

# Long and short term strategies to improve claw health and to reduce lameness



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SKARA

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## 15<sup>th</sup> EHRC Conference

*"Maximising Profitability by Good Herd Management"*

Hungary – Budapest, 17-20, 2017

### Main Topics of the Conference

Feed efficiency

Genomic selection as a Farm tool

Managing healthy and long lasting cows

Claw health

Genetic variation within the herd

Gene editing

THESE CLAWS ARE MADE FOR WALKING

BUT

Conditions are rarely  
optimal in dairy  
production

# Long and short term strategies to improve claw health and to reduce lameness







Dept. Biosystem och Technology, SLU Alnarp

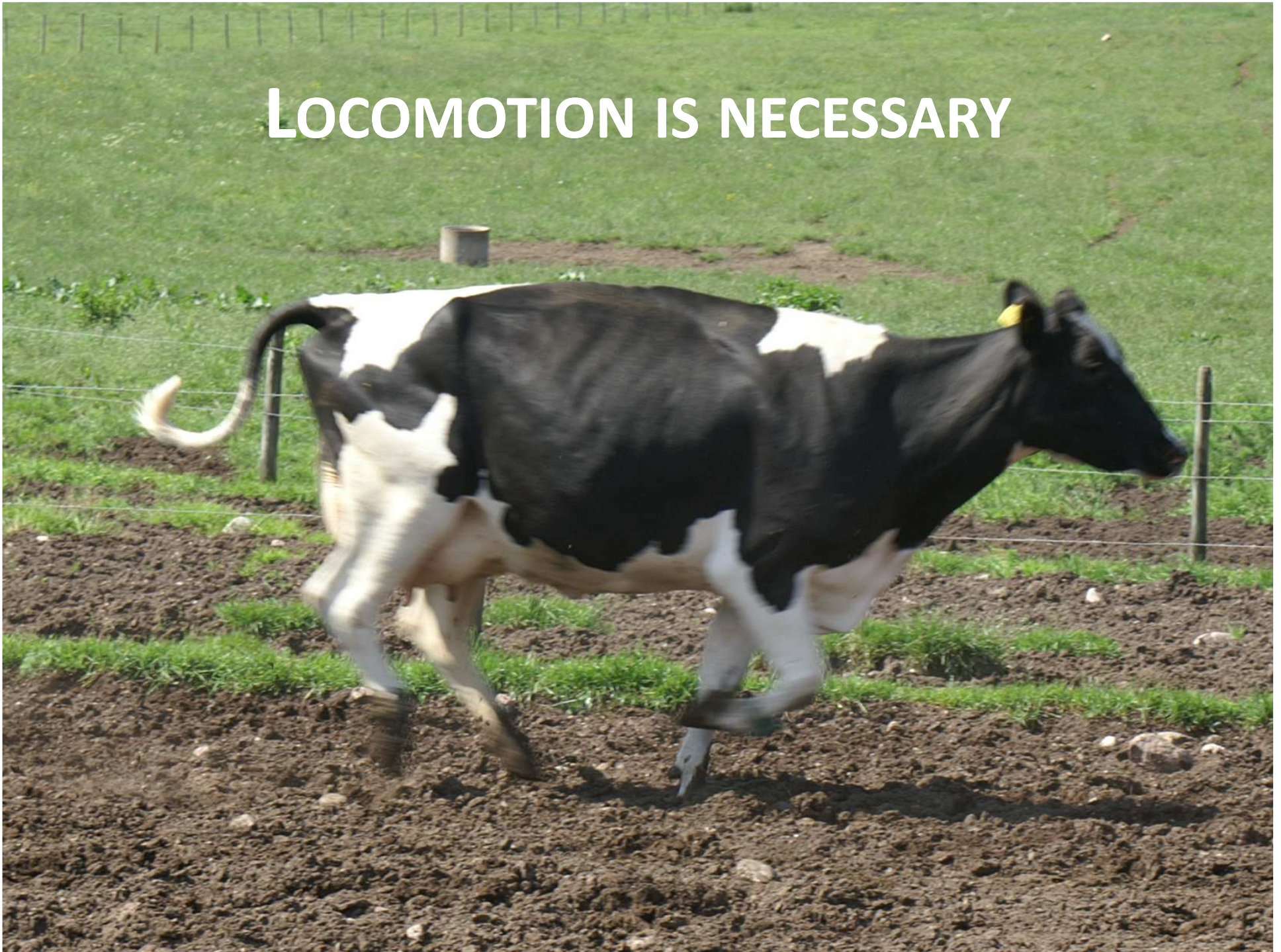


# TODAY'S CHALLENGES

- OPTIMIZE ANIMAL WELFARE
- MINIMIZE CLIMATE IMPACT
- ECONOMY FOR THE FARMER



**LOCOMOTION IS NECESSARY**







**SIGNIFICANTLY IMPAIRED  
LOCOMOTION = LAMENESS**



# WORLD WIDE LAMENESS PROBLEMS



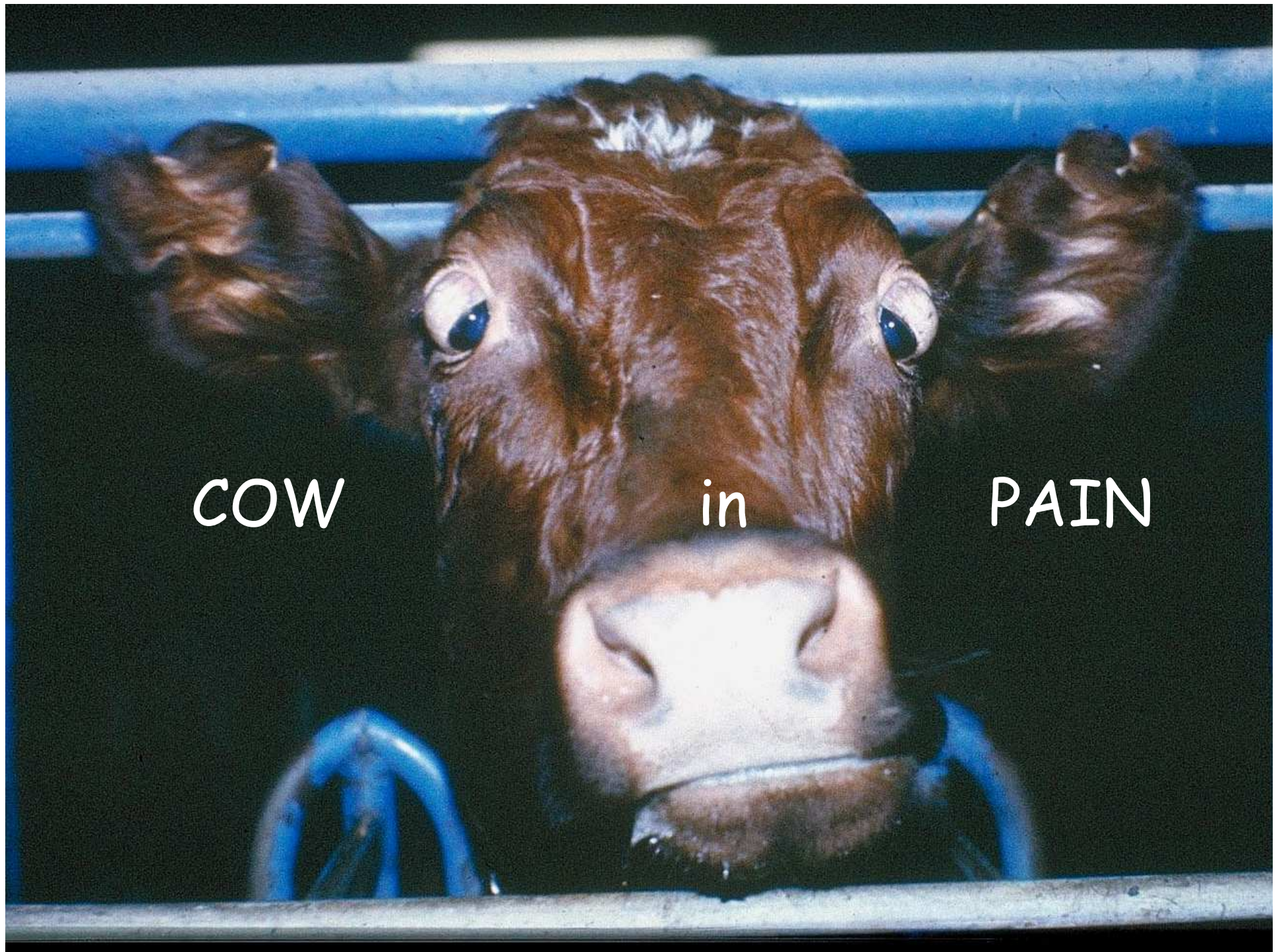
Chile	2010	40 %
Germany	2004	45 %
USA	2006	25 %
England	2010	37 %
Denmark	2008	24 %
Austria	2009	31 %
Finland	2013	23 %
Sweden	2016	10 %



# LAMENESS CAUSED BY CLAW AND LEG LESIONS







COW

in

PAIN



# Stairways to heaven or .... ?





# WHEN IS LAMENESS APPARENT?

- Subjective lameness scoring
- Automatic detection
- Indirect indicators



# SCOORING LAMENESS DOESN'T SOLVE ANY PROBLEMS UNLESS ACTIONS ARE TAKEN

Claw lesions

Leg lesions

} Treatment

Optimal flooring

Optimal bedding

Optimal hygiene

Optimal nutrition

Optimal genetics

} Prevention



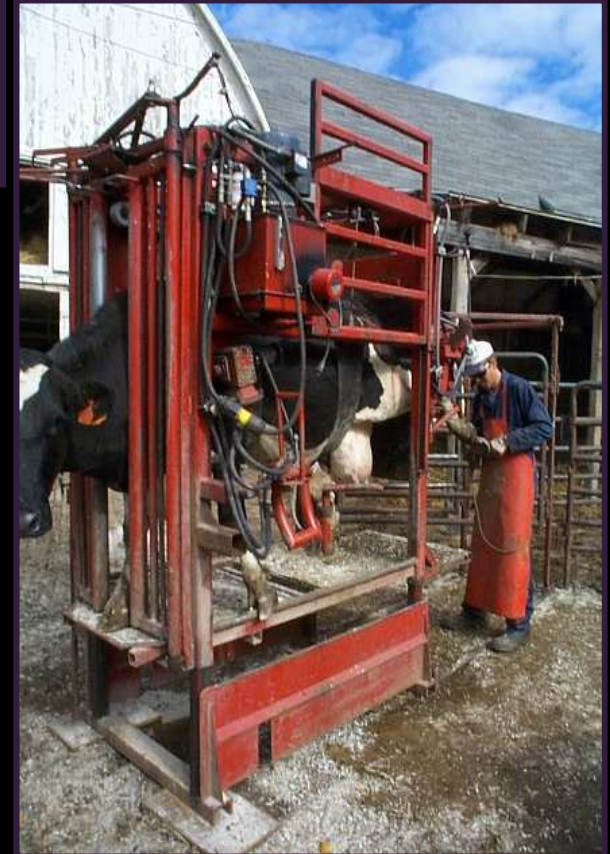
# Possibilities to promote health

**Genetics**

**Cow  
Comfort**

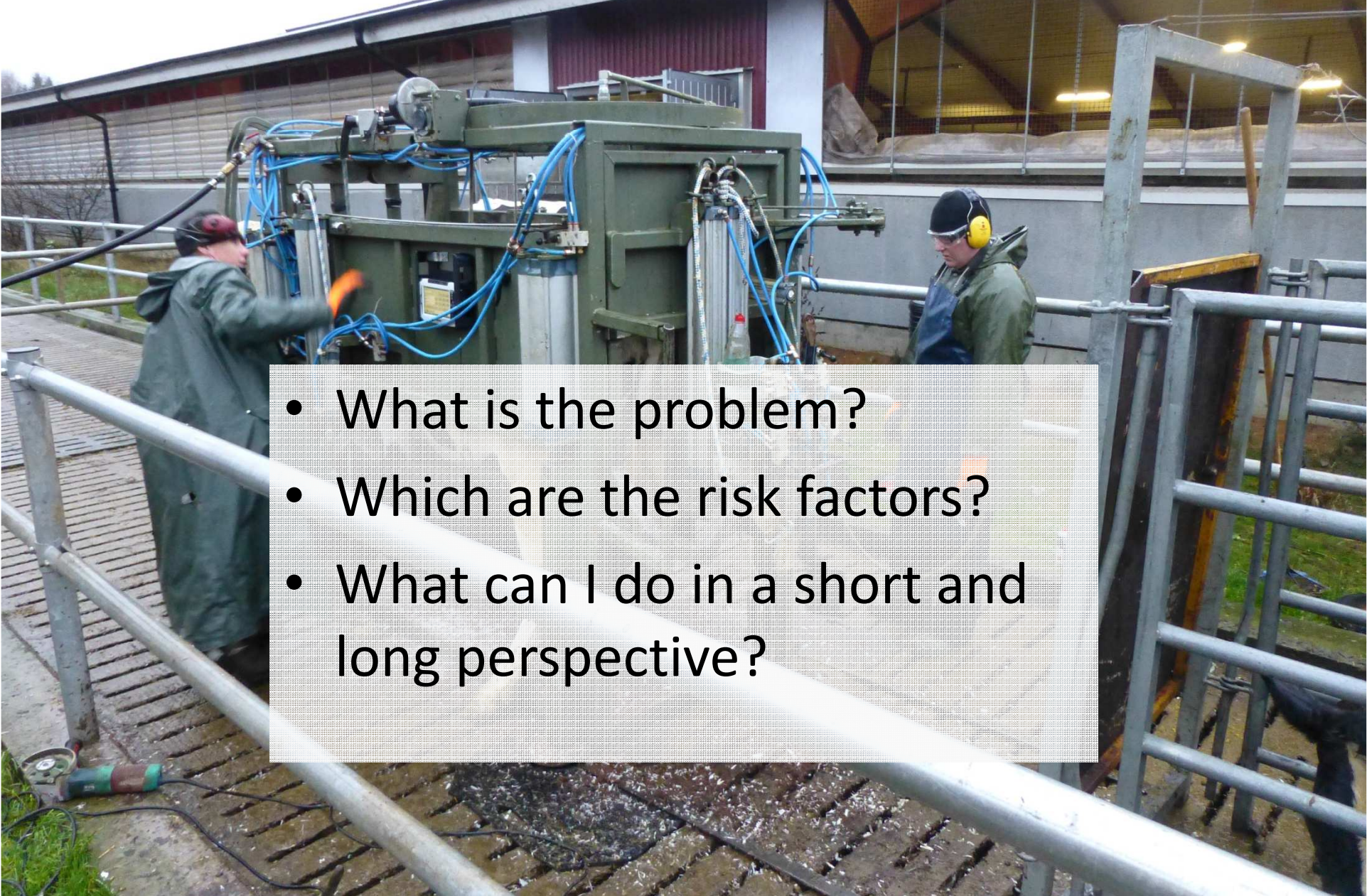
**Diet**

**Manage-  
ment, Trim**





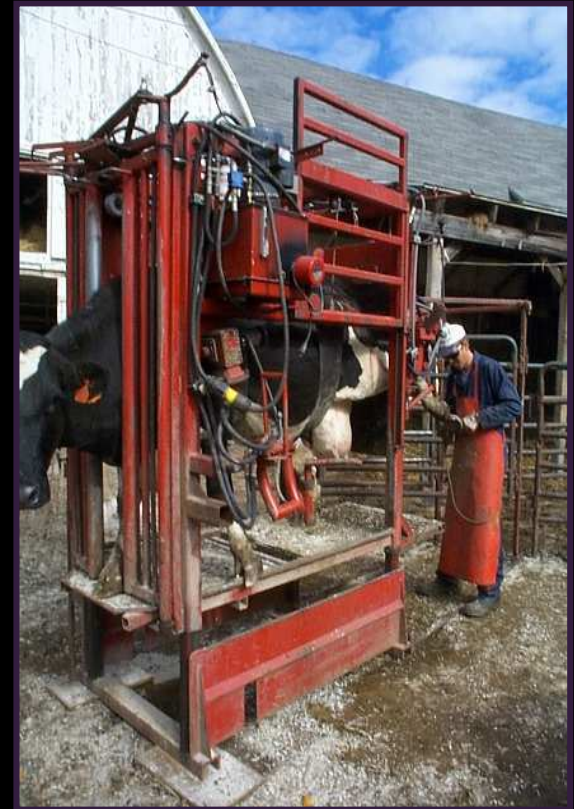
# Action plan

- 
- What is the problem?
  - Which are the risk factors?
  - What can I do in a short and long perspective?



# Possibilities to promote health

**Management**





# FOOT TRIMMING AN OLD NORDIC TRADITION



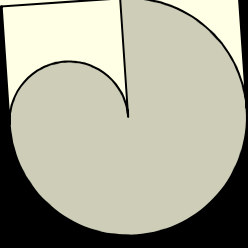




## **Swedish Veterinary Journal, 1896**

Inadequate or neglected claw trimming  
is a common cause of lameness.

The old, hard horn forms thick layers  
that cause pressure on the sole  
and result in inflammation  
of the claw corium beneath





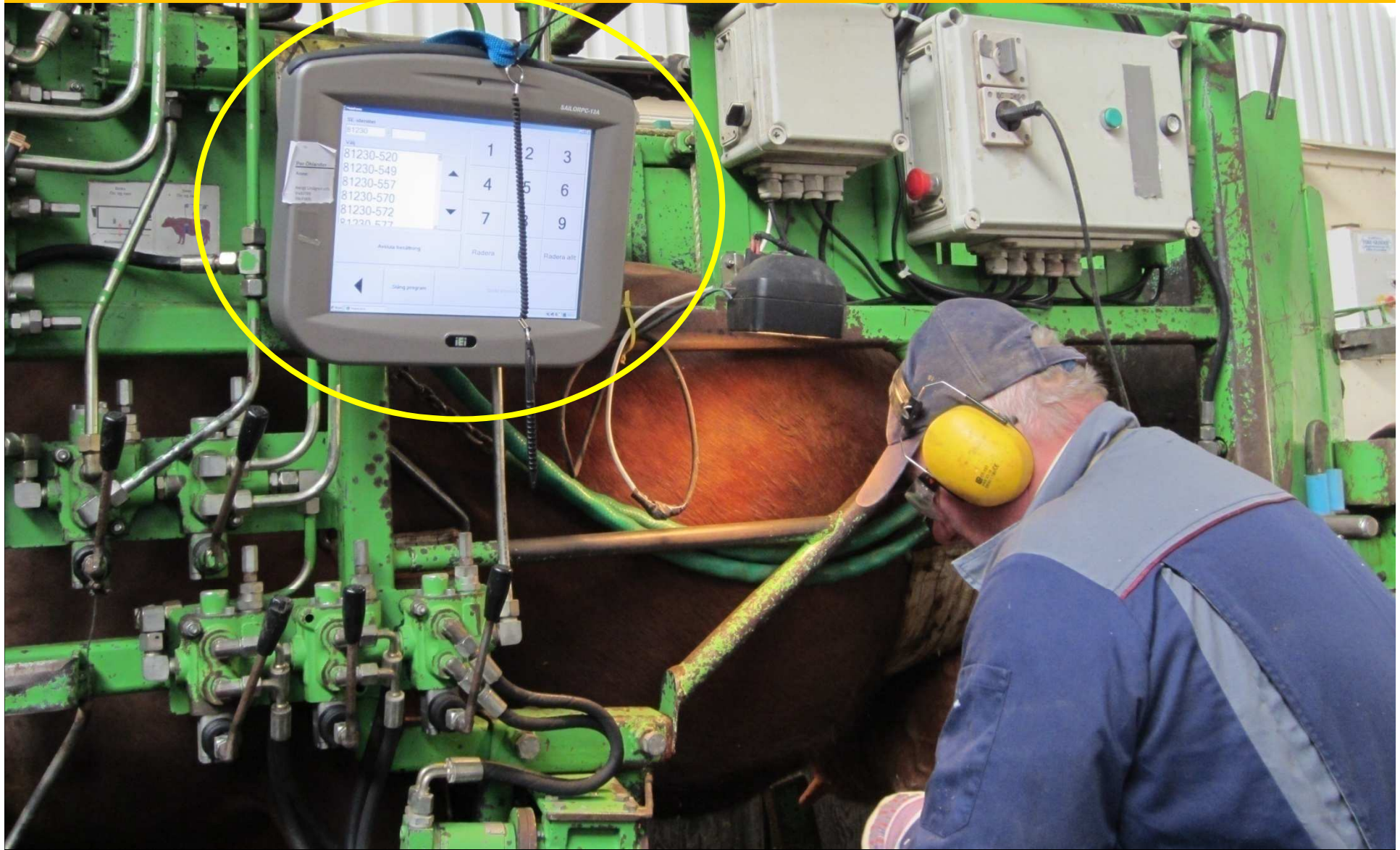
3 FOLD BENEFIT

Detection  
Treatment  
Prevention

Manske et al., 2002



# RECOMMENDATION TO TRIM CLAWS TWICE YEARLY AND KEEPING RECORDS OF CLAW LESIONS





# Claw health report 2016

Vald period: 2016-01-01 - 2016-12-31

Medverkande besättningar	Antal kontroll-besättningar	Medelkor/besättning	Medverkande Klövvårdare	Besök/besättning			Verkningar/kor			Verkade	
				1ggr	2ggr	3ggr	1ggr	2ggr	3ggr	Kvigor	Kötttdjur
2 795	2 110	96	197	663	1 237	421	121564	137317	27735	2 866	2 428

## Records

	Antal reg	OK	%	Eksem	%	DD %	Röta	%	Blödning Sula + vita linjen	%	Ulcer %
Första kalvare	115 745	77 928	67,3	6 452	5,6	5 355	10 910	9,4	17 832	15,4	4164
Äldre kor	377 981	221 660	58,6	25 281	6,7	15 603	63 774	16,9	62 258	16,5	18341
Samtliga	493 726	299 588	60,7	31 733	6,4	20 958	74 684	15,1	80 090	16,2	22505

	Böld vita linjen	%	Böld tå	%	Hålvägg	%	Dubbel sula	%	Vårta	%	Fibroma %	övr- spalt	%
Första kalvare	221	0,2	77	0,1	1 376	1,2	1 404	1,2	229	0,2	1 876	365	0,3
Äldre kor	1 886	0,5	290	0,1	10 825	2,9	9 193	2,4	593	0,2	16 849	695	0,2
Samtliga	2 107	0,4	367	0,1	12 201	2,5	10 597	2,1	822	0,2	18 725	1 060	0,2

KLÖVFORM	Asymmetrisk	%	Förvuxen	%	Korkskruv	%	Björnfot	%	Hälta	%	Benskada (has/knä)	%
Första kalvare	3 073	2,7	25	0,0	1 617	1,4	24	0,0	432	0,4	340	0,3
Äldre kor	18 006	4,8	203	0,1	7 611	2,0	183	0,0	2 216	0,6	1 065	0,3
Samtliga	21 079	4,3	228	0,0	9 228	1,9	207	0,0	2 648	0,5	1 405	0,3



# Possibilities to promote health

## Cow Comfort





# paradise hotel





# SIMPLE MATHEMATICS OF EXPOSURE

Excessive standing and walking on harsh, abrasive **FLOORS** that the animals are not accustomed to, and under unhygienic

Excessive lying on harsh, abrasive **BEDS** in an uncomfortable stall that does not allow change of position, and under unhygienic conditions

## Foot lesions



## Leg injuries





Grass is good for activity



Who want's to play on concrete?



**Result: 80% preference for rubber flooring**



**Rubber mat,  
type 1 or type 2**

**Concrete,  
grooved**

Telezhenko et al. 2007



**Result: 80% preference for rubber flooring**



Telezhenko et al. 2007





## LAMENESS & LEG LESIONS in first calvers

Concrete in relation to slatted rubber N=118

	Odds/Ratio	CI 95%	P <sub>LR</sub>
Lameness	3,64	1,33 – 11,09	0,01
Sole haemorrhage Sole ulcer	2,19	1,00-4,97	0,05
White Line haemorrhage	2,82	1,28-6,43	0,01
Ulceration hock	2,57	1,16 – 5,88	0,02



# Hygiene

**Ammonium  
emission**

**Udder health**

**Milk quality**

**Claw health**





# Five Point Plan for Control of Digital Dermatitis

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 claw care
4. Frequent foot **cleaning and disinfection** to reduce new cases
5. Define and monitor claw health targets





# Possibilities to promote health

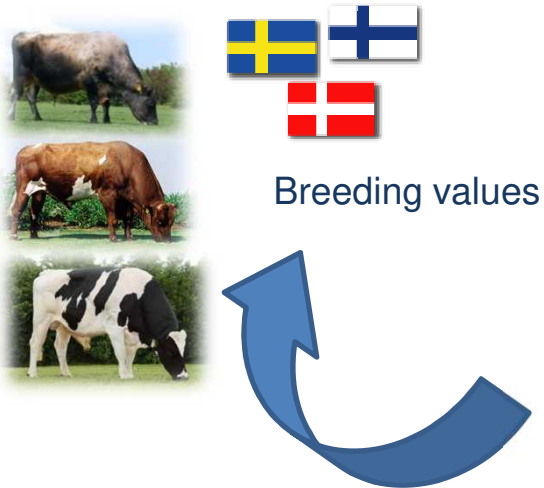
## Genetics





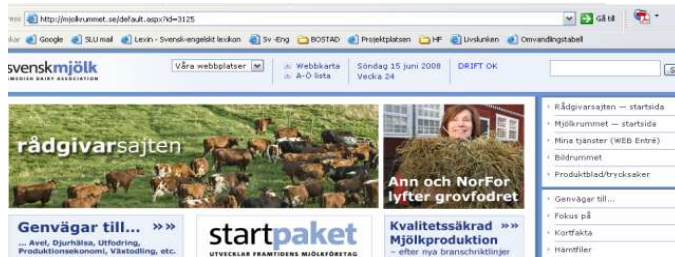
# The Nordic countries have the largest claw health database in the world

## Nordic Cattle Genetic Evaluation



Annually about 500 000 cows are evaluated, including about 300 000 Holsteins in Denmark, Sweden and Finland

All own herd statistics are available for the farmers



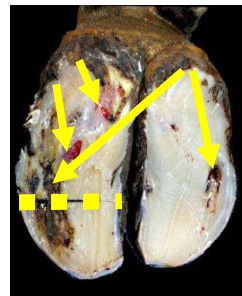


# Claw health index – what is in it?

## Lesions and % of genetic progress in selection for claw health

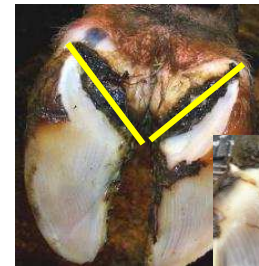
### Claw horn disorders

- ✓ **Sole Ulcer (90%)**
- ✓ Sole Haemorrhages (83%)
- ✓ White Line Disease + Double Sole (78%)



### Infectious skin and bulb disorders

- ✓ Heel Horn Erosion (62%)
- ✓ **Digital / Interdigital Dermatitis (50%)**
- ✓ ID fibroma + Warts (41%)



### Abnormal shape

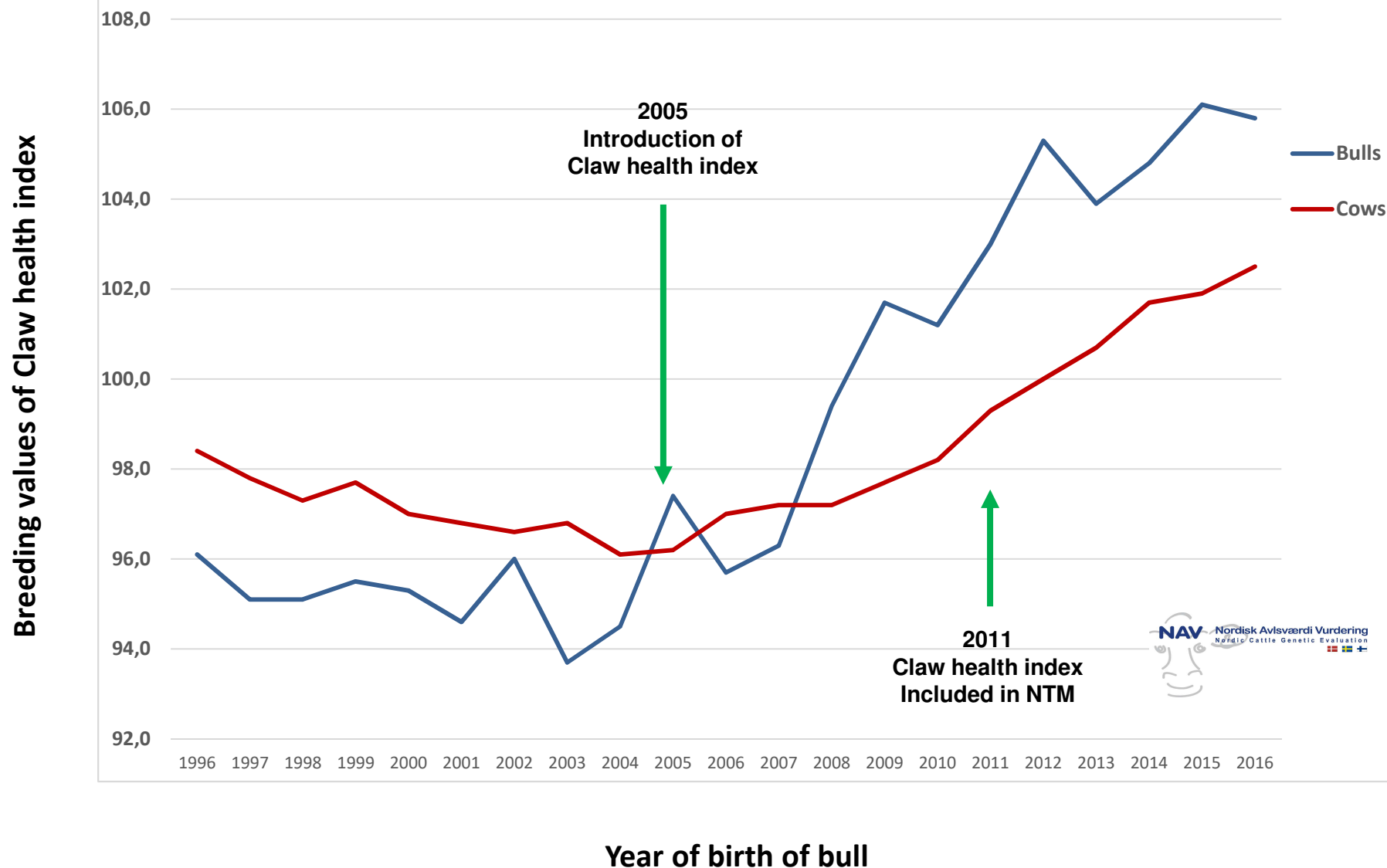
- ✓ Corkscrew Claw (57%)



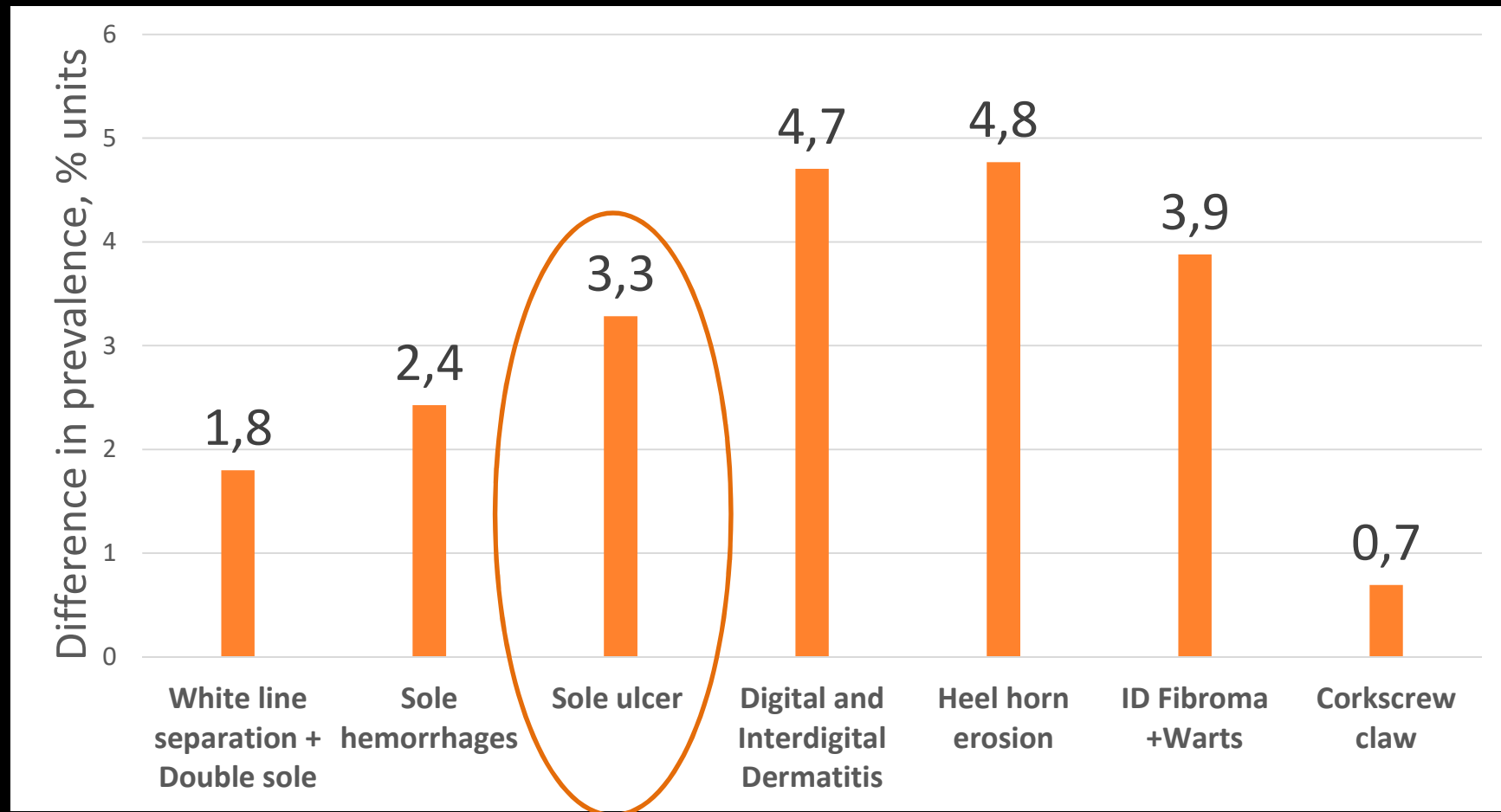


# Genetic progress for claw health

HOL bulls and cows in Sweden, Denmark and Finland



## Differences in expected prevalence (% units) of lesions between progeny of **top 100** and **bottom 100** bulls



Holstein bulls (born 2008-2011) – daughter proven, high reliability



# Example Sole ulcer 5 % prevalence

**Top 100** (average claw health EBV 117)

**Daughters average will be 3.3%**

**Bottom 100** (average claw health EBV 84)

**Daughters average will be 6.6%**

Sole ulcer prevalence will be twice as high (100% ) with a bottom bull compared with a top bull





# CONCLUSIONS

## Short and long term actions

- **Trimming** and claw care, check list
- **Management**, biosecurity, feed
- **Housing**, new facilities or rebuild
- **Breeding**, selecting the best fit



THANK YOU

