



Recording of claw and foot disorders in dairy cattle: current role and prospects of the international harmonization initiative of ICAR

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11th of June, 2015

ICAR Technical Meeting,
Krakow, Poland

Overview



- Introduction
 - Survey on recording of foot and claw disorders
 - Status of genetic evaluation for claw health
 - International harmonization of foot and claw disorders
 - ICAR Claw Health Atlas
 - Conclusions
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Introduction

- Foot and claw disorders - **animal welfare issue**
 - Foot and claw disorders – **high economic importance**
(up to 450 Euro per lame cow and year)
 - **High percentages of lame cows** or cows with claw disorder
(70% Van der Waaij et al. (2005); 36% Rouha-Mülleder et al. (2009))
 - For effective breeding - **data from claw trimmers important**
 - **Challenge in genomic selection** – sufficient phenotypes and genotypes of novel traits for calibration
 - **Harmonization within and across countries needed!**
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Initiative of ICAR WGFT

- Survey of ICAR WGFT 2012 – big interest on feet and leg problems
- ICAR WGFT with claw health experts –Berlin 5/2014
- ICAR Survey on claw health recording - Aug/Sept 2014
- ICAR WGFT with claw health experts - Vienna 10/2014
- 6 Online-Meetings and many emails for elaboration
- Finalization - May 2015:

„ICAR Claw Health Atlas“



Results of survey

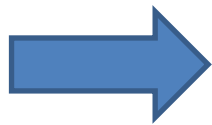
Participation

- Topic „**Claw health and feet and leg disorder recording**“
 - **Online questionnaire**: August - September 2014
 - **Overall response rate: 60%** (53 ICAR member countries)
 - 22 replies from 18 countries to the survey directly
 - partial information from further 14 countries (information by email)
 - **Who answered?**
Researchers, scientists, claw experts, representatives from performance and/or breeding organisations, veterinarians
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Results of survey

Content of survey

- Standardized key, which disorders are recorded, grading systems, quantitatively most important disorders,..
- Documentation and recording (logistics, coverage, who,...)
- Central data storage
- Formation and training of claw trimmers
- Promotion programs,..



Intention to get an idea and overview about the current situation in different countries

Results of survey

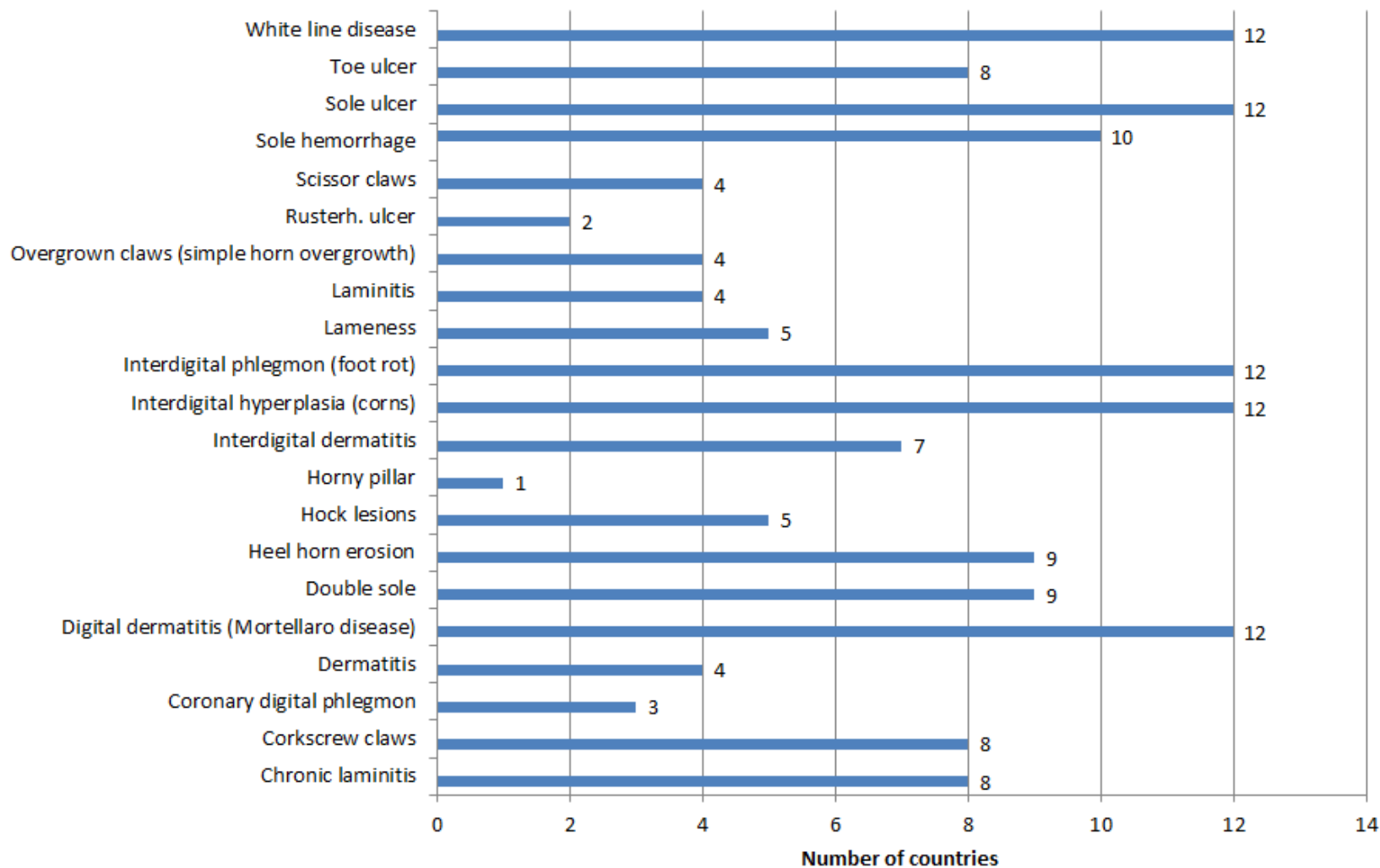
Harmonized key of claw disorders by country



- **10 countries with harmonized single key of claw disorders** (Denmark, Finland, France, Germany, Israel, Norway, Spain, Sweden, The Netherlands, United Kingdom)
 - **Harmonization across the Nordic countries** (Nordic Claw Atlas, 2013)
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Results of survey

Which disorders are recorded?





Results of survey

Disorders and details of recording

- Number of diagnoses:
 - 6 to 20 claw disorders + up to 10 foot and leg conditions
 - big regional differences
 - Details of recording:
 - 2 countries on cow level
 - 9 countries on cow leg level
 - 4 countries per single claw
 - Severity grading (numeric/descriptive):
 - 7 countries – yes for all disorders
 - 5 countries – yes for certain disorders
 - 2 countries – no disorders
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Results of survey

Main source of information

- Claw trimmers main source in most countries, veterinarians intervene in severe cases
 - **Most countries: 40 to 60 % done by professional claw trimmers** (Austria, Canada, Germany, Italy, Netherland, Norway, Sweden, United Kingdom)
 - Finland and France: 60-80% by professionals
 - Denmark, Israel and Spain: 80-100% by professionals
 - New Zealand and Australia: cows are on pasture most of the year - claw trimming is not standard practice
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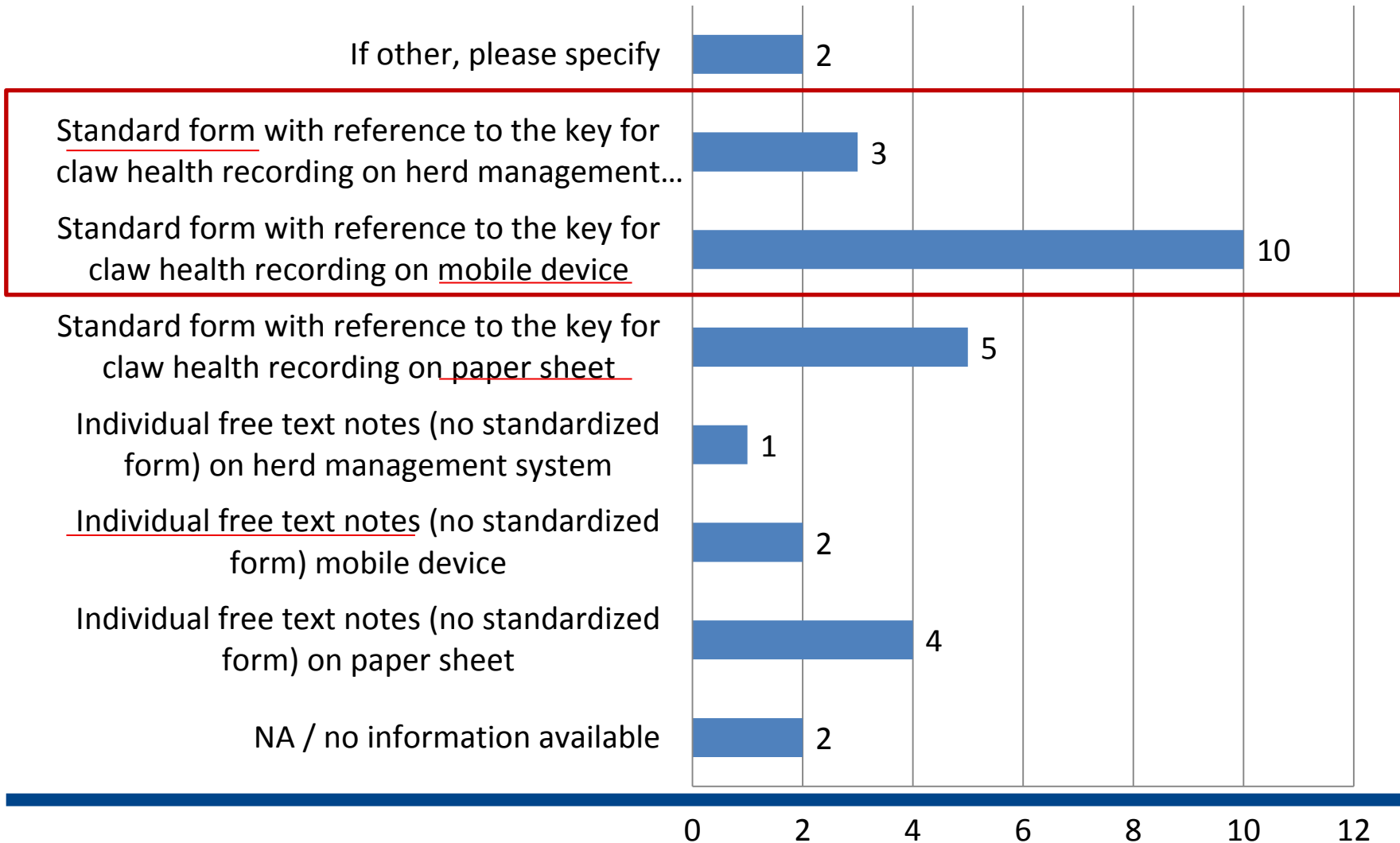
Results of survey

Education and training of claw trimmers

- **In most countries** people are allowed to **work as a trimmer - with or without education**
 - **Trimmers are licensed and/or certified** (e.g. Austria, Denmark, France, Germany, Italy, Sweden, Finland, Norway)
 - **Claw trimmers are provided with** either **special education programs** or training by claw trimmer experts or professionals (e.g. Canada, Denmark, Finland, Israel, Spain, The Netherlands or United Kingdom)
 - Some countries organize **regular training sessions, or undertake other measures to ensure comparability** of the results between the different hoof trimmers (e.g. Charfeddine, 2014; Van Pelt, 2015).
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Results of survey

Recording practices*



* it is assumed that a rather large portion of the claw trimmings are not documented at all



Results of survey

Central data storage

- **Use for benchmarking and breeding:** data need to be centrally available
 - **Electronic documentation systems** for claw disorders
 - data are partly provided for research
 - but **data transfer to a central data base - not common standard**
 - **Standard practice in countries with routine genetic evaluation**
 - Nordic countries
 - The Netherlands
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Status of genetic evaluation for claw health



- **Routine genetic evaluations for claw health:**
 - The Netherlands since 2010
 - Denmark, Sweden and Finland since 2010; since 2014 genomic breeding value for claw health within 10,000 genotyped cows with phenotypes (NAV, 2014)
 - Norway since 2014
- **Spain and France:** infrastructure to capture claw trimming data (25-30% of cows)
- **Other countries:** data from commercial dairy farms for genetic research projects (e.g. Canada, Germany)
- Many activities and projects are under way

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International harmonization of foot and claw disorders

- **Emphasis/projects on recording of foot and claw disorders observed in many countries**
 - A broad range of recording practices and documentation schemes exists
 - ICAR WGFT invited internationally recognized claw experts to collaborate
 - **Fruitful interdisciplinary collaboration among experts from different backgrounds** (claw health experts, hoof trimmers, bovine practitioners, geneticists)
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International harmonization of foot and claw disorders

- focusing solely on the standardization and harmonization of data recording
 - **designed to provide a universal tool for claw trimmers and practitioners**
 - resulted into **harmonized descriptions of 27 different lesions**
 - **Descriptive trait definitions are used** to ensure accurate classifications
 - **AIM: support the collection of comparable and high-quality data within and across countries** (e.g., genetic evaluation purposes; interventions to improve claw health on farms)
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ICAR CLAW HEALTH ATLAS



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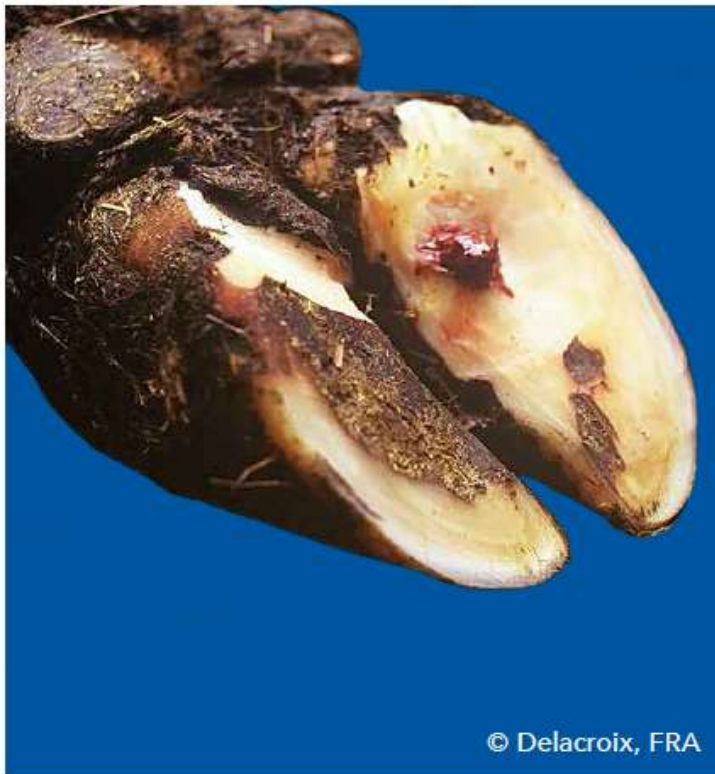
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Overview of Foot and Claw Disorders

Name	Code	Description	Synonymous Terms	P
Swelling of coronet and/or bulb	SW	Uni- or bilateral swelling of tissue above horn capsule, which may be caused by different conditions		33
Ulcer	U	Ulceration of the sole area specified according to localization (zones) such as bulb ulcer, sole ulcer, toe ulcer, toe necrosis		
Sole ulcer	SU	Penetration through the sole horn exposing fresh or necrotic corium		35
Bulb ulcer	BU	Ulcer located at the bulb	Heel ulcer	36
Toe ulcer	TU	Ulcer located at the toe		37
Toe necrosis	TN	Necrosis of the tip of the toe with involvement of bone tissue		38
Thin sole	TS	Sole horn yields (feels spongy) when finger pressure is applied		40
White line disease	WL	Separation of the white line with or without purulent exudation		
White line fissure	WLF	Separation of the white line which remains after balancing both soles		41
White line abscess	WLA	Necro-purulent inflammation of the corium		42

Sole ulcer (SU)

Penetration through the sole horn exposing fresh or necrotic corium



ICAR Claw Health Atlas

(Egger-Danner et al. 2015)



- **International harmonized descriptions** of foot and claw disorders available for the first time
 - **Publically available** for download at ICAR webpage
 - **Promotion** of ICAR Claw Health Atlas
 - **Versions in other languages will be available**: translated text need to be provided
 - Access to a printable high quality version will be provided by ICAR
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Conclusions

- **Focus on foot and claw health increasing** (farm economy aspects, animal welfare,.)
 - **Claw trimming data are important** for genetic improvement of claw health
 - **Challenge: enough phenotypes for genomic selection** of these novel traits - **international cooperation!**
 - **International harmonized descriptions** of foot and claw disorders **major step forward – implementation needed!**
 - **We can do better when we work together** (multidisciplinary, multi-country approaches) – ICAR Claw Health Atlas – example of fruitful cooperation!
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Acknowledgement

- The ICAR Working Group on Functional Traits acknowledges **the excellent cooperation with the international experts** on claw health and expresses its gratitude for their support and proposals for the elaboration of new standards for the recording of claw health information.
- **Without their expertise and their great support it would have been impossible to succeed** with the ambitious plans of making available this new ICAR Claw Health Atlas.

The ICAR Claw Health Atlas is found:

https://www.icar.org/Documents/ICAR_Claw_Health_Atlas.pdf

ICAR CLAW HEALTH ATLAS



Thank you for your attention!