Improved genetic evaluation for General Health

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General Health evaluation - November 2017

- First time **animal model**
- First time **all disease traits for Jersey** in General Health evaluation, not only metabolic disorders
- New data: **BHB/Acetone**
  - EBV for ketosis and ”other” metabolic disorders

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New General Health Index

GH index = Early Reproductive Disorders (**ERP**)
+ Late Reproductive Disorders (**LRP**)
+ Feet & Leg Problems (**FLP**)

Metabolic Disorders
+ ***Ketosis (KET)***
+ ***Other Metabolic Disorders (OMB)***

Publication of EBV for: ERP, LRP, FLP, KET and OMB

Data changes – November 2017

New Data

- BHB/acetone as indicator traits for ketosis (DNK)

	Holstein	RDC	Jersey
Denmark	2013-	2013-	2013-
Sweden	Recording starting in 2018 -		
Finland	Recording starting in 2018 -		
% of population	60%	10%	95%

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Data changes – November 2017

Trait harmonization

- Re-define feet & leg disease (DNK)
- Remove data from herds with incomplete recording of veterinary treatments (SWE)
- Include reproductive and feet & leg problems for Jersey

Important to have accurate reporting

Model changes – November 2017

- Sire model to an animal model with more accurate EBVs for both sires and cows
  - Possibility to include cows in the reference population
- General Health model also for Jersey including Swedish and Finnish data
- Re-estimation of genetic parameters
- Improved approximation of EBV reliabilities

Effects on EBVs for the GH index - bulls

- EBV correlations between old vs. new model
  - HOL: 0.92
  - RDC: 0.89
- Re-ranking (change ≤ 3 units of EBVs)
  - HOL: 76%
  - RDC: 75%

EBV changes are in accordance with the new data editing – larger changes for Feet & leg problems and other metabolic disorders for HOL and RDC

Heritabilities and Genetic correlations

Lactation 1 Holstein	Other metabolic	Ketosis	BHB	Acetone
Other metabolic	**0.006**	0.74	0.48	0.65
Ketosis		**0.012**	0.65	0.76
BHB			**0.149**	0.88
Acetone				**0.053**

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Additional information from BHB and acetone

Reliabilities for cows with or without BHB and Acetone observations, that have veterinary treatment observations but not own progeny

Breed	BHB & Acetone observations	Other Metabolic disorders	Ketosis	GH index
HOL	**Yes**	**0.34**	**0.36**	**0.32**
	No	0.29	0.29	0.30

General Health evaluation – further improvements during 2018

- Improved adjustment for differences in disease frequencies between Denmark, Finland and Sweden
- Re-estimation of heritabilities and genetic correlations
- Add heterosis effects
- Add Norwegian data (HOL and JER)

General Health evaluation – further improvements during 2018

- (BHB and Acetone for Finland and Sweden)
- Test the value of using Clinical Mastitis as an indicator trait in GH index
- Validation of the General Health evaluation
- Revision of the GH Index based on NTM work
- Aim for implementation during the fall 2018

THANK YOU – QUESTIONS?

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