



Overview of different data sources in the feet and legs complex

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Meeting of the ICAR WGFT: “Recording of feet and legs problems with focus on claw trimming data”, Berlin May 20, 2014

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Data sources

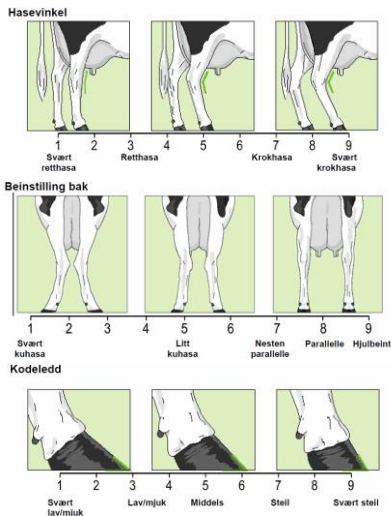
- Conformation scores – feet and legs
- Claw health – claw trimming
- Claw health – veterinary treatments
- Locomotion
- Lameness
- Automatic Milking Systems with associated sensors



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Conformation scores – feet and legs



+Routine recording

+Available

+ICAR standards

–Low genetic correlations to claw health (e.g. Ødegård et al., 2014)

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Feet and leg conformation and claw health



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Genetic correlations between claw health and feet and leg conformation in Norwegian Red cows

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Genetic correlations between claw disorders and feet and leg conformation traits were 0, low, or moderate

Table 4. Genetic correlation between claw disorders and feet and leg conformation traits. Posterior mean (standard deviation) and [95 % highest posterior density interval]

	Rear leg rear view new	Rear leg rear view old	Rear leg side view	Foot angle	Hoof quality
Corkscrew claw	0.02 (0.06) [-0.09; 0.13]	0.15 (0.05) [0.05; 0.25]	-0.04 (0.05) [-0.13; 0.05]	0.09 (0.05) [-0.01; 0.18]	-0.86 (0.03) [-0.92; -0.79]
Infectious claw disorders	-0.20 (0.07) [-0.33; -0.05]	-0.02 (0.07) [-0.15; 0.12]	0.01 (0.07) [-0.11; 0.14]	0.16 (0.07) [0.03; 0.29]	-0.12 (0.08) [-0.26; 0.04]
Laminitis related claw disorders	0.26 (0.08) [0.11; 0.41]	0.10 (0.07) [-0.03; 0.23]	0.00 (0.07) [-0.13; 0.13]	0.17 (0.06) [0.05; 0.30]	-0.33 (0.07) [-0.47; -0.18]

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Claw health – claw trimming

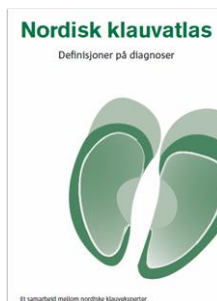
- Recording of claw health status at claw trimming:
Healthy or affected of 1 or more of 9 claw disorders:

- Corkscrew claw
- Heel horn erosion
- Dermatitis
- Sole ulcer
- White line disorder
- Haemorrhage of sole and white line
- Interdigital phlegmon
- Lameness
- Acute trauma

From: Norwegian claw health recording system

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Innhold

Norway	Denmark	Finland	Sweden	United Kingdom	
Heelhornerosjon	Ballerid/ Ballerhornerosjon	Kantavurppu	Klörvita	Heel horn erosion	4
Blødning i selen	Selblødning	Verhymäntäntuissa	Sulblödning	Sole haemorrhage	5
Såleulcer	Såleulcer	Anturahaavama	Klövulcer	Sole ulcer	6
Lesning i den hvite linjen	Hul veng, lön huld linje	Valkoinen repelmä	Hövlåg, separation vita linjen	White line fissure	7
Dyll i den hvite linjen	Hul veng, byld i huld linje	Valkoinen paise	Sår, bolid i vita linjen	White line abscess/ White line ulcer	8
Ulmus	Nydannelse	Sorkkavälin tilkannu	Ulmus	Interdigital hyperplasia/ Interdigital fibroma	9
Dobbeltsole	Dobbelt söl	Kaksipöytä	Dubbelsula	Double sole	10
Mild hudbetennelse (interdigital dermatitis)	Hudbetennelse	Sorkkavälin ihutiivähdys	Dermattit lindig	Dermatitis/ Skin infection	11
Digital dermatitt	Digital dermatitt, DD	Sorkkavälin ihutiivähdys	Digital dermatitt	Digital dermatitis	12
Vorte	Digital Vorte	Sorkkavälin	Vörta	Verrucose dermatitis/ Wart growth/ Papillomatous digital dermatitis	13
Klauvpatellagigrom	Klauvbrandbyld	Sorkkavälin ajotulehdys	Klövpatellagigrom	Interdigital phlegmon/ Foul in the foot/ Foot rot	14
Tilbytt	Tilbyttelse	Klövpatella	Tilbid	The ulcer/ Toe abscess	15
Asymmetriske klauver	Asymmetrisk klöv	Episymmetrisk sorkkat	Asymmetrisk klövform	Asymmetric claw/ Different shaped claws	16
Korketrekklauver	Prostrækker klöv	Sorkkavälinvaurio/ Klövserotia	Korketrekklöv	Corkscrew claw	17
Overvokste klauver	Overgroet klöv	Ylikasvaneet sorkkat	Övervuxen klöv	Overgrown claw	18
Såleklauver	Såleklöv	Såleklorat	Såklöv	Soleor claws	19
Kronisk foringssvulst	Snabelklöv/ Laminitis væksting	Kronishen sorkkavälinvaurio	Flögbyrning, kronisk klöv	Chronic laminitis/ Laminitic ring	20
Halthet	Halthed	Ostumahe	Hälta	Lameness	21
Havskade	Havstrykning	Klövverhymäntä	Havskada	Hock lesion	22

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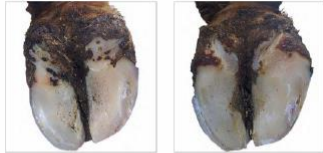


Nordic Claw Atlas

Hornforråtnelse

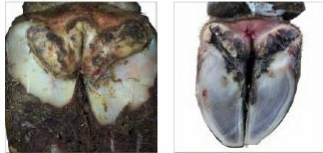


Mild



Overflatelesjoner i hælrområdet.

Moderat til alvorlig



Moderate til alvorlige erosjoner i hælrområdet som kan nå kernehuset, typisk til fersket.

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Nordic ClawAtlas

- Joint Nordic recording system for claw disorders
- Electronic recording
- Harmonization of trait definitions

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Claw health – veterinary treatments



- Included in disease recording systems
- Norway: same disease codes as for claw trimming data
- Low frequency
- Could also be producer recorded

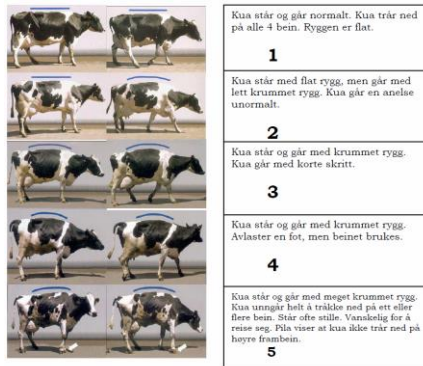


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Locomotion



+Direct measure

-Difficult to score

-Training & expertise



Lameness

Halthet



Svak



Står normalt, men går stilt med krum rygg.



Stor



Står og går med krum rygg, riktiger med hodet og er tydelig halt.



- Subjective scoring
- Unspecific
- Many different causes

From: Nordic Claw Atlas 2013

Automatic Milking Systems with associated sensors



- Records on cow traffic and behaviour (e.g. milking frequency, pedometer) may provide useful indicators of claw health
- Objective & frequent measures recorded routinely
- Future data sources?
 - Automated methods of lameness detection
 - Video motion analysis
 - Automated locomotion score
 - Systems for monitoring locomotion and posture behaviour
 - Weight distribution among legs when standing



Data sources

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