrower passageways in front of cubicles and feeders, longer distances form buildings to paddocks, narrower tracks, sharper turns in milking parlours, gateway conditions, access to paddocks and access to shade. For some measures, the changes were not observable: dry cows housed in cubicles or straw yards, heifer adaptation period, heifer trimming, silage exposure, water access, quality and smooth turns. Farmers did not apply other measures on the farms, like keeping surfaces clean in the milking parlour, applying rubber mats on the way out from the milking parlour, arrangements improving cow flow and removing obstacles on routes used by cows. It is hard to estimate if positive changes were driven by the given advices or occoured independently and why negative measures occurred. The five farms from the top

of the table (Table 2) made radical changes and their main aim was to decrease lameness in the herds.

The most popular opinion among farmers about the high percentage of lame cows is thought to be bad quality of feed given to the animals. This is presumed to be happening because of the extreme changes in the weather, influencing quality of forage and maize silage which caused an imbalanced TMR or feeding higher amount of concentrates. The importance of housing technology and farm hygiene are equally important. The second reason is the heritage of old buildings from the time of socialism. In most of the cases, those buildings were originally used for tethered cows. After swapping to the free stall or straw yard housing systems no significant improvements were made. Finally, the lack of time, a properly-sized workforce and cost-cutting policies are important factors influencing the opinions of the farmers and farm managers that not enough attention and time can be spent decreasing lameness.

FAWC (2009) asserts that one reason for the slow progress in dealing with lameness is the farmer's perception of the problem. Leach *et al*. (2010) observed on 222 farms that 90% of farmers did not perceive lameness to be a major problem on their farms and for 62% lameness was not the top priority, although the average occurrence of lameness was 36%. In the present study 17 out of 25 farmers underestimated the occurrence of lameness on their farms. That means farmers have not enough skills for monitoring and judging which cow is normal, mildly lame, moderately lame, lame or severely lame (Sprecher *et al*., 1997). That ability helps to estimate when immediate actions should be taken for preventing cows not to become lamer. It also helps in estimating which actions are more effective in decreasing lameness.

There was evidence that training farmers to recognise early cases of lameness and to request veterinary treatment resulted in a marked reduction in the duration of cases of lameness (Clarkson *et al*., 1996). This statement is not completely in agreement with FAWC (2009). The report states that work at the University of Bristol has shown that informing farmers about the prevalence of lameness within their herds and providing external advice often fails to stimulate the farmers to take preventive actions.

Although on four farms there were no significant differences between 2010 and 2011 one can observe that on-farm trimming shows lower effectiveness than professional trimming. On farms where claw trimming was performed by farm workers there was on average, significantly more lame cows than on farms where professional trimming service was employed (16.4% vs. 5.4% ± S.D. 9.44, $p<0.001$). There were no significant differences between professional and on-farm hoof treatments in groups with ongoing building projects, feeding disorders and changes in trimming. This is probably because of a lack of power due to a very low number of variables.

Although lameness had been already reported 20-30 years ago, as an outbreak that significantly decreased the performance of dairy cows, relatively small progress has been done in creating feasible management practices since that time. There are many reasons why there are a lot of lame cows present in the modern dairy industry. Hoof trimming is not the only way to prevent lameness,

but, when properly done, definitely has a positive impact on mobility. If routine trimming was found to be a preventive way for treating claw disorders, this procedure should be done properly on every farm. Lameness is painful for cows which was proved by Chapinal *et al*. (2011). Researchers reported that before hoof trimming, lame cows spent more time lying down each day than non-lame cows. Bad locomotion is disturbing for lame cows and this is why they are looking for relief. Trimming by itself is also causing a kind of trauma for the cows. The same authors found that both lame and non-lame cows increased the time spent each day lying down after claw trimming for up to five weeks after having their hooves trimmed. In the study, all farms were visited approximately 5-10 weeks after hoof trimming to avoid noticing the negative change in gait immediately following claw trimming Chapinal *et al*. (2011).

In this study, unpredictable factors should be taken under consideration because the factors might influence the results interpreted without clear explanations; those would be feeding, weather, human resources and others. The nine farms can be an example where, in theory, there were no differences in husbandry over one year, however, there was an increase in lameness on seven farms and a not significant decrease on two of them.

There is a specific time on a dairy farm when building projects are carried out because everyday activities are changing. Cows might be walking around working zones, avoiding the paths of moving vehicles which increases the risk for longer distances, worse surface quality, more holes or presence of stones and cobble. Observations confirm that farm workers were less confident with cleaning hooves of stones than the employees of professional trimming services. The study proved that professional hoof care is more efficient than the skills of farm workers during the time of trauma which could be caused by engineering projects and adaptation to new husbandry systems. What is more, the scientific opinion of EFSA (2009) about the welfare of dairy cows in relation to leg and locomotion problems states that animals kept in free-stall barns are at higher risk of being lame in comparison with straw yards. Haskell *et al*. (2006) also found that lameness scores were higher on free-stalls farms compared with straw yard farms. When cows are introduced to new facilities, it is extremely important to provide them with professional trimming: the best lameness preventive solution.

The dairy industry, like other businesses, is at risk of cost-cutting policies and faces challenges to have the ability to produce a final product in a sustainable way at the lowest price possible. Sometimes farmers do not see the outcomes of professional trimming and have tendencies to substitute that activity by employing farm workers. In the research, on the farms, where trimming was done by farm employees instead of a company, there were more lame cows (21.6%). Unfortunately, from the author's experience, in most of the cases those people were not trained properly for maintaining such an important task. The labour force is usually preoccupied with other farm activities; there is lack of repeated training and there is no monitoring of trimming quality and progress of treatment. On the other hand, when farm managers can see no improvement in lameness, the decision is made to employ a professional company. This solution is more effective in comparison to farm workers. A half-effective solution is when a

professional team is called either only to trim cows when they are very ill or to run a workshop for farm workers trimming cows. Nevertheless, training should be renewed routinely to keep skills on a professional level (Van Der Tol, 2005).

In the present study professional trimming was found to be more effective than trimming performed by farm workers. The same conclusion was reported by FAWC (2009) i.e. professional trimmers are very effective in controlling sole ulcers and foul-in-the-foot. However, Barker *et al*. (2007) asserted that routine hoof trimming done by a professional hoof trimmer or by the farmer was related with an increased mean herd locomotion score in comparison to those herds in which no routine trimming took place. Wells *et al*. (1999) claimed that routine hoof trimming is better than no trimming, but works better if the most severe lame cows are checked between visits. This suggests that routine trimming of all cows 1-2 times per year was an effective method of controlling the prevalence of lameness because lame and unsound cows were left untreated until the next visit by the professional claw trimmer. Another possibility is that inadequate hygiene of hoof trimming equipment or poor foot-trimming technique led to lameness after trimming (Wells *et al*., 1999). Once a cow has chronic lameness, then the natural wear associated with normal mobility and locomotion is lost and imbalance between the claw horn growth and wear becomes a permanent problem. This situation occurs when cows with the worst locomotion disorders are not treated and are waiting for the next trimming which might be in the next 4-6 months. In the current study, preventive checks between visits were run on almost every farm where a professional team worked and very rarely on farms where farm workers performed the trimming. On farms where there are no checks between trimmings, awareness for lameness could possibly be very low, or financial matters are the issue, or farm workers do other jobs instead. Studies more closely investigating trimming between professional hoof trimmer visits, found that cows were lamer when farmers trimmed them in crushers with a foot-lifting apparatus than without such apparatus (Amory *et al*., 2008). It is possible that claw trimming by farmers between visits of professional hoof trimmers was detrimental to the locomotion of cows because of low-quality trimming. Ownership of professional tools, alone, is not sufficient enough to treat lameness when improperly used (Kofler, 1999).

Whay (2002) calculated that in the UK the average case of lameness costs £178 per year and the average herd is losing about £10 000 per 100 cows every year. The money lost with a single lame cow equals the treatment of eighteen cows using a professional hoof trimmer. In Hungary where prices of ill cows are comparable and where labour is much cheaper, the ratio could even be as much as thirty cows. This seems to be a very cost-effective way of preventing lameness disorders for most herds in Hungary, if done properly and may reduce, for example infertility. It is a question why so many farmers are still incapable of employing professional claw trimmers and why they are putting cows at risk by giving the task to workers employed on the farm.

There are golden rules for the prevention of lameness in dairy herds (Toussaint Raven, 1985). Trimming should be avoided when cows are turned out on very long or abrasive tracks (e.g. tarmac or concrete). This happens often when cows are trimmed and need to walk a few hundred meters between barns

and milking parlours a few times a day on concrete. None of the farms monitored provided rubber mats between the barns and the milking parlours. Rubber mats in the milking parlour were found on four farms. On three farms there was straw on alleys between barns and milking parlours. Special attention should be paid with trimming freshly-calved cows (the first four weeks of lactation), as they are under strain and horn growth is less than the wear and this raises the risk of a thin sole after trimming (Whay, 2002). Regarding trimming, none of the farms take into account special treatment of freshly-calved cows. All the herds are different and probably the best way for trimming would be a system designed for the individual cow. However, only half of the dairy farms kept clear lameness case records.

The most occurring reasons for a higher prevalence of lameness where on-farm teams worked would be:

– not properly cleaning the area between the inner and outer claw;
– using a spray on the unclean area between the inner and outer claw;
– not dishing out the sole ulcer;
– not making the dishing out on the outer claw large enough in order to relieve the weight off the sole ulcer site;
– bruising or under-running the horn;
– dull tools and the lack of proper grinders for sharpening;
– letting cows walk in the manure after serious bleeding or spray treatments of haemorrhages;
– using bandages and letting cows walk in the mud and dung;
– improper crushes where cows are unstable, making them stressed thus affecting trimming;
– improper crushes without barriers helping to herd cows into the crushes;
– a lack of training and routine repetition.

Cheaper and quicker solutions, like various hoof trimming methods, have a great chance for significantly decreasing the level of lameness. The best combination is found when the professional team is running the service with an occasional treatment of cows with the worst cases between regular visits. Regular visits with locomotion scoring in advance of the trimming makes sure that the correct cows are treated and the performance of trimming can be monitored. This hoof management strategy was already described in the literature (Toussaint Raven, 1985; Van Der Tol *et al*., 2004; Willshire and Bell, 2009), but unfortunately farmers not always find this method useful. One of the reasons is time and money and the other reason is that farmers get used to bad conditions and do not realize when bad becomes worse. Alternatively, the farm workers can carry out this work, but essential courses and routine trainings should be provided.

CONCLUSIONS

Among the 25 farms the prevalence of lameness was decreased on 16% of the farms and was under control (did not change statistically) on 20% of the farms; that means that those farmers recognised the locomotion problems and took effective actions. The most common effective changes were employment of professional hoof trimmers, checking cows between trimmings and provisions of

effective foot baths. One needs to consider that on the majority of farms engineering projects, silage contamination with mycotoxins and probable energy-imbalanced diets were reported between 2009 and 2011. Those factors are very likely to have a significant impact on the increased number of lame cows. It is also possible that an elevated occurrence of lameness between 2010 and 2011 will drop after some time on farms where negative factors were observed. The results give promising information that a decrease of prevalence of lameness is possible on Hungarian dairy farms. On the other hand, there was proof that old and unreviewed routine programs for preventing lameness need to be altered and implemented according to changing conditions on the farms.

Professional trimming was found to be more effective than on-farm trimming on farms with engineering projects, with feeding disorders and when trimming was changed from on-farm to professional and vice versa. There should be monitoring of lameness and comparison of hoof trimming teams. There is a huge variation between farms and cows regarding proper trimming, but general information about the performance of a particular hoof trimmer (or a team) should be used for successful lameness treatment. Sadly, many farm managers are not interested in checking different trimming methods or services. The human nature of becoming used to everyday activities and routines creates a risk where self-confidence in performing trimming overwhelms the curiosity for checking and comparing the quality of trimming.

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Address for correspondence:
Richard Gudaj, PhD Student
Department of Animal Breeding
University of Debrecen
138 Böszörményi Street
4032 Debrecen, Hungary
E-mail: rgudaj@gmail.com

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RAZLIČITE METODE MENADŽMENTA I PREVALENCA HROMOSTI U 25 HOLŠTAJN-FRIZIJSKIH STADA U MAĐARSKOJ

GUDAJ R, BRYDL E, LEHOCZKY J i KOMLÓSI I

SADRŽAJ

Hromost mlečnih krava je na trećem mestu po ekonomskim troškovima posle mastitisa i poremećaja u reprodukciji. U periodu od dve godine vršena je opservacija 25 mlečnih stada holštajn-frizijskih krava u Mađarskoj u cilju utvrđivaja uticaja različitih metoda obrezivanja papaka i različitog menadžmenta u kontroli hromosti i smanjenju njene prevalencije. Profesionalno obrezivanje je bilo efikasnije, posebno na farmama gde nije bilo problema sa ishranom i gde nije rađena rekonstrukcija objekata. Najveće smanjenje prevalence hromosti je utvrđeno na farmama gde je primenjivano profesionalno obrezivanje, efikasno pranje papaka, šetanje grla i gde su postojale adekvatne površine za njihov odmor. Od značaja je bio i tretman krava sa izraženim problemima u periodima između regularnih obrezivanja. Najviše slučajeva hromosti je registrovano na farmama koje su same vršile obrezivanje i gde su postojali problemi u ishrani uz rekonstrukciju objekata.