



# Reducing Lameness in Dairy Cows

A report for



**NUFFIELD IRELAND**  
**Farming Scholarships**

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**2015 Nuffield Scholar**

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## EXECUTIVE SUMMARY

Since the abolition of milk quotas in Ireland at the end of March 2015, dairy cow numbers have increased significantly. From the beginning of 2015 to 2020 cow numbers will have grown by 24%, to reach 1.395 million by 2020. Ireland has had the largest percentage growth in milk output in the EU, with milk output grow increased by 27% in the 3 years since quotas ended, according to CSO data. With growing herd sizes, cows are now walking further to the milking parlour. This has resulted in an increase in the incidents and costs of lameness on Irish dairy farms.

Lameness in dairy cows is a multi-factorial problem and can be caused by bacteria, environment or husbandry. A lame cow can defined as 'a cow with any abnormality which causes a cow to change the way she walks'.

The main objectives of this report is to find out how much lame cows are costing dairy farmers, identify what the primary causes of lameness are, and then look at ways to reduce lameness from both farm level and at an industry level.

1. The cost of lameness
2. Primary causes of lameness
3. How to reduce lameness at farm level
4. How can we reduce lameness at an industry level

### Key Findings:

The costs of lameness are much more significant than anticipated. Each single case of lameness costs an average of €300. On a typical farm, the incidences of lame cows annually, can vary from 15 to 50% on an annual basis (Cusack, 2012). If Ireland reaches its targets of 1.395 million cows by 2020 and taking a conservative of 20% lameness, this will cost the Irish dairy farmers almost €90 million a year.

The causes of lameness varied between different countries and systems. In countries where cows were housed inside all year round, such as the Netherlands, Denmark, Germany and Poland, digital dermatitis was one of the biggest causes of lameness. In New Zealand where cows are outside grazing all year round and walking long distances to the milking parlour every day, white line disease is by far the biggest problem followed by sole injuries, interdigital cracks and foot rot (Chesterton, 2014).

Farmers should take the same approach to a lame cow as they would for a cow with mastitis. They need to be able to identify lame cows earlier and treat them as soon as they observe the lameness. A farmer will not leave a cow with mastitis for several days without treating her, so why should a lame cow be any different.

Farmers can reduce lameness on farm by up-skilling, learning how to mobility score cows, and conduct hoof trimming of affected cows themselves. Stress can be a big contributor to lameness, and farmers can reduce stress on the cows by following a cow's time budget (Hoekstra, 2014). Farmers can also reduce lameness by improving stockmanship, especially



around the collecting yard (Chesterton, 2014). According to Neil Chesterton, 75% of lameness is caused around the milking parlour and collecting yards.

The dairy Industry can reduce lameness by the acting on the following recommendations:

- Develop a Cost Calculator for lameness.
- Teagasc to appoint a full time researcher to focus on lameness.
- Animal Health Ireland (AHI) to run a lameness workshop similar to the Cell Check Workshop.
- AHI to develop 'Farm Guide for Lameness Control'.
- Mandatory recording of lame cows.
- Introduce an unacceptable level of lameness on farms.
- Add a new category to the Tams 2 (grant scheme) for specialised hoof trimming crates.

The importance of treating cows as soon as possible is underestimated. Lame cows are in pain and if left untreated, can lead to animal welfare issues in addition to a reduction in their milk production.



## TABLE OF CONTENTS

DISCLAIMER.....	2
EXECUTIVE SUMMARY .....	3
TABLE OF CONTENTS.....	5
TABLE OF FIGURES .....	6
FOREWORD .....	7
ACKNOWLEDGEMENTS .....	9
GLOSSARY .....	10
OBJECTIVES.....	11
INTRODUCTION .....	12
1. COSTS OF LAMENESS.....	13
2. PRIMARY CAUSES OF LAMENESS .....	17
3. HOW TO REDUCE LAMENESS AT FARM LEVEL .....	23
4. HOW TO REDUCE LAMENESS AT INDUSTRY LEVEL .....	29
CONCLUSIONS .....	31
RECOMMENDATIONS.....	32
REFERENCES .....	33

**TABLE OF FIGURES**

Figure 1 Costs of Lameness .....	14
Figure 2 Cost variance per disease.....	15
Figure 3 Cost variance between different cows .....	15
Figure 4 Digital Dermatitis .....	18
Figure 5 White Line Disease.....	21
Figure 6 Mobility Score Card .....	24
Figure 7 Viking Genetics .....	26
Figure 8 Cows Time Budget .....	27



## FOREWORD

I am a dairy farmer in East Cork working in partnership with my parents. I am the eldest of four girls. I enjoy every aspect of farming and have done so since a young age. When I was in Leaving Cert (final year at school) we had to make our career choices for the CAO form and farming was my number one choice.

Many people said to me at the time “what are you doing that for”, “you are wasting your points”, “it’s not a career for a young girl” etc. However, I have a tendency to go with my gut and had the full support and encouragement from my family.

I attended Waterford Institute of Technology and Kildalton Agricultural College where I graduated with a Bachelor of Science Honors Degree in Agriculture. As part of my college degree I had to spend three months’ placement on a farm. I packed my bags and headed to New Zealand.

This was extremely daunting at the time, but I knew it was an opportunity I could not pass up on. I worked on a 1,300 cow dairy farm. I loved every minute of it and the three months flew. I wasn’t ready to go home so I decided to defer college for a year and I spent a further 12 months working on the 1,300 cow dairy farm.

On the farm, there could be anything from two to seven lame cows spotted per day, as the numbers were big and the cows were walking long distances. It was standard procedure to draft out any cow that was seen lame and treat her that morning. I was handed a knife and quickly learnt how to treat lame cows.

When I returned to Ireland it was killing me to see a lame cow on our own dairy farm. We would leave her lame for a few days until there was a second lame cow to justify the call out fee for a hoof trimmer. The only thing that was holding me back from treating our own cows was that we did not have a crate that I could handle the cows in, without the physical work and injury risk.

We have a small engineering business on the farm so I approached my father, who is a very forward thinking man, and suggested that we have to come up with a crate that I could treat lame cows in, as soon as I see them lame, without having to wait for him to help me restrain them. I also wanted it to be safe for both me and the cow.

This led us on to making a roll-over crate and we were astonished at how quiet the cows were when lying on their side. It worked brilliantly. Neighboring farmers heard about this and came to see it working and encouraged us to develop it further.

Today, not alone am I a dairy farmer, but I am the Founder and CEO of Inspect 4 Hoof Trimming Limited. We make roll-over crates for farmers and professional hoof trimmers and have very recently launched Inspect 4 Farm Services.

Having built this product, I went looking for marketing material on the cost of lameness etc. to help market our crate at trade shows. I found out that the average cost of a lame cow is €300.



When speaking with farmers at the trade shows I found they tended to only think of the direct costs and forget about the very significant indirect costs. Most farmers I talk to will say they too are guilty of waiting until they have two or three cows lame before they do anything. In my opinion it is unacceptable to leave cows lame and in pain for a few days. They need to be treated it is also costing more money the longer the farmer leaves it as the infection is spreading.

In 2014 I became the secretary of the Irish Cattle Foot Trimmers Association, and helped organise a lameness awareness day in Kildalton Agricultural College. The event was open to both farmers and professional hoof trimmers. I invited some great speakers from the UK and The Netherlands who gave excellent presentations with the latest findings and research in lameness in their countries.

I found it very difficult to get a speaker from Ireland, and as it was a Teagasc venue I asked a Teagasc vet to give a presentation. This vet gave a presentation on a study that was done over 15 years ago when Mortellaro (digital dermatitis, which was discovered in Italy in 1974 by Cheli & Mortellaro) was just spotted in the country.

To me, this highlighted the need for more up-to-date research to be carried out on lameness in Ireland. It is frightening how little we actually know about lameness and it seems to be a costly problem and one that is increasing due to the abolition of milk quotas and increase in herd sizes.

In order to research my study topic, I visited the UK, the Netherlands, New Zealand and Denmark.





## ACKNOWLEDGEMENTS

I would like to thank Nuffield Ireland for awarding me a Nuffield Scholarship.

I would especially like to thank John Tyrrell and Bill O'Keeffe for being so understanding when I was unable to complete my GFP in 2015 due to personal circumstances with my sister undergoing a liver transplant. A Nuffield Scholarship is often referred to as 'A life changing experience' but I would have to say a liver transplant definitely ticks that box too, and it has given my sister a whole new life. I am very grateful to both John and Bill for understanding life has to come first and for the support they gave to me at that time.

I would like to thank my fellow 2015 Nuffield Scholars who I got to travel with to the Contemporary Scholars Conference in France and for their understanding and support when I had to defer my Nuffield Scholarship to the following year.

I would like to thank my mentor Jonathan Tighe who was a huge support to me and provided me with advice whenever I needed it.

I would like to thank the 2016 Nuffield Scholars who were very welcoming when I joined their year.

A deep debt of gratitude is due to the people that I met in the course of my international travels in pursuit of my study topic, in New Zealand, the UK, the Netherlands and Denmark, as well as to the research and advisory experts in Teagasc. I was welcomed with a warmth and willingness to share knowledge and experiences which was a great help to me.

The Africa Global Focus Program was a huge eye opener for me and a trip of a lifetime. I would like to thank Richard Fowler, Lachie Greene, Anna Jones, Denis Holder, Luciano Loman, Tim Smith and William Harrington. It is fair to say that we were a very diverse group, but learnt a lot from one another on our travels.

I would like to thank everyone who helped me with my research and the Irish Cattle Foot Trimmers Association for their sponsorship towards my personal travel of €1,000.

I would like to thank Chris and Richie who kept the farm going while I was away especially when I left for the GFP in March leaving them with all the new born calves.

To my parents Eddie and Linda and my Fiancé Ed for your encouragement, work and support.



## **GLOSSARY**

GFP – Global Focus Program

NZ – New Zealand

DD – Digital Dermatitis



## OBJECTIVES

There are four main objectives of this report.

1. To establish the cost of lameness
2. Identifying the primary causes of lameness
3. How to reduce lameness at farm level
4. How can we reduce lameness at an industry level

When thinking about the costs of lameness, one immediately thinks of the direct costs that are coming out of your pocket. However, lameness also has many indirect costs associated with it. When farmers are asked what a case of lameness costs them, they don't actually know. This report aims to find out the costs of lameness taking both the direct and indirect costs into account.

Lameness is a multifactorial problem. For the purpose of this report, the author intends to find out what the main causes of lameness are, and to travel to different countries to see what they are doing to help reduce lameness at farm level and at an industry level.

This report will look at comparing mastitis to lameness and see if it is possible for farmers and industry to take the same steps to reduce lameness. Mastitis is not very different from lameness in a many ways. Both can be caused by bacteria, both affect the cow's health, both create pain and discomfort for the cow, if left untreated the problem escalates, both have financial consequences, both can lead to culling.

There are aids and workshops available to help farmers identify mastitis early and farmers treat mastitis cows immediately. However, if a lame cow is spotted in the morning she might not be treated for several days, this report hopes to identify ways to help farmers take the same approach to a lame cow as a cow with mastitis.



## INTRODUCTION

It is a natural unfortunate common occurrence that cows get lame and need treatment. A lame cow can be defined as a cow with any abnormality which causes a cow to change the way she walks. Lameness in dairy cows is a multi-factorial problem and can be caused by bacteria, environment, and husbandry.

In Ireland on average 20% of dairy cows go lame on an annual basis (Cusack, 2012). These lame cows result in significant indirect costs such as:

1. A decrease in milk production
2. Poorer quality of milk
3. Slower to walk, holding up the rest of the herd
4. If left unrepaired then can cause the cow to feel very sickly
5. Poorer conception rate leading to poor fertility in the herd
6. Culling with a low cull value

Dairy herd sizes in Ireland have increased since the abolition of milk quotas in 2015. In the period 2015 to 2020 the dairy herd in Ireland is expected to increase by 24%. The grazing platform has also increased and cows now walk longer distances to the milking parlour which is leading to an increase in lameness. Farmers that have expanded herd sizes and are continuing to expand have to look at ways to minimize costs on the farm and ways to improve efficiency and herd health.

When comparing lameness to mastitis which is another costly problem, dairy farmers know much more about mastitis and the importance of treating a cow with mastitis straight away. In Ireland a lame cow can be lame for a while before she is even noticed by the farmer as a lame cow and then might not be treated straight away. If a cow is lame she is in pain and needs to be treated as soon as possible not only for animal welfare reasons but to reduce the losses for the farmer.



## 1. COSTS OF LAMENESS

Lameness is a very costly problem not just here in Ireland but with all dairy cows worldwide.

The costs of lameness can be spit up into two:

- Direct Costs
- Indirect Costs

The direct costs are what the farmer sees coming out of his/her pocket and include the vet, hoof trimmer, treatment costs (medicine, shoes, bandages etc.), costs of having to dump the milk for a withdrawal period if medicine is administered typically 3-4days. However, the main economic effects are seen with the indirect costs these include reduced production in terms of yield and quality, reduced fertility, increased chance of culling with a reduced cull value.

In 2004 in Ireland two UCD students Eoin Ryan MVB and Luke O'Grady BVMS MRCVS studied the Economics of Infectious and Production Diseases in Irish Dairy Herds and estimated that a single case of lameness is costing a farmer on average €293.23 this was based on a milk price of €0.275/litre.

*Table 1. Average Cost of Lameness*

Type of lameness	Digital	Inter-digital	Solar ulcer	Average case
Prevalence (%)	41	38	21	
	<b>Cost (€)</b>	<b>Cost (€)</b>	<b>Cost (€)</b>	<b>Cost (€)</b>
Total cost of a single case	310.01	143.21	531.94	<b>293.23</b>
<b>Total cost of 1.4 cases</b>	328.94	158.19	560.09	<b>312.60</b>

*Source:* (Ryan & O' Grady, 2004)



Figure 1 Costs of Lameness

Direct Costs	Unit	Cost/ Unit(€)	Total (€)
Cost of Treatments (drugs, dressings, shoes etc.)			8.50
Vet's Time (Minutes) @ €104.30/hr	15	104.30	26.80
Average Callout Charge per cow (4 cows @ callout)		40.00	10.00
Cost of farmer's time (Minutes) @ €20/hr	20	20	6.66
Cost of Milk Withdrawal (AB used in 10% of cases)	0.1		
Four days' milk @ 23 litres per day (92 litres x 10%) @ €0.35 per litre	9.2		3.22
Cost of reduced milk yield	500L	0.15 margin/L	75.00
<b>Indirect Costs:</b>			
Cost of increased culling @ 11% cases culled			
Cost of culling a cow (lame cows generally of low salvage value)		960.70	105.68
Extra days added to Calving Interval @€3.93/day	9	3.93	35.37
Cost of extra services	0.39	29.80 per straw	11.62
<b>Total Cost of a case of Lameness</b>			<b>282.85</b>
<b>Total Cost of 1.4 cases per cow</b>			<b>302.43</b>

Source: (Cusack, 2012)

This average cost of €300 per case of lameness is quite conservative and does not take into consideration if a cow is lame during the breeding season as most cows in Ireland are in a spring calving system with a 12week breeding season. If a cow is lame she is not going to show signs of heat this will set her back a further three weeks until she comes into heat again provided she is no longer lame. The additional three weeks will result in a later calving date the following year and the farmers loses out on a further three weeks milk costing an additional €240 loss (Teagasc, 2013).



The costs of lameness varies with each type of lameness a sole ulcer is much more costly than a white line lesion. The longer a cow is left lame will also impact the cost of lameness e.g. a severely lame cow is more costly than a mildly lame cow (Atkinson, 2016).

Figure 2 Cost variance per disease

Type of lameness	Digital	Inter-digital	Solar ulcer	Average case
Prevalence (%)	45	35	20	
	Cost (€)	Cost (€)	Cost (€)	Cost (€)
Total cost of a single case	282.85	136.12	504.58	275.26
Total cost of 1.4 cases	302.43	152.46	535.78	296.61

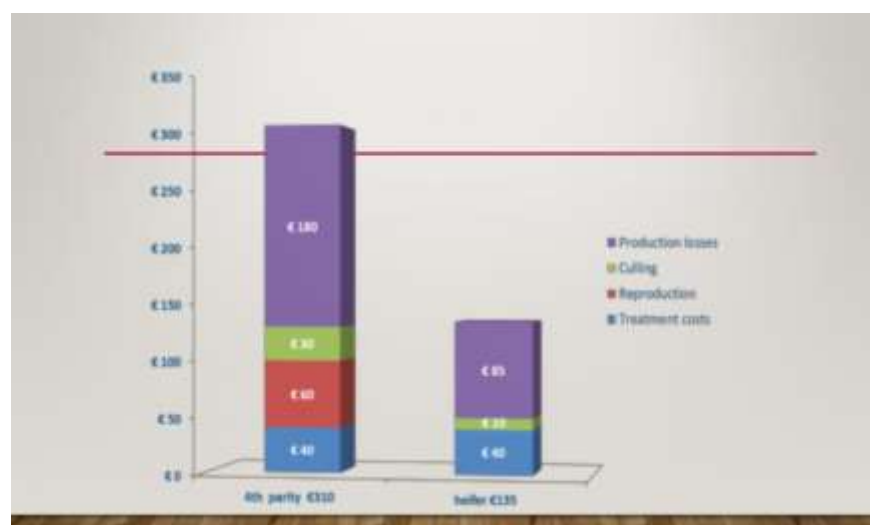
Source: (Cusack, 2012)

You can also have the same type of lameness in different cows which can result in different costs. Costs can vary by the days in milk, lactation, in calf or not and replacement costs. See below the comparison of two cows both with a sole ulcer.

Cow A in her fourth lactation, 20 days in milk producing 40kgs a day versus a cow in her first lactation, 100 days in milk producing 25kgs a day.

In this example costs for a sole ulcer vary from €310 in cow A, to €85 in cow B (Lievaard, 2016).

Figure 3 Cost variance between different cows



Source: (Lievaard, 2016)



Having to cull cows is extremely costly for farmers, with replacement heifers costing €1,451 (Kennedy, Shalloo, & Buckley). After infertility and mastitis, lameness is the third highest reason for culling cows (Kloosterman, World Renound Dutch Hoof Trimmer, 2016).

Lameness could also be a contributor to infertility, and in some cases this is the number one reason for culling. In the US 15% of the animals are culled for lameness, but in reality 49% have a direct or indirect relation to hoof health through reproduction, low production or loss of condition (Lievaard, 2016).

On researching the costs of lameness overseas, the average cost of lameness seemed to vary. In the UK the average cost of a case of lameness is £330 (Atkinson, 2016). In the Netherlands the average cost of lameness is €240 (Kloosterman, 2014).

In an interview with Fred Hoekstra, professional hoof trimmer in New Zealand, he says research done in Canterbury and Southland estimates that a single case of lameness is costing between \$1,000 - \$1,200 NZ dollars. However, in his professional opinion, he thinks a more conservative realistic figure is \$500NZ dollars.

If Ireland reaches its targets of 1.395 million cows by 2020, and taking a conservative of 20% lameness considering that 15-50% of all dairy cows go lame on an annual basis (Cusack, 2012), lameness will cost the industry almost €90 million a year.





## 2. PRIMARY CAUSES OF LAMENESS

Lameness is a multifactorial problem and can be caused by bacteria, environment or husbandry.

The majority of lameness is associated with claw lesions on the foot with the remainder related to upper limb problems. Of these claw lesions, 85% of lameness occurs in the hind legs and 99% involves the outer claw (Kloosterman, 2014). Greater than 80% of cows show signs of more than one lesion (Kloosterman, 2014).

### Claw Lesions

There is a wide range of claw lesions. The most common are white line disease, digital dermatitis, sole ulcers, foul in the foot and laminitis. It is important to identify each different type of lesion as they have different causes and are treated differently. A group of international claw health experts came together and published the ICAR Claw Health Atlas in 2015. This material is available online with a further description and picture of each type of lameness and can be used as a valuable tool for improving the health and welfare of dairy cattle. (ICAR Claw Health Atlas, 2015).

For the purpose of this report the author has decided just to briefly outline two foot problems that were most common when visiting farms overseas and in Ireland, Digital Dermatitis and White Line Disease.

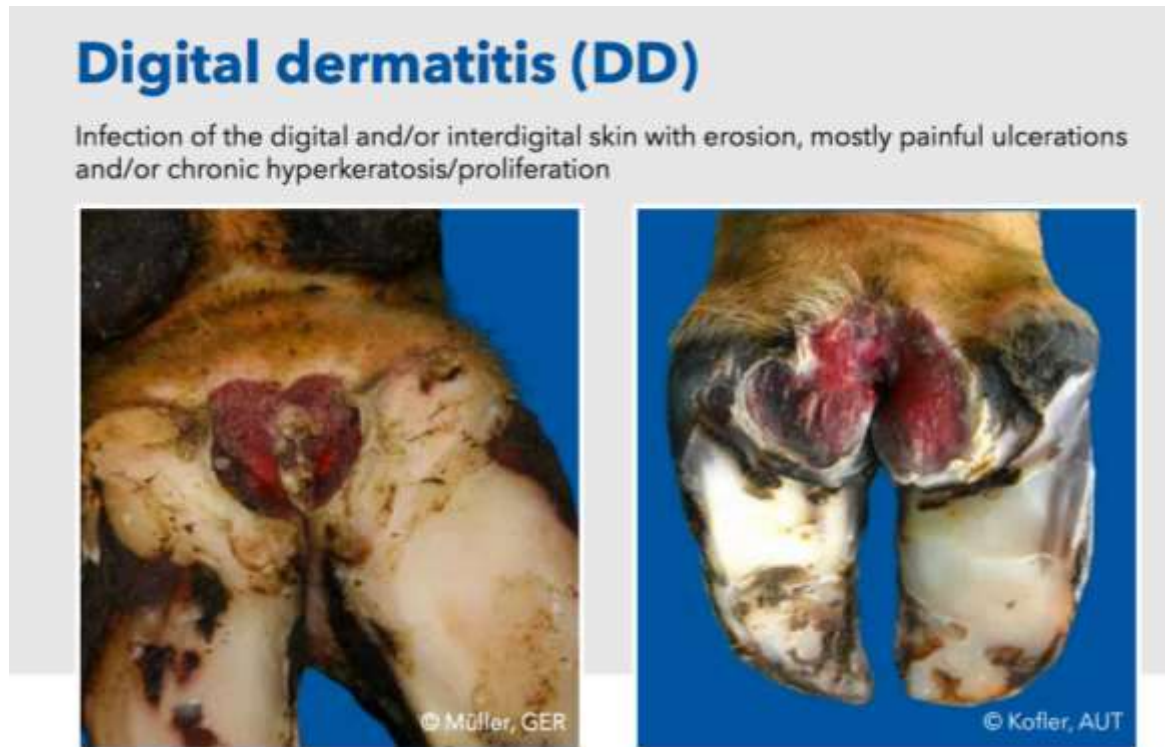
The causes of lameness varied between different countries and systems. In countries where cows were housed inside all year round such as the Netherlands, Denmark, Germany and Poland, digital dermatitis was one of the biggest causes of lameness.

### **2.1 Digital Dermatitis (DD)**

Also known as Mortellaro is caused by a bacteria called treponema (Fiedler, 2016). DD primarily affects the skin on the heels of cattle. It is a major cause of lameness in dairy cows and a significant problem for the dairy industry in many countries, causing reduced animal welfare and economic loss (Palmer & O'Connell, 2015). It is contagious and is identified as a very painful lesion on the heel of the foot. DD can spread easily so it is important to have a control program in place.



Figure 4 Digital Dermatitis



**Source: (ICAR Claw Health Atlas, 2015)**

A comprehensive strategy for the control of digital dermatitis (DD) in dairy herds was presented at the **2016 International Lameness Conference** (Capion, 2016). The 5-point plan, which applies to young stock as well as dry and lactating cows, includes (Bergsten, et al., 2016):

1. External biosecurity to keep disease out of farm
2. Internal biosecurity to minimise infection pressure on cows
3. Early identification, recording and treatment of clinical cases, in association with hoof care
4. Frequent foot disinfection to reduce new cases
5. Defining and monitoring hoof health targets

At the International Lameness Conference in Denmark 2016 a presentation was given by Charlotte Kroger outlining a current research trail investigating the use of non-antibiotic treatment for DD. The results were not released as the trial is ongoing (Kroger, 2016).



### **The International Lameness Conference**

Every two years the International lameness conference is held. It is a fantastic conference with experts from all around the world sharing their knowledge on lameness. It is a three-day conference, the first day is out on farms and the following two days take place in a hotel.

The 2016 conference was held in Legoland in Denmark. We stayed in Legoland Hotel and 182 people attended it, 26 different countries were represented. I was the only one there from Ireland. Of the 182 people that attended the conference approx. 95% of these were professional hoof trimmers or vets.

The conference was a mixture of both practical workshops and classroom presentations. The practical workshops allowed us to work with dead feet from a slaughter house. Everyone got the opportunity to work on the dead feet and identify different techniques to treat problem feet.

It was interesting to see the different approaches that were taken with the American method, The Dutch Method and the Danish Method. It was a bit surreal to have so many hoof trimmers in the same room paring cow's feet, most hoof trimmers could speak and understand English however the Italian Hoof Trimmers had an interpreter with them.

In the hotel rooms, plastic was put on the ground and everyone had the opportunity to work on a dead foot. I never thought I would be in a hotel with little pieces of hoof flying off due to knives and grinders!

There was a selection of speakers from different countries for the classroom presentations. These presentations varied from the latest research in controlling digital dermatitis, to disinfecting practices to prevent the spread of disease, the importance of recording lameness etc.

At the end we had presentations from three different hoof trimmers who told us about their daily routine i.e. a typical day as a hoof trimmer in Alaska! There were many companies and trade stands who attended the conference who sell products to hoof trimmers, as a result of this I have built up a business relationship with a Germany company and am now the sole importer for their products in Ireland.

### **Netherlands**

In the Netherlands full herds are routinely trimmed up to four times a year to help reduce lameness. As digital dermatitis is one of the biggest problems in the Netherlands there is big emphasis put on foot bathing.

On a visit to the Dairy Training Centre in Leeuwarden the author interviewed hoof experts Paul Galama, Pieter Kloosterman and Menno Holzhauer. In their professional opinion you cannot get rid of DD once it is in a place however it is possible to control it.



They had recently done a foot bathing trial and found that formalin at the proper concentration of 4%, applied every second week, and is the most effective way to keep DD at bay. For the proper concentration of 4%, the footbath must be a minimum of 3 meters long x 1 meters wide and 0.15 metres deep.

Also in the trial they discovered that there is no advantage in mixing in bluestone. These three experts in hoof care are now recommending using the Intra Care spray as they see good results with it rather than using antibiotics.

### **Pieter Kloosterman**

Pieter Kloosterman is a World Renowned Dutch Hoof Trimmer. He holds the highest certificate in professional hoof trimming. Pieter works with the Dairy Training Centre in Leeuwarden. Pieter runs hoof trimming courses and information days on lameness.

Pieter travels around the world certifying professional hoof trimmers. He runs check days and diploma days to ensure hoof trimmers are of the highest standard which is a category 1 hoof trimmer. You can only become a category 1 hoof trimmer once you have completed and passed, a training course, a check day and a diploma day.



Paul Galama, Pieter Kloosterman, Maeve O'Keeffe and Menno Holzhauser at the Dairy Training Centre in Leeuwarden, Netherlands.



## 2.2 White Line Disease

The white line is the weak point on the sole and is where dirt and stones can work their way up. Aggressive trimming is required to allow sufficient drainage of any infected tracts (Hoekstra, 2014).

Some require antibiotics and it can be useful to apply a block to the good foot. If you have lots of these look at the cow tracks and concrete surfaces – sharp stones and tight turns can contribute to an increase in white line disease (mydairyvet, n.d.).

*Figure 5 White Line Disease*



**Source: (ICAR Claw Health Atlas, 2015)**

In New Zealand where cows are outside grazing all year round and walking long distances to the milking parlour every day white line is by far the biggest problem followed by sole injuries, interdigital cracks and foot rot (Chesterton, 2014). Digital dermatitis has not become an issue yet in New Zealand.

Neil Chesterton a vet who specialises in lameness in the North Island believes that the two main contributors to lameness is track maintenance and stockman ship. According to Neil, 75% of lameness is caused around the milking parlour and collecting yards when cow flow is not at its optimum and people get impatient. Cows are creatures of habit and like to enter the milking parlour in order.



## Neil Chesterton

Neil graduated as a vet from Sydney Australia in 1974 and moved to Inglewood which is in the North Island in New Zealand. He took a particular interest in studying lame cows. He is very passionate about preventing lameness and spends a lot of his time studying cow flow and understanding cow behaviour.

Neil has produced many videos and booklets covering all aspects of lameness in grass fed dairy cows. He helps farmers reduce lameness by giving them practical advice. As a result of this work Neil was awarded an Honorary BVSc by Massey University.

Neil is well known around the world and has participated in many lameness conferences worldwide.

What I found most interesting about Neil was his passion for lame cows and how much time he spends observing the cows. We watched many videos together in his house in Inglewood looking at cow behaviour. It was really interesting to see how much people impact lameness and how important good cow flow is.

I learnt from Neil that a lot of lameness is caused around the holding yards and milking parlour. He also emphasised the importance of maintaining cow passageways.



At Neils house in Inglewood, NZ. With his wife Sandra.





### 3. HOW TO REDUCE LAMENESS AT FARM LEVEL

Reducing lameness:

- Early identification – Mobility score
- Prompt & Effective treatment – Upskill farmers
- Record lame cows
- Implement a cow's time budget
- Collecting yards

How do we identify lame cows? A lame cow is only termed a lame cow once she is noticed at farm level. It is so important for farmers to be able to identify a lame cow as early as possible to reduce the severity of the condition by treating her promptly. The longer you leave a cow lame the problem just escalates costing the farmer financially and also the cow remains in a lot of pain which raises animal welfare concerns.

#### 3.1 Early Identification – Mobility Score

The AHDB dairy mobility scoring chart in the UK is a fantastic way to identify lame cows earlier. Dairy farmers are able to easily assess cow mobility on-farm.

The Mobility Score is a four-point score ranging from 0 to 3:

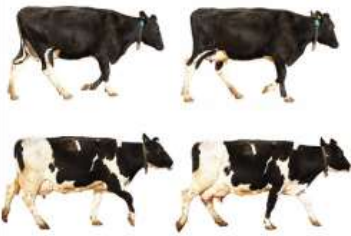


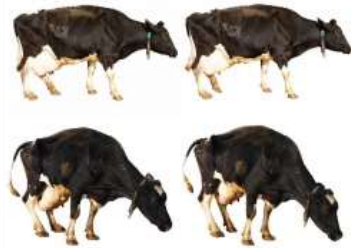
- A cow scoring 0 will have good mobility and will walk with even weight-bearing rhythm on all four feet, with a flat back, whereas;
- A cow scoring 3 will be unable to keep up with the healthy herd and will either show uneven weight-bearing on a limb that is immediately identifiable, or will walk with shortened strides and an arched back (AHDB Dairy, 2013).



Figure 6 Mobility Score Card



### AHDB Dairy Mobility Score

Category of score	Score	Description of cow behaviour	Suggested action
<b>Good mobility</b> 	0	<p>Walks with even weight bearing and rhythm on all four feet, with a flat back.</p> <p>Long, fluid strides possible.</p>	<ul style="list-style-type: none"> <li>No action needed</li> <li>Routine (preventative) foot trimming when/if required</li> <li>Record mobility at next scoring session.</li> </ul>
<b>Imperfect mobility</b> 	1	<p>Steps uneven (rhythm or weight bearing) or strides shortened; affected limb or limbs not immediately identifiable.</p>	<ul style="list-style-type: none"> <li>Could benefit from routine (preventative) foot trimming when/if required</li> <li>Further observation recommended.</li> </ul>
<b>Impaired mobility</b> 	2	<p>Uneven weight bearing on a limb that is immediately identifiable and/or obviously shortened strides (usually with an arch to the centre of the back).</p>	<ul style="list-style-type: none"> <li>Lame and likely to benefit from treatment</li> <li>Foot should be lifted to establish the cause of lameness before treatment</li> <li>Should be attended to as soon as practically possible.</li> </ul>
<b>Severely impaired mobility</b> 	3	<p>Unable to walk as fast as a brisk human pace (cannot keep up with the healthy herd).</p> <p>Lame leg easy to identify – limping; may barely stand on lame leg/s; back arched when standing and walking.</p> <p>Very lame.</p>	<ul style="list-style-type: none"> <li>This cow is very lame and requires urgent attention, nursing and further professional advice</li> <li>Examine as soon as possible</li> <li>Cow will benefit from treatment</li> <li>Cow should not be made to walk far and kept on a straw yard or at grass</li> <li>In the most severe cases, culling may be the only possible solution.</li> </ul>

Source: (AHDB Dairy, 2013)





### 3.2 Prompt and Effective Treatment

Once a cow has been identified as being lame she needs to be treated without hesitation. When the author was travelling and visiting farms in different countries it was noted on most farms there was some kind of handling facility for a lame cow. In the Netherlands the herds are routinely trimmed up to four times a year and this is done by a professional hoof trimmer, however there would also be a crate to handle problem cases themselves.

In New Zealand most farmers seemed to treat lame cows themselves with little use of a hoof trimmer or vet for routine problems. Cows are drafted out as soon as they were seen lame and treated. It is important to identify the type of lameness and treat accordingly.

Farmers should consider upskilling and taking a lameness course especially those farmers with large herds where lame cows are more frequent. After travelling around the world it seems most farmers in other countries had the skills and equipment to treat problem cases themselves without any hesitation or delay.

There are courses in hoof trimming and mobility scoring available to farmers here in Ireland these are run by Dunmasc Genetics, Irish Cattle Foot Trimmers Association and XL Vets.

### 3.3 Record Lameness Cows

Once cows have been treated for lameness either a physical treatment or antibiotic treatment it should be recorded. It goes back to the old saying you can't manage what you can't measure. By building up lameness records on a farm it will allow the farmer to make better decisions.

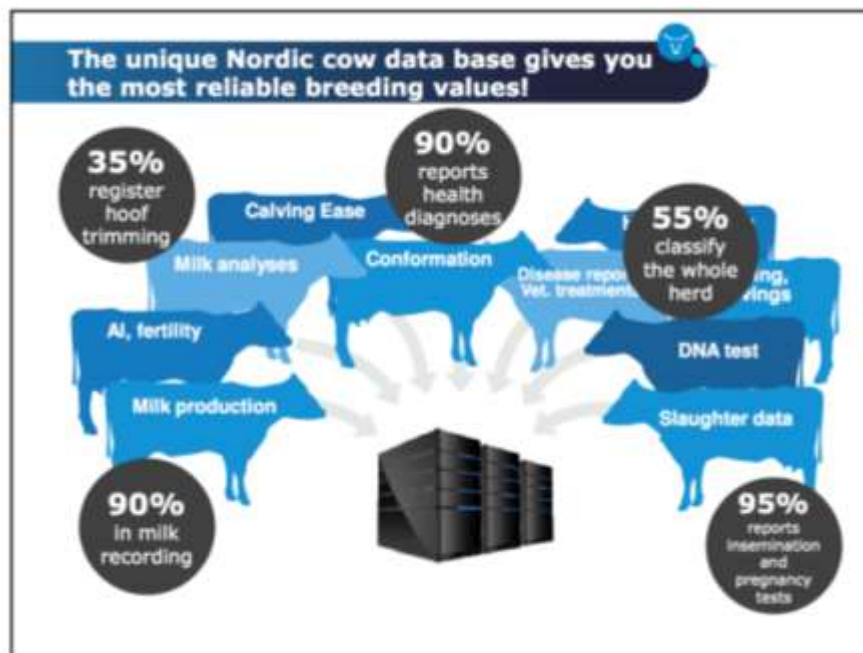
Records can help farmers, hoof trimmers and vets see what type of lameness is the biggest problem and then look at ways to minimise that cause of lameness whether is related to nutrition, infrastructure, breeding etc. Farmers should be able to record lame cows the same as they would a case of mastitis. Electronic recording is ideal but if not start off with a pen and paper.

For professional hoof trimmers and vets there are electronic programs dedicated to recording lameness such programs include ALL4FEET system in the UK or Hooftec which is also available in the UK.

Once recorded this information can be used not only on farm but if uploaded to breeding companies or ICBF for example it can develop trends and identify genetic trends improving the bulls we use in the future. This is already happening in other countries and it is only a matter of time before recording lameness will become mandatory.



Figure 7 Viking Genetics



Source: (Nielsen, 2016)

### 3.4 Implement a Cows Time Budget

In an interview with Fred Hokestra professional hoof trimmer in the South Island of New Zealand he reckons stress is biggest contributing factor and it is about getting the basics right, reduce overcrowding, slippery concrete and pushing cows. Fred looks at the time budget for a cow and tries to get his farmers to put the time budget in practice as best they can to reduce stress which will reduce lameness (Hoekstra, 2014).

Time Budget for a cow:

- 12 to 14 hours resting
- 8 hours eating
- 1 hour for socialising
- 1.5 hour for drinking

The author came across the time budget on a second occasion in Denmark at the International Lameness Conference there seems to be a lot of emphasis put on this and is something to be taken into consideration when increasing herd sizes as time walking and standing in yards increases with cow numbers.

This comes back to the importance of maintaining cow passageways and having good cow flow. If cows are walking further than 1km to a paddock it only makes sense to put them in a closer paddock for the second milking so they are not walking that distance twice in one day which eats into their time budget.



### **Fred Hokestra**

Fred Hokestra – Founder of Veehof hoof care specialists in New Zealand. Fred originally from Holland moved out to New Zealand in 1990. He is a qualified hoof trimming instructor. He is passionate about lameness and is the president of the NZ & Australian Hoof Trimmers Association.

Fred provides a hoof trimming service to Canterbury, West Coast and Southland and holds hoof trimming courses throughout New Zealand. Fred is also the distributor of WOPA crushes in New Zealand.

Take home messages after meeting with Fred – Stress is one of the main contributors to lameness. We need to look at a cow's time budget and implement it as best we can to reduce stress on the cows and reduce lameness.

*Figure 8 Cows Time Budget*



**Source: (Lievaard, 2016)**

If you implement this time budget it only leaves 2.5 hours for walking in the cows and milking a day.

As part of the Global Focus Program the author visited a 190 cow dairy farm in Kenya which would be considered a large dairy farm in Ireland. On the farm, the cows were hand milked, by 14 people, in their paddock twice a day, and they were each individually called over to milk by name.

These cows were allocated their full time budget, and stockmanship was second to none. Lameness was not a problem here!



### 3.5 Collecting Yards

Cows are creatures of habit and like to come into the parlour in their own order. To do this you have to ensure that there is enough space in the collecting yard for the cows to move around a minimum of 1.5m sq. for Friesian or 1.3m sq. for Jersey. If there is a backing gate avoid putting it on for the first 20 minutes of milking to give the cows the space, they need to move and get in order.

Neil Chesterton highlighted the importance of being patient with the cows and not to come out of the pit as this slows down milking and upsets the cows. He recommends to call the cows in a nice voice 'come on, come on' etc. from a young age when they are calves and to get all the employees to call the cows in the same manner.

#### **What to look out for to improve cow flow in the collecting yard:**

Min 1.5 sq. m per cow for Friesian, min 1.3m per cow for Jersey

Make sure concrete is not slippery

Avoid sharp bends

Brighten up dark sheds

Check for stray electricity.

#### **Case Study Guus Mensink Farm:**

Guus Mensink milks 240 cows with his brother in the Netherlands. The timing visiting this farm couldn't have been better as he had a contractor in hoof trimming the cows. Every year the cows are trimmed 4 times (preventative trimming) as cows are housed in doors. Cows that are housed all year round require more routine hoof trimming.

They also have their own crush onsite to treat any cow once she is seen lame and he does this himself.



Professional hoof trimmers carrying out routine trimming on Guus Mensink's farm.



## **4. HOW TO REDUCE LAMENESS AT INDUSTRY LEVEL**

### **4.1 Develop a Cost Calculator**

A model needs to be constructed using best evidence available which is Ireland specific on the economic effects of lameness. A simple cost calculator needs to be constructed for a farmer to use to see how much lameness is costing him/her on their own farm on an annual basis. This calculator would also help professional hoof trimmers/vets when trying to get farmers to understand the importance of identifying and treating lame cows as early as possible without thinking about the call out fee and leaving the animals condition progress.

### **4.2 Teagasc to appoint a full time researcher on lameness**

For Teagasc to open a new position for a researcher to focus full time on 'Lameness in Dairy Cows in Ireland'. On travelling to various countries there was at least one if not two experts in lameness who focus all their time on lame cows and conduct research trials. Unfortunately, Ireland does not have anyone in the country who dedicates their time solely to researching lameness and providing farmers and hoof trimmers/vets with literature and latest findings on lameness on a continuous basis.

### **4.3 AHI to run a lameness workshop.**

For Animal Health Ireland to set up a Lameness Workshop. This workshop should be implemented the same way as the Cell Check Workshop which is very successful. The author would recommend that a Vet/Category 1 Professional Hoof Trimmer trained in mobility scoring would deliver this workshop in conjunction with Teagasc and milk companies/plc's such as Glanbia, Dairygold, Aurivo Co. op etc. As part of the one day workshop the author recommends that mobility scoring would be a key part of the day where farmers are trained to identify lame cows at an early stage, this can be carried out in a milking parlour.

### **4.4 'Farm Guide for Lameness Control'**

That Animal Health Ireland publish a guide to help farmers control lameness in the same way they have done for mastitis with the 'Farm Guidelines for Mastitis Control'.

### **4.5 Mandatory recording of lame cows**

Recording cases of lameness needs to become mandatory even if it is only a physical treatment without antibiotics it should still be recorded by the person that treats the animal whether it is the farmer, vet or professional hoof trimmer. The author recommends that all cows should be recorded using the ICAR Claw Health Atlas Guide and that all this data is sent to ICBF.

Recording lameness needs to be included in all Irish farm software systems the same way mastitis is with yearly reports available for farmers, hoof trimmers and vets.

### **4.6 Introduce an unacceptable level of lameness on farms**

The Department of Agriculture along with Board Bia need to introduce an unacceptable level of lameness in a herd. High levels of lameness in herds should be unacceptable. Animal welfare



is becoming more and more important and lameness needs to be addressed as it is not acceptable to leave lame cows lame for long periods of time as they are in pain. By putting an unacceptable level of lameness in place it reassures consumers that their produce is coming from happy healthier cows.

#### **4.7 Add new category to Tams 2 for specialised hoof trimming crates**

Health and safety on farms is becoming so important and treating lame cows is physical dangerous work. It is important that those treating lame cows have specialised equipment that is safe for both the operator and the animal. Under the Tams2 safety grant equipment scheme all that is included to treat lame cows is a hoof hoist and it is capped at €270, this does not cater for the safety of the animal or the operator. The author recommends that the Department of Agriculture look at the animal handling equipment and add in a category for specialised hoof trimming crates that are designed to improve health and safety when hoof trimming.



## CONCLUSIONS

There is a serious lack of awareness about the scale and impact of lameness in this country. By 2020 lameness could be costing Irish farmers over €90,000,000 a year.

A lame cow has many hidden costs the main contributors are milk loss, fertility and culling (Ryan & O' Grady, 2004). Farmers need to be educated more on the indirect costs of lameness and as there is a tendency to only see the direct costs which include the vet, hoof trimmer or medicine. Most Irish farmers are unable to put any estimate on the economic effects of lameness and those that do hugely under estimate the financial impact of lameness in their herds.

If a farmer sees a cow with mastitis in the morning, he/she will not hesitate to treat her and will most certainly not wait a few days to treat her. Mastitis is not too different from lameness in a lot of ways, both can be caused by bacteria, both affect the cow's health, both create pain and discomfort for the cow, if left untreated the problem escalates, both have financial consequences that are mainly indirect costs, both can lead to culling. If a lame cow is spotted in the morning she might not be treated for several days, farmers need to take the same approach to a lame cow as a cow with mastitis.

Both farmers and industry need to start prioritising lameness. It is a very costly problem and one that is increasing.

The action that can be taken at farm and at industry level to reduce the causes and incidence of lameness in dairy cows, is not difficult to implement. It is good husbandry practice and it makes good business sense. It is also consistent with the emphasis on sustainability and greater awareness of the conditions under which our food is produced.





## RECOMMENDATIONS

Reducing lameness on farms will require the resources, expertise and knowledge from different sectors of the industry. A combination of farmers, vets, professional hoof trimmers, and industry will have will to work together.

Dairy farmers, vets and industry already have experience working together and have developed fantastic programs for reducing mastitis. We need to go back to basics and take the same approach to lameness. The only difference is that there is the added value in introducing a third sector the professional hoof trimmers who are on farms every day and treat the majority of lame cows in the country.

Lame cows can be detected earlier by mobility scoring on a regular basis in the milking parlour. Once lame cows are identified farmers should take immediate action whether they treat the cows themselves or get in a hoof trimmer or vet. The type of lameness can be identified using the ICAR Claw Health Atlas. Once cows have been treated either physically or with antibiotic they should be recorded.

Recording is key to identify main lameness causes and address problem areas. You can't manage what you can't measure.

Maintaining cow passageways is extremely important for good cow flow and minimising lameness. Stress and Stockmanship are contributors to lameness.

The Industry needs to start prioritising lameness and investing in research. Industry can improve lameness by acting on the following recommendations:

- Develop a Cost Calculator for lameness
- Teagasc to appoint someone full time to researching lameness
- AHI to run a lameness workshop similar to the Cell Check Workshop
- AHI to develop 'Farm Guide for Lameness Control'
- Mandatory recording of lame cows
- Introduce an unacceptable level of lameness on farms
- Add a new category to the Tams 2 for specialised hoof trimming crates





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