INTRODUCTION
The latest genomic routine international evaluation for workability traits took place as scheduled at the Interbull Centre. Data from 6 countries were included in this evaluation. International genetic evaluations for workability traits of bulls from Austria-Germany, Canada, Denmark-Finland-Sweden, France, Italy, Netherlands, the United Kingdom, Norway and Switzerland were computed. Holstein data were included in this evaluation.

CAN, DEU, FRA, DFI, GBR, NLD, ITA submitted GEBVs.

INF: CAN, DEU, FRA, DFI, GBR, NLD, ITA

Changes in national procedures

Changes in the national genetic evaluation of workability traits are as follows:

NLD (HOL) New added edc from a new validation affecting GREL and SD

INTERNATIONAL CHANGES COMPARED TO THE AUGUST ROUTINE RUN

Starting with the December 2019 evaluation, the GMACE software was updated to ensure GMACE reliabilities are always at least 1 point higher than the corresponding reliabilities of MACE parent averages. This update affects bulls from countries with extremely low national genomic reliabilities for a given trait. The vast majority of GMACE results were unaffected by the update.

DATA AND METHOD OF ANALYSIS

Eleven 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 eleven 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

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

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
NEXT ROUTINE INTERNATIONAL EVALUATION

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

NEXT TEST INTERNATIONAL EVALUATION

Dates for next routine 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 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 December 2019

<table>
<thead>
<tr>
<th>Country</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAN</td>
<td>20191201</td>
</tr>
<tr>
<td>DEU</td>
<td>20191203</td>
</tr>
<tr>
<td>DFS</td>
<td>20191105</td>
</tr>
<tr>
<td>FRA</td>
<td>20191204</td>
</tr>
<tr>
<td>NLD</td>
<td>20191201</td>
</tr>
<tr>
<td>GBR</td>
<td>20191009</td>
</tr>
<tr>
<td>ITA</td>
<td>20191112</td>
</tr>
</tbody>
</table>

Table 2.

Number of bulls in reference population for msp

<table>
<thead>
<tr>
<th>Country</th>
<th>CAN 2012</th>
<th>DEU 3926.0</th>
<th>DFS 2972.0</th>
<th>FRA 3183.0</th>
<th>NLD 3016.0</th>
<th>GBR 17450.0</th>
<th>ITA 17713.0</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>31019.0</td>
<td>28467.0</td>
<td>26953.0</td>
<td>27481.0</td>
<td>28543.0</td>
<td>27181.0</td>
<td>3233.0</td>
</tr>
</tbody>
</table>

Number of bulls in reference population for tem

<table>
<thead>
<tr>
<th>Country</th>
<th>CAN 2012</th>
<th>DEU 28370.0</th>
<th>DFS 26015.0</th>
<th>NLD 26135.0</th>
<th>GBR 17450.0</th>
</tr>
</thead>
</table>