

Claw Health – European insight

The 29th Holstein and Red Holstein Conference in Stockholm



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• Healthy cows

- Animal welfare
- Better economy
 - More economical production
 - Less costs for the veterinarian
- Best image for dairy production
 - Less external political regulations
- Claw health – important health trait for the future !
 - Big impact in large herds

• Digital dermatitis

Infection related

Mild



Severe



• Interdigital dermatitis

Infection related

Mild



Severe



• Heel horn erosion

Infection related

Mild



Severe



- Interdigital hyperplasia/Skin proliferation

Infection related

Mild



Severe



• Sole haemorrhage

Metabolic related

Mild



Severe



• Sole ulcer

Metabolic related

Mild



Severe



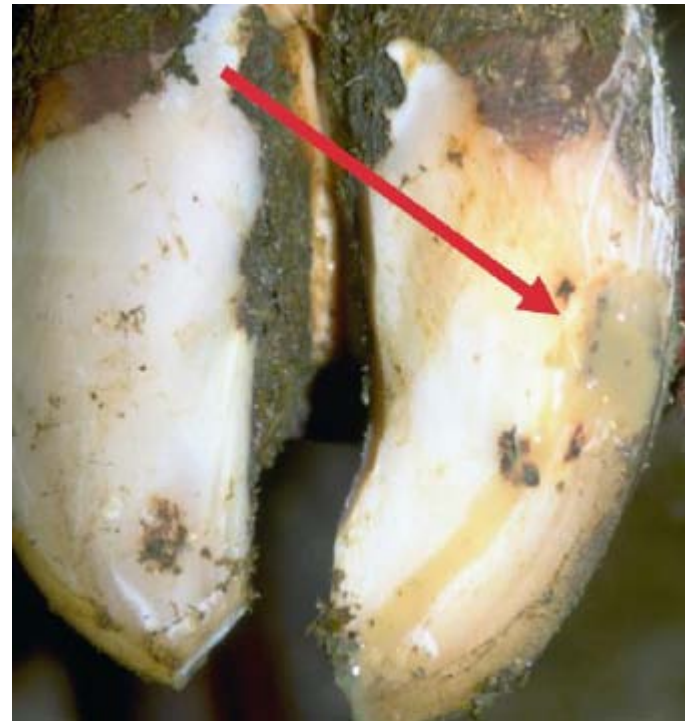
• White line disease

Metabolic related

Mild



Severe



• Double sole

Metabolic related

Mild



Severe



- Cork screw claw

Malformation claw diagnosis

Mild



Severe



• How to breed for improved claw health

- Registrations are the key !!
- Registrations have to be easy to handle – especially in larger herds
 - Otherwise too timeconsuming – and not done
- The claw health registrations are valuable management tools at farm level
 - Important message to farmers
 - Convince hoof trimmers
- Information have to go to a common database

- Number of claw trimmings in total all years

	RDC	HOL	JER	Total
Sweden	384,739	429,532	5,552	819,823
Finland	92,913	44,359	-	137,272
Denmark	15,177	166,295	25,493	206,965

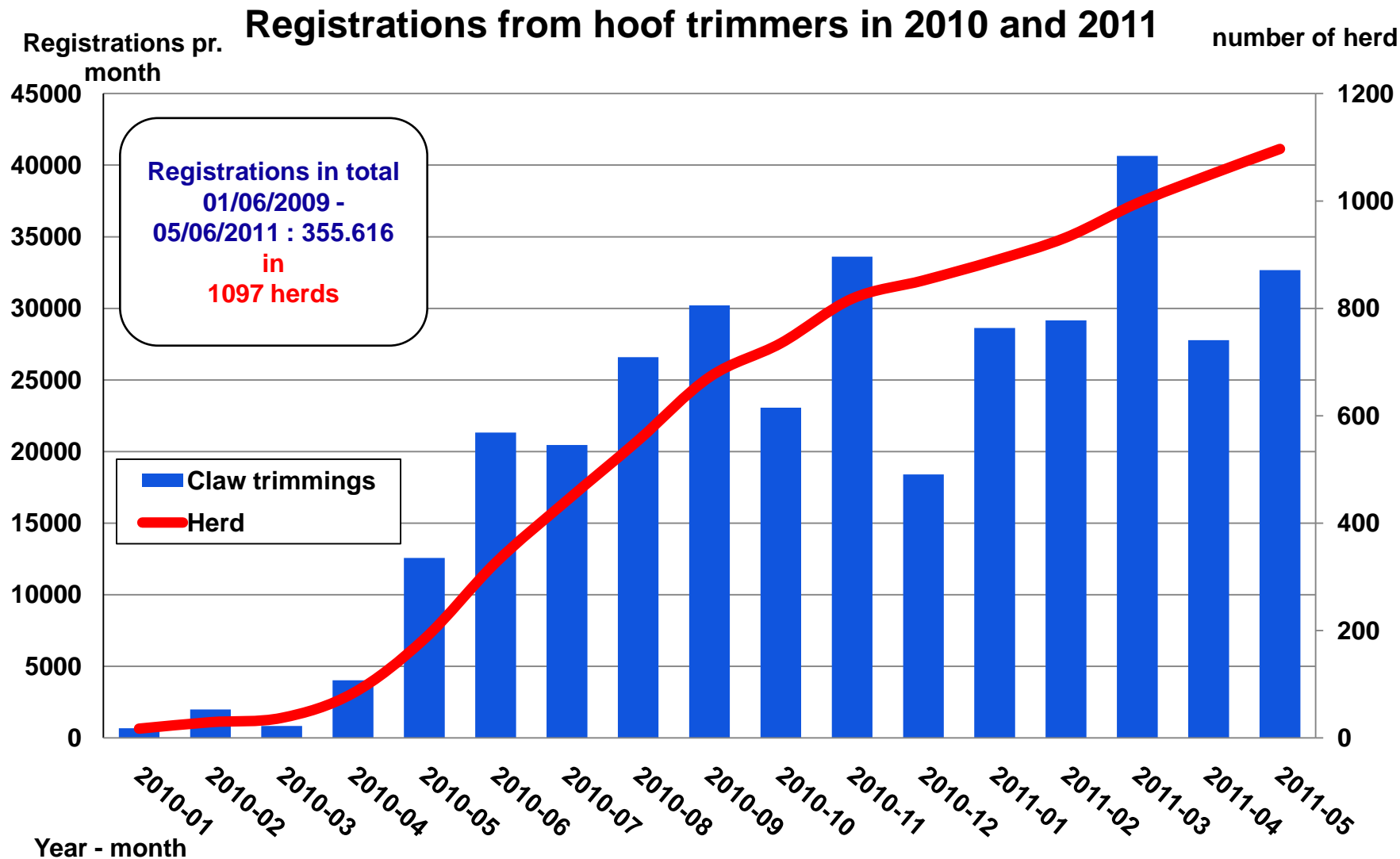
Number of records in total >1,164,000

Sweden was the pioneer and has been registering during many years

- Registration unit in Denmark



Data collection in Denmark



• Genetic parameters

- Heritabilities on single disorders
 - In general 0,04 – 0,14 according to trait
- Genetic variation
 - Medium – high
 - Big differences in large progeny groups
- Consequence:
 - Possible to breed for better claw health and increase profit...

• Claw health index

- Sweden: Was the pioneer and published first index 2007
- Holland: Index introduced in 2010
- Denmark, Sweden & Finland (Nordic): New improved index 2011
 - In other countries – e.g. Germany – studies and pilot projects are ongoing – but no official indexes yet.

Traits in claw index

Trait	Nordic	The Netherlands
Dermatitis – Interdigital and digital	x	x
Heel horn erosion	x	
Skin proliferation / Interdigital hyperplasia	x	x
Sole haemorrhage	x	x
Sole ulcer	x	x
Cork screw claw	x	
White line separation	x	x
Feet & legs conformation		x

• Claw health index – The Netherlands

Trait	Scale
Sole Haemorrhage	0/1/2/3
Digital dermatitis	0/1/2/3
Interdigital dermatitis	0/1/2/3
Sole ulcer	0/1/2/3
Interdigital hyperplasia	0/1
White line disease	0/1
Feet and legs conformation – (rear leg rear view, rear leg side view, foot angle, locomotion, feet & legs)	

Scale (0/1/2/3): 0 = no disorder ; 1 = slight disorder ; 2 = moderate disorder ; 3 = severe disorder

Scale (0/1): 0 = no disorder; 1 = slight-, moderate- or severe disorder.

• Claw health index – Nordic countries

Trait	Scale
Dermatitis – Interdigital and digital	0/1/2
Heel horn erosion	0/1/2
Sole haemorrhage	0/1/2
Sole ulcer	0/1/2
Cork screw claw	0/1
White line separation	0/1
Skin proliferation / Interdigital hyperplasia	0/1

Scale (0/1/2): 0 = no disorder ; 1 = mild disorder ; 2 = severe disorder

Scale (0/1): 0 = no disorder ; 1 = mild or severe disorder

All statistics regarding Nordic Claw Health Index come from Nordic Cattle Genetic Evaluation (NAV)

Relative weights single disorders – The Netherlands

Trait	Relative weight
Sole Haemorrhage	0,852
Digital dermatitis	0,929
Interdigital dermatitis	1,000
Sole ulcer	0,416
Interdigital hyperplasia	0,240
White line disease	0,221

Stoop et al., 2010

AM with conformation traits as correlated information in "Multiple-trait" evaluation

• Relative weight single disorder - Nordic

Trait	Relative weight
Dermatitis – Interdigital and digital	0,268
Heel horn erosion	0,291
Skin proliferation / Interdigital hyperplasia	0,218
Sole haemorrhage	0,189
Sole ulcer	1,000
Cork screw claw	0,032
White line separation	0,041

Multi-trait linear AM

• Reliabilities obtained

The Netherlands				
Daughters in total	150	150	150	150
Daughters – conf	90	90	90	0
Daughters – claw health	0	15	30	15
Rel claw health index (%)	24	59	69	53

Stoop et al., 2010

Nordic countries				
Daughters – claw health	10	20	30	40
Rel claw health index (%)	45	50	60	65

Correlation between claw health and Total Merit Traits (NTM) in Nordic index - Holstein

• Longevity	0.25
• NTM	0.20
• Other diseases	0.15
• Udder health	0.15
• Feet & Legs	0.05
• Temperament	-0.05

Claw health will be included in NTM August 2011

• Example two second crop proven bulls

	V Exces	VAR Elvis	Difference
Daughters with claw info	10516	4669	
Claw index	119	98	21
Dermatitis – Interdigital and digital	0.32	0.31	0.01
Heel horn erosion	0.16	0.22	- 0.06
Skin proliferation	0.05	0.10	- 0.06
Sole haemorrhage	0.18	0.24	- 0.06
Sole ulcer	0.08	0.10	- 0.02
Cork screw claw	0.00	0.01	- 0.01
White line separation	0.10	0.10	- 0.01

- Future opportunities internationally
 - Trait definition on single disorders
 - To be harmonized to optimize correlations between countries
 - ICAR standards !
 - Interbull trait
 - Genomically enhanced indexes
 - Based on daughter proven bulls in the reference group
 - Large scale genomic tests on females with phenotypic registrations on claw health

• Thanks for your attention



VAR Etlar – Claw index 72



D Limbo – Claw index 123