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INTRODUCTION
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The latest genomic test international evaluation for udder traits took place
as scheduled at the Interbull Centre. Data from 21 countries were
included in this evaluation.

International genetic evaluations for udder health traits of bulls were computed from:
AUS BEL CAN CHE CZE DEU DFS ESP FRA GBR HUN IRL ISR ITA NLD NZL POL SVN USA ZAF JPN
Holstein data were included in this evaluation.


BEL, CAN, DEU, ESP, FRA, DFS, GBR, ITA, NLD, POL, HUN submitted GEBVs.


mas:     , CAN, DEU, ESP, FRA, DFS,     , ITA, NLD, POL, HUN
scs: BEL, CAN, DEU, ESP, FRA, DFS, GBR, ITA, NLD, POL, HUN


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


CAN (HOL)    Base change
FRA (HOL)    Base change
NLD (HOL)    Base change
DEU (HOL)    Base change
ITA (HOL)    Base change, one year cut off data




INTERBULL CHANGES COMPARED TO THE DECEMBER ROUTINE RUN
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No changes in Interbull procedures

DATA AND METHOD OF ANALYSIS
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Thirteen Holstein populations sent GEBV data for up to 38 traits, while
classical EBVs for the same traits were used in the analyses. Young bull
GEBVs from the GEBV providers have been converted to the scales of all
countries participating in classical MACE. A bull will get a MACE EBV or
a GMACE EBV but not both.
From those thirteen countries, National GEBVs of bulls less than seven years of age and with no
classical MACE proofs were included for the breeding value prediction
with a further requirement of either a MACE-PA or a GMACE-PA (for young
genomic bulls with young genomic sires) being available.

The parameter-space approach is used for the GMACE genetic evaluations (Sullivan, 2016)


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

Sullivan, P.G. 2016. Defining a Parameter Space for GMACE. Interbull Bulletin 50, p 85-93.

VanRaden, P.M. and Sullivan, P.G. 2010. International genomic evaluation methods for dairy cattle. Gen. Sel. Evol. 42:7

Sullivan, P.G. and Jakobsen, J.H. 2012. Robust GMACE for young bulls methodology. Interbull Bulletin 45, Article 1.

Sullivan, P.G. 2012a. GMACE reliability approximation. Report to the GMACE working group of Interbull. GMACE_rels 2013

Sullivan, P.G. 2012b. GMACE variance estimation. Report to the GMACE working group of Interbull. GMACE_vce 2013

Sullivan, P.G. 2012c. GMACE Weighting Factors. Report to the GMACE working group of Interbull. GMACE_gedcs 2013

Jakobsen, J.H. and Sullivan, P.G. 2013. Trait specific computation of shared reference population. Reference sharing Nov 2013
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NEXT ROUTINE INTERNATIONAL EVALUATION
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Dates for next routine run can be found on http://www.interbull.org/ib/servicecalendar


NEXT TEST INTERNATIONAL EVALUATION
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Dates for next test run can be found on http://www.interbull.org/ib/servicecalendar


PUBLICATION OF INTERBULL ROUTINE RUN
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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 minimising the need to resort to
conversions.

At the same time, all recipients of Interbull results are expected to honour
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.

Table 1.  National evaluation dates in GMACE run April 2023
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Country  Date
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CAN      20230401
DEU      20230404
DFS      20230307
FRA      20230405
GBR      20230309
NLD      20230401
ITA      20230308
HUN      20211122
BEL      20201201
ESP      20230314
POL      20230228
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Table 2.
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Number of bulls in reference population for       scs
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CAN 43963.0
DEU 10624.0 46574.0
DFS  5406.0 38857.0 39909.0
FRA  4178.0 35006.0 34439.0 36789.0
GBR 36967.0 11300.0  5916.0  4222.0 39468.0
NLD  4256.0 36901.0 36192.0 34481.0  4591.0 38786.0
ITA 37579.0 10116.0  4750.0  3393.0 36782.0  3592.0 38963.0
HUN  2286.0  8274.0  7688.0  7297.0  2505.0  7827.0  2268.0  9111.0
BEL   727.0   728.0   634.0   710.0   686.0   741.0   719.0   549.0  1719.0
ESP  7006.0 40764.0 39116.0 35100.0  7629.0 36860.0  6310.0  8085.0   703.0 41975.0
POL  5007.0 33985.0 33676.0 30534.0  5444.0 32030.0  4376.0  7642.0   994.0 34353.0 35755.0

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Number of bulls in reference population for       mas
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CAN 26231.0
DEU  8580.0 31419.0
DFS  4565.0 26098.0 26965.0
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FRA  3615.0 23423.0 23068.0 24981.0
NLD  3569.0 24289.0 23856.0 22981.0 25673.0
ITA 21642.0  8226.0  4122.0  3018.0  3058.0 22446.0
HUN  2146.0  4516.0  3992.0  3710.0  4083.0  2136.0  5228.0
ESP  5859.0 27604.0 26313.0 23497.0 24281.0  5424.0  4342.0 28555.0
POL  4145.0 21194.0 21079.0 19032.0 19518.0  3726.0  3923.0 21516.0 22786.0
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