INTRODUCTION
The latest routine international evaluation for calving traits took place as scheduled at the Interbull Centre. Data from eighteen (18) countries were included in this evaluation.

International genetic evaluations for calving traits of bulls from Australia, Austria-Germany, Belgium, Canada, Denmark-Finland-Sweden, France, Germany, Hungary, Ireland, Israel, Italy, Netherlands, Norway, Spain, Switzerland, the United Kingdom, Slovak Republic, Poland and the United States of America were computed.

Brown Swiss, Holstein, and Red Dairy Cattle breed data were included in this evaluation.

CHANGES IN NATIONAL PROCEDURES
Changes in the national genetic evaluation of calving traits are as follows:

AUS (HOL) Drops of information due to data clean up such as pedigree changes, status change of a bull which leads to a good number of bulls no longer qualifying.

DFS (HOL,RDC) New parameters have been estimated. Small score is introduced for HV correction, Inbreeding in the A-matrix Inbreeding depression included in the model. Correction in the EDC calculation.

ESP (HOL) Database update from regional milk recording organizations, several bulls are affected but very slight change in information per bull.

FRA (HOL,BSW) Drops in information due to manual edits in database. The change of herd-year-season assignment of certain data records might also explain small changes in EDC and reliabilities for some bulls.

CHE (HOL,BSW) Drops in information due to manual edits in database. The change of herd-year-season assignment of certain data records might also explain small changes in EDC and reliabilities for some bulls.

ITA (HOL) Drop in information due to data editing.

GBR (HOL) Minor changes in data due to re-extraction procedure at each run and changes introduced by data providers.

NLD (BSW,HOL,RDC) Applied to dce only: Update of genetic parameters.

BEL (HOL) Inclusion of inbreeding effect. Proofs calculated via an updated program (BLUP method).

INTERBULL CHANGES COMPARED TO THE PREVIOUS ROUTINE RUN
Post-processing Windows:
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According to the decision taken by ITC in Orlando (2015) to review the post-processing windows every 5 years, during the 2020 the relative working group has been re-activated and new windows have been identified.

As before, the upper bounds have been set to 0.99 as these were judged to have very little effect on evaluations while the lower values have been reduced to the 10th percentile. This reduction would provide post-processed correlations to be closer to the real estimated ones. Over the past five years, in fact, the previous adopted lower value (25th percentile) had been found too high causing estimated and post-processed correlations to differ significantly from each other.

The new lower values have been applied to all breeds and traits.

The weight assigned to the magnitude of the changes tested by each country has also been revised. The new weight will allow post-processed correlations to take more in consideration the value of the new estimated ones even when no changes are applied by the countries.

The new weights are as follows:
No changes :: 4
Small changes :: 3
Big changes :: 0

More information can be read on https://interbull.org/ib/rg_procedure

DATA AND METHOD OF ANALYSIS
National genetic evaluations of AI sampled bulls with at least
10 daughters or 10 EDC (for clinical mastitis and maternal calving traits at least
50 daughters or 50 EDC, and for direct calving traits at least 50 calves or 50 EDC) in at
least 10 herds. Table 1 presents the amount of data included in this Interbull evaluation for all breeds.

National proofs were first de-regressed within country and then analyzed jointly with a linear model including the effects of evaluation country, genetic group of bull and bull merit. Heritability estimates used in both the de-regression and international evaluation were as in each country’s national evaluation.

Table 2 presents the date of evaluation as supplied by each country. Estimated genetic parameters and sire standard deviations are shown in APPENDIX I and the corresponding number of common bulls are listed in APPENDIX II.

SCIENTIFIC LITERATURE

The international genetic evaluation procedure is based on international work described in the following scientific publications:

International genetic evaluation computation:
Klei. 1996. Interbull Bulletin 17:3-7

Verification and genetic trend validation:
Huirard et al., 1995. J. Dairy Sci. 78:431-437

Weighting factors:
Fiske and Banos. 2001. J. Dairy Sci. 84:1750-1767

De-regression:

Genetic parameter estimation:
Klei and Weigel, 1998, Interbull Bulletin 17:8-14

Post-processing of estimated genetic correlations:
Mark et al., 2002. Interbull Bulletin 31:126-135

Time edits

International reliability estimation
Harris and Johnson. 1998. Interbull Bulletin 17:31-36

NEXT ROUTINE INTERNATIONAL EVALUATION

Dates for the next routine evaluation can be found on http://www.interbull.org/ib/servicecalendar.

NEXT TEST INTERNATIONAL EVALUATION

Dates for the next test run can be found on http://www.interbull.org/ib/servicecalendar.

PUBLICATION OF INTERBULL ROUTINE RUN

Results are distributed by the Interbull Centre to designated representatives in each country. The international evaluation file comprised international proofs expressed on the base and unit of each country included.
is the analysis. Such records readily provide more information on bull performance in various countries, thereby minimizing the need to resort to conversions.

At the same time, all recipients of Interbull results are expected to honor the agreed code of practice, decided by the Interbull Steering Committee, and only publish international evaluations on their own country scale. Evaluations expressed on another country scale are confidential and may only be used internally for research and review purposes.

**PUBLICATION OF INTERBULL TEST RUN**

Test evaluation results are meant for review purposes only and should not be published.

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**Table 1. National evaluation data considered in the Interbull evaluation for calving (December Routine Evaluation 2022).**

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**APPENDIX I. Sire standard deviations in diagonal and genetic correlations below diagonal**

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