Harmonization of maternal traits at Interbull level

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Context

▶ Calving traits important for farmers both for production of cows and for the calf (sold for meat, or new heifers)

▶ Two traits currently evaluated at ITBC: calving ease and stillbirth

▶ Four EBVs as a result: direct calving ease, maternal calving ease, direct stillbirth, maternal stillbirth

▶ 17 countries or grouped-countries participate at least for one trait and 8 for both traits

Context

▶ Information collected in the GE forms available on ITBC website

▶ Different situations in participating countries at different levels:

- recording

- data editing

- national models

- traits send to ITBC

Phenotypes and data editing

Calving ease	Number
2 levels*	1
3 levels**	3
4 levels***	11
5 levels	2

Stillbirth	Number
2 levels	7
3 levels+	1

+: separate born dead and born alive but died within 48 hours in data collection & pool together for evaluations

* : calving score 1 - 2 and calving score 3 - 4 pool together for evaluations
** : calving score 3 – 4 - 5 pool together for evaluations
***: calving score 4 -5 pool together for evaluations

▶ Traits recorded on heifers and cows in all countries but the largest parity for cows can differ (from 2 to all parities available).

Domestic evaluations models

▶ 10 countries use an animal model + 7 countries use a threshold sire - maternal grand sire model

▶ Some countries use a multivariate domestic evaluation:

- Multi-lactations model (7 countries)

- Multitraits with other traits not send to ITBC (gestation length, calf size and birth weight)

▶ Correlations between direct and maternal effects assumed to be 0 for 6 countries and different from 0 for 7 countries.

Traits send to ITBC

Traits send to ITB	Direct EBVs	Maternal EBVs	Maternal Grand Sire EBVs
EBVs Heifer	6	5	0
EBVs Cows	10	2	6
EBVs combined	1	1	0
Total	*17*	*8*	*6*

▶ 3 countries send only direct EBVs

▶ A lot of different situations in participating countries that could maybe lead to suboptimal evaluation accross countries especially for the maternal EBVs?

Average genetic correlations in ITBC for calving ease (January 2021)

Direct calving ease	Animal	Sire - MGSire
Animal	0.72	0.70
Sire - MGSire		0.68

Maternal calving ease	Animal	Sire - MGSire
Animal	0.65	0.62
Sire - MGSire		0.65

Countries included: AUS, CAN, CHE, DFS, FRA, ISR, ITA, NLD, USA, GBR, HUN, DEU, BEL, IRL, NZL, SVK, ESP, POL

In black: countries with animal model
In blue: countries with sire – maternal grand sire model

Average genetic correlations in ITBC for stillbirth (January 2021)

Direct stillbirth	Animal	Sire - MGSire
Animal	0.61	0.52
Sire - MGSire		0.49

Maternal stillbirth	Animal	Sire - MGSire
Animal	0.75	0.68
Sire - MGSire		0.69

Countries included: AUS, CAN, CHE, DFS, FRA, ISR, ITA, NLD, USA, HUN, DEU, POL

In black: countries with animal model
In blue: countries with sire – maternal grand sire model

Discussion

▶ Genetic correlations between countries lower with Sire and MGS model

▶ Maternal EBVs and Maternal grand sire EBVs do not represent the same trait

▶ Correlation between heifer and cows high but not equal to one (around 0,60-0,70). It is better to consider them as different traits

▶ Sending heifer traits should be a priority

▶ Deliver maternal effect to ITBC (change the model or reconstruct them from maternal grand sire EBVs)

Conclusion

▶ Opportunities to improve genetic correlations between countries working on harmonization process at different levels:

▶ Define a target trait to be delivered to ITBC

▶ Models

▶ Recording

▶ Data editing: number of levels, snell score transformation, …

Acknowledgements

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Thank you for your attention