Introduction

The latest routine international evaluation for SNP Training for clinical mastitis took place
as scheduled at the Interbull Centre. Data from six (6) countries were
included in this evaluation.

International genetic evaluations for SNP Training for clinical mastitis of bulls from
Canada, France, Germany, Netherlands, Switzerland, and the United States of America were computed.
Brown Swiss, Holstein and Jersey breed data were included in this evaluation.

Changes in national procedures

Changes in the national genetic evaluation of SNP Training for clinical mastitis are as
follows:

```
DEU (HOL)         First Time
NLD (HOL)         First time
USA (HOL,JER)     First time
CAN (HOL,JER)     First time
CHE (HOL,BSW)     First Time
FRA (HOL,BSW)     First Time
```


INTERBULL CHANGES COMPARED TO THE PREVIOUS ROUTINE RUN

Post-processing Windows:

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   :: 2
Small changes:: 1
Big changes  :: 0
```

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

DATA AND METHOD OF ANALYSIS

Data were 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 calvings 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 analysed
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:
    Schaeffer. 1994. J. Dairy Sci. 77:2671-2678
    Klei, 1998. Interbull Bulletin 17:3-7

Verification and Genetic trend validation:
    Klei et al., 2002. Interbull Bulletin 29:178-182.
    Boichard et al., 1995. J. Dairy Sci. 78:431-437

Weighting factors:
    Fikse and Banos, 2001. J. Dairy Sci. 84:1759-1767

De-regression:
    Sigurdsson and G. Banos. 1995. Acta Agric. Scand. 45:207-219
    Jairath et al. 1998. J. Dairy Sci. Vol. 81:550-562

Genetic parameter estimation:
    Klei and Weigel, 1998, Interbull Bulletin 17:8-14
    Sullivan, 1999. Interbull Bulletin 22:146-148

Post-processing of estimated genetic correlations:
    Mark et al., 2003, Interbull Bulletin 30:126-135
    Jorjani et al., 2003. J. Dairy Sci. 86:677-679
    https://wiki.interbull.org/public/rG%20procedure?action=print

Time edits
    Weigel and Banos. 1997. J. Dairy Sci. 80:3425-3430

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 were 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
in 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.

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PUBLICATION OF INTERBULL TEST RUN
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Test evaluation results are meant for review purposes only and should not be
published.


^LTable 1. National evaluation data considered in the Interbull
evaluation for SNP training for clinical mastitis (April Routine Evaluation 2021).
Number of records for clinical mastitis by breed
-----------------------------------------------------------------------------------------
Country          BSW          GUE          HOL          JER          RDC          SIM
-----------------------------------------------------------------------------------------
AUS
BEL
CAN                                        4835         234
CHE              654                        620
CZE
DEA
DEU                                        4327
DFS
ESP
EST
FRA              376                      12339
FRM
GBR
HUN
IRL
ISR
ITA
JPN
KOR
LTU
LVA
NLD                                        2473
NOR
NZL
POL
PRT
SVK
SVN
URY
USA                                        6737         724
ZAF
HRV
CAM
=========================================================================================
No.Records       1030                     31331         958
Pub. Proofs       973           0         26730         813            0            0
-----------------------------------------------------------------------------------------


^LAPPENDIX I. Sire standard deviations in diagonal and genetic correlations below diagonal
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-----------------------------------------------------------------------------------
BSW      cma
-----------------------------------------------------------------------------------
          CHE     FRA
CHE      11.19
FRA       0.85    1.06


-----------------------------------------------------------------------------------
HOL      cma
-----------------------------------------------------------------------------------
          CAN     CHE     DEU     FRA     USA     NLD
CAN       7.77
CHE       0.90   10.56
```

```
DEU      0.89    0.94   10.09
FRA      0.92    0.95    0.92    1.20
USA      0.82    0.83    0.83    0.83    2.37
NLD      0.83    0.93    0.84    0.86    0.82    5.05


--------------------------------------------------------------------------------
JER      cma
--------------------------------------------------------------------------------
          CAN     USA
CAN      8.15
USA      0.83    2.60


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^LAPPENDIX II. Number of common bulls
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BSW
--------
 common bulls below diagonal
 common three quarter sib group above diagonal
        CHE   FRA
 ----------------------------------------------------------------------------
  CHE    0    67
  FRA   50     0
 ----------------------------------------------------------------------------
GUE
--------
HOL
--------
 common bulls below diagonal
 common three quarter sib group above diagonal
        CAN   CHE   DEU   FRA   USA   NLD
 ----------------------------------------------------------------------------
  CAN    0    221   764   800  1132   323
  CHE   193    0    227   194   203   130
  DEU   587   206    0    884   727   522
  FRA   592   168   561    0    873   481
  USA  1268   177   607   640    0    340
  NLD   300   116   461   353   301    0
 ----------------------------------------------------------------------------
JER
--------
 common bulls below diagonal
 common three quarter sib group above diagonal
        CAN   USA
 ----------------------------------------------------------------------------
  CAN    0    79
  USA   72    0
 ----------------------------------------------------------------------------
RDC
--------
SIM
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```