INTRODUCTION

The latest **genomic routine international evaluation for conformation traits** took place as scheduled at the Interbull Centre. Data from twenty (22) countries were included in this evaluation.

International genetic evaluations for calving traits of bulls from Australia, Belgium, Canada, Switzerland, Czech Republic, Germany, Denmark-Finland-Sweden, Spain, France, United Kingdom, Hungary, Ireland, Italy, Japan, Korea, The Netherlands, Norway, New Zealand, Poland, South Africa, Estonia, Slovenia, Portugal and the United States of America were computed.
Holstein data were included in this evaluation.

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

ang: BEL, CAN, DEU, ESP, FRA, , DFS, GBR, ITA, NLD, POL
bcs: BEL, CAN, DEU, , FRA, , , GBR, ITA, NLD,
bde: BEL, CAN, DEU, ESP, FRA, , DFS, GBR, ITA, NLD, POL
cwi: BEL, CAN, DEU, ESP, FRA, , DFS, GBR, ITA, NLD, POL
fan: BEL, CAN, DEU, ESP, FRA, , DFS, GBR, ITA, NLD, POL
ftl: BEL, CAN, DEU, ESP, FRA, , DFS, GBR, ITA, NLD, POL
ftp: BEL, CAN, DEU, ESP, FRA, , DFS, GBR, ITA, NLD, POL
fua: BEL, CAN, DEU, ESP, FRA, , DFS, GBR, ITA, NLD, POL
loc: BEL, CAN, DEU, ESP, FRA, , DFS, GBR, ITA, NLD,
ocs: BEL, CAN, DEU, ESP, FRA, AUS, , GBR, ITA, NLD, POL
ofl: BEL, CAN, DEU, ESP, FRA, , DFS, GBR, ITA, NLD, POL
ous: BEL, CAN, DEU, ESP, FRA, , DFS, GBR, ITA, NLD, POL
ran: BEL, CAN, DEU, ESP, FRA, , DFS, GBR, ITA, NLD, POL
rlr: BEL, CAN, DEU, ESP, FRA, , DFS, GBR, ITA, NLD, POL
rls: BEL, CAN, DEU, ESP, FRA, , DFS, GBR, ITA, NLD, POL
rtp: BEL, CAN, DEU, ESP, FRA, , DFS, GBR, ITA, NLD, POL
ruh: BEL, CAN, DEU, ESP, FRA, , DFS, GBR, ITA, NLD, POL
rwi: BEL, CAN, DEU, ESP, FRA, , DFS, GBR, ITA, NLD, POL
sta: BEL, CAN, DEU, ESP, FRA, , DFS, GBR, ITA, NLD, POL
ude: BEL, CAN, DEU, ESP, FRA, , DFS, GBR, ITA, NLD, POL
usu: BEL, CAN, DEU, ESP, FRA, , DFS, GBR, ITA, NLD, POL

CHANGES IN NATIONAL PROCEDURES

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

DEU (HOL) Optimisation of the SNP BLUP genomic model and update of genomic reliabilities. Many bulls missing compared to the previous run due to a new editing in the national genomic evaluation.

Base change

CAN (HOL) Update of reliability calculations
Corrected status of about 7500 bulls from 0 to 10

FRA (HOL) -Base change
-corrected proofs status and bull status for some records

DFS (HOL) -corrected proofs status and bull status for some records

NLD (HOL) -corrected proofs status for some records

INTERBULL CHANGES COMPARED TO THE DECEMBER ROUTINE RUN

No changes in Interbull procedures

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.

SCIENTIFIC LITERATURE

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

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

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 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 2016

Country	Date
BEL	20160401
CAN	20160401
DEU	20160405
DFS	20160202
ESP	20160311
FRA	20151204
GBR	20160401
ITA	20160308
NLD	20160401
POL	20160215

Table 2.

Number of bulls in reference population for sta

BEL	2428.0								
CAN	1199.0	27228.0							
DEU	886.0	1892.0	32749.0						
DFS	799.0	1711.0	30796.0	31458.0					
ESP	803.0	1646.0	30033.0	29867.0	30583.0				
FRA	864.0	1925.0	27695.0	27377.0	27390.0	29355.0			
GBR	766.0	24207.0	1716.0	1561.0	1484.0	1735.0	24488.0		
ITA	672.0	23161.0	1253.0	1102.0	1097.0	1270.0	22949.0	23356.0	
NLD	894.0	1989.0	28499.0	28090.0	27535.0	24985.0	1801.0	1317.0	29826.0
POL	175.0	139.0	2491.0	2617.0	2623.0	2559.0	164.0	137.0	216.0	2739.0

Number of bulls in reference population for cwi

BEL	2428.0								
CAN	1199.0	27224.0							
DEU	885.0	1892.0	31536.0						
DFS	798.0	1711.0	29717.0	30372.0					
ESP	802.0	1646.0	28889.0	28820.0	29437.0				
FRA	863.0	1925.0	26570.0	26343.0	26269.0	28223.0			
GBR	766.0	24204.0	1716.0	1561.0	1484.0	1735.0	24485.0		
ITA	672.0	23158.0	1253.0	1102.0	1097.0	1270.0	22947.0	23353.0	
NLD	893.0	1989.0	27313.0	27027.0	26409.0	23877.0	1801.0	1317.0	28637.0
POL	175.0	139.0	2491.0	2617.0	2623.0	2559.0	164.0	137.0	216.0	2739.0

Number of bulls in reference population for bde

BEL	2413.0								
CAN	1199.0	27228.0							
DEU	886.0	1892.0	32191.0						
DFS	799.0	1711.0	30352.0	31011.0					
ESP	803.0	1646.0	29535.0	29453.0	30083.0				
FRA	864.0	1925.0	27211.0	26973.0	26907.0	28870.0			
GBR	766.0	24207.0	1716.0	1561.0	1484.0	1735.0	24488.0		
ITA	672.0	23161.0	1253.0	1102.0	1097.0	1270.0	22949.0	23356.0	
NLD	894.0	1989.0	27941.0	27645.0	27035.0	24500.0	1801.0	1317.0	29265.0
POL	175.0	139.0	2491.0	2617.0	2623.0	2559.0	164.0	137.0	216.0	2739.0

Number of bulls in reference population for ang

BEL	2386.0								
CAN	1197.0	26789.0							
DEU	877.0	1887.0	28983.0						
DFS	791.0	1707.0	27233.0	27886.0					
ESP	794.0	1641.0	26682.0	26652.0	27225.0				
FRA	855.0	1920.0	24391.0	24201.0	24091.0	26041.0			
GBR	764.0	24195.0	1711.0	1557.0	1479.0	1730.0	24472.0		
ITA	670.0	23151.0	1248.0	1098.0	1092.0	1265.0	22940.0	23344.0	
NLD	875.0	1982.0	24766.0	24547.0	24202.0	21702.0	1793.0	1311.0	25776.0
POL	173.0	139.0	2488.0	2614.0	2620.0	2556.0	164.0	137.0	213.0	2736.0

Number of bulls in reference population for ran

BEL	2429.0								
CAN	1199.0	27228.0							
DEU	886.0	1892.0	32628.0						
DFS	799.0	1711.0	30675.0	31337.0					
ESP	803.0	1646.0	29918.0	29752.0	30468.0				
FRA	864.0	1925.0	27576.0	27258.0	27277.0	29236.0			
GBR	766.0	24207.0	1716.0	1561.0	1484.0	1735.0	24488.0		
ITA	672.0	23161.0	1253.0	1102.0	1097.0	1270.0	22949.0	23356.0	
NLD	894.0	1989.0	28380.0	27971.0	27422.0	24866.0	1801.0	1317.0	29707.0
POL	175.0	139.0	2491.0	2617.0	2623.0	2559.0	164.0	137.0	216.0	2739.0

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Number of bulls in reference population for        rwi
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BEL  2413.0
CAN  1199.0 27228.0
DEU   886.0  1892.0 32694.0
DFS   799.0  1711.0 30744.0 31406.0
ESP   803.0  1646.0 29980.0 29817.0 30530.0
FRA   864.0  1925.0 27641.0 27326.0 27337.0 29301.0
GBR   766.0 24207.0  1716.0  1561.0  1484.0  1735.0 24488.0
ITA   672.0 23161.0  1253.0  1102.0  1097.0  1270.0 22949.0 23356.0
NLD   894.0  1989.0 28444.0 28038.0 27482.0 24931.0  1801.0  1317.0 29771.0
POL   175.0   139.0  2491.0  2617.0  2623.0  2559.0   164.0   137.0   216.0  2739.0

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Number of bulls in reference population for        rls
-----------------------------------------------------
BEL  2429.0
CAN  1199.0 27228.0
DEU   886.0  1892.0 32750.0
DFS   799.0  1711.0 30797.0 31459.0
ESP   803.0  1646.0 30034.0 29868.0 30584.0
FRA   864.0  1925.0 27696.0 27378.0 27391.0 29356.0
GBR   766.0 24207.0  1716.0  1561.0  1484.0  1735.0 24488.0
ITA   672.0 23161.0  1253.0  1102.0  1097.0  1270.0 22949.0 23356.0
NLD   894.0  1989.0 28500.0 28091.0 27536.0 24986.0  1801.0  1317.0 29827.0
POL   175.0   139.0  2491.0  2617.0  2623.0  2559.0   164.0   137.0   216.0  2739.0

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Number of bulls in reference population for        rlr
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BEL  2403.0
CAN  1197.0 26382.0
DEU   880.0  1884.0 30651.0
DFS   793.0  1703.0 28887.0 29538.0
ESP   797.0  1638.0 28072.0 28024.0 28616.0
FRA   858.0  1917.0 25753.0 25553.0 25460.0 27353.0
GBR   764.0 23378.0  1708.0  1553.0  1476.0  1727.0 23654.0
ITA   671.0 22323.0  1245.0  1094.0  1089.0  1262.0 22124.0 22516.0
NLD   878.0  1979.0 26466.0 26208.0 25614.0 23087.0  1790.0  1308.0 27488.0
POL   174.0   139.0  2479.0  2612.0  2610.0  2546.0   164.0   137.0   215.0  2726.0

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Number of bulls in reference population for        fan
-----------------------------------------------------
BEL  2414.0
CAN  1197.0 27223.0
DEU   885.0  1892.0 30560.0
DFS   799.0  1711.0 29020.0 29666.0
ESP   802.0  1646.0 28203.0 28147.0 28750.0
FRA   863.0  1925.0 25914.0 25698.0 25618.0 27570.0
GBR   764.0 24204.0  1716.0  1561.0  1484.0  1735.0 24483.0
ITA   671.0 23160.0  1253.0  1102.0  1097.0  1270.0 22948.0 23355.0
NLD   883.0  1987.0 26587.0 26326.0 25717.0 23212.0  1798.0  1316.0 27608.0
POL   174.0   139.0  2490.0  2617.0  2622.0  2558.0   164.0   137.0   215.0  2738.0

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Number of bulls in reference population for        fua
-----------------------------------------------------
BEL  2429.0
CAN  1199.0 27227.0
DEU   886.0  1892.0 31932.0
DFS   799.0  1711.0 30108.0 30765.0
ESP   803.0  1646.0 29281.0 29210.0 29829.0
FRA   864.0  1925.0 26961.0 26733.0 26658.0 28619.0
GBR   766.0 24207.0  1716.0  1561.0  1484.0  1735.0 24488.0
ITA   672.0 23160.0  1253.0  1102.0  1097.0  1270.0 22949.0 23355.0
NLD   894.0  1989.0 27700.0 27413.0 26795.0 24262.0  1801.0  1317.0 29024.0
POL   175.0   139.0  2491.0  2617.0  2623.0  2559.0   164.0   137.0   216.0  2739.0
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Number of bulls in reference population for ruh

BEL 2429.0
CAN 1199.0 27227.0
DEU 886.0 1892.0 31607.0
DFS 799.0 1711.0 29776.0 30406.0
ESP 803.0 1646.0 28956.0 28852.0 29475.0
FRA 864.0 1925.0 26640.0 26408.0 26337.0 28298.0
GBR 766.0 24206.0 1716.0 1561.0 1484.0 1735.0 24487.0
ITA 672.0 23161.0 1253.0 1102.0 1097.0 1270.0 22949.0 23356.0
NLD 894.0 1989.0 27366.0 27076.0 26463.0 23934.0 1801.0 1317.0 28689.0
POL 175.0 139.0 2491.0 2617.0 2623.0 2559.0 164.0 137.0 216.0 2739.0

Number of bulls in reference population for usu

BEL 2429.0
CAN 1199.0 27228.0
DEU 886.0 1892.0 32748.0
DFS 799.0 1711.0 30795.0 31457.0
ESP 803.0 1646.0 30032.0 29866.0 30582.0
FRA 864.0 1925.0 27694.0 27376.0 27389.0 29354.0
GBR 766.0 24207.0 1716.0 1561.0 1484.0 1735.0 24488.0
ITA 672.0 23161.0 1253.0 1102.0 1097.0 1270.0 22949.0 23356.0
NLD 894.0 1989.0 28498.0 28089.0 27534.0 24984.0 1801.0 1317.0 29825.0
POL 175.0 139.0 2491.0 2617.0 2623.0 2559.0 164.0 137.0 216.0 2739.0

Number of bulls in reference population for ude

BEL 2417.0
CAN 1197.0 27224.0
DEU 886.0 1892.0 32747.0
DFS 799.0 1711.0 30794.0 31456.0
ESP 803.0 1646.0 30031.0 29865.0 30581.0
FRA 864.0 1925.0 27694.0 27376.0 27389.0 29354.0
GBR 764.0 24204.0 1716.0 1561.0 1484.0 1735.0 24483.0
ITA 671.0 23160.0 1253.0 1102.0 1097.0 1270.0 22948.0 23355.0
NLD 884.0 1987.0 28497.0 28088.0 27533.0 24984.0 1798.0 1316.0 29526.0
POL 175.0 139.0 2491.0 2617.0 2623.0 2559.0 164.0 137.0 216.0 2739.0

Number of bulls in reference population for ftp

BEL 2429.0
CAN 1199.0 27228.0
DEU 886.0 1892.0 32702.0
DFS 799.0 1711.0 30749.0 31411.0
ESP 803.0 1646.0 29987.0 29821.0 30537.0
FRA 864.0 1925.0 27648.0 27330.0 27344.0 29308.0
GBR 766.0 24207.0 1716.0 1561.0 1484.0 1735.0 24488.0
ITA 672.0 23161.0 1253.0 1102.0 1097.0 1270.0 22949.0 23356.0
NLD 894.0 1989.0 28452.0 28043.0 27489.0 24938.0 1801.0 1317.0 29779.0
POL 175.0 139.0 2491.0 2617.0 2623.0 2559.0 164.0 137.0 216.0 2739.0

Number of bulls in reference population for ftl

BEL 2417.0
CAN 1197.0 27224.0
DEU 886.0 1892.0 32746.0
DFS 799.0 1711.0 30793.0 31455.0
ESP 803.0 1646.0 30030.0 29864.0 30580.0
FRA 864.0 1925.0 27693.0 27375.0 27388.0 29353.0
GBR 764.0 24204.0 1716.0 1561.0 1484.0 1735.0 24483.0
ITA 671.0 23160.0 1253.0 1102.0 1097.0 1270.0 22948.0 23355.0
NLD 884.0 1987.0 28496.0 28087.0 27532.0 24983.0 1798.0 1316.0 29525.0
POL 175.0 139.0 2491.0 2617.0 2623.0 2559.0 164.0 137.0 216.0 2739.0

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Number of bulls in reference population for        rtp
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BEL  2406.0
CAN  1199.0 24915.0
DEU   884.0  1884.0 30369.0
DFS   797.0  1706.0 28667.0 29237.0
ESP   801.0  1640.0 27857.0 27762.0 28321.0
FRA   862.0  1919.0 25581.0 25355.0 25224.0 27133.0
GBR   766.0 22357.0  1710.0  1556.0  1478.0  1729.0 22634.0
ITA   672.0 21370.0  1248.0  1097.0  1092.0  1265.0 21171.0 21563.0
NLD   892.0  1967.0 26411.0 26176.0 25604.0 23119.0  1778.0  1295.0 27581.0
POL   174.0   139.0  2242.0  2343.0  2323.0  2258.0   164.0   137.0   216.0  2426.0

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Number of bulls in reference population for        ocs
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AUS  2143.0
BEL   223.0  2412.0
CAN   430.0  1199.0 27213.0
DEU   382.0   885.0  1892.0 32119.0
ESP   367.0   802.0  1646.0 29410.0 29960.0
FRA   374.0   863.0  1925.0 27077.0 26775.0 28730.0
GBR   448.0   766.0 24192.0  1716.0  1484.0  1735.0 24473.0
ITA   304.0   672.0 23147.0  1253.0  1097.0  1270.0 22935.0 23342.0
NLD   478.0   893.0  1989.0 27896.0 26932.0 24385.0  1801.0  1317.0 29219.0
POL   107.0   175.0   139.0  2491.0  2623.0  2559.0   164.0   137.0   216.0  2739.0

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Number of bulls in reference population for        ous
-----------------------------------------------------
BEL  2407.0
CAN  1199.0 27227.0
DEU   886.0  1892.0 32750.0
DFS   799.0  1711.0 30797.0 31459.0
ESP   803.0  1646.0 30034.0 29868.0 30584.0
FRA   864.0  1925.0 27696.0 27378.0 27391.0 29355.0
GBR   766.0 24206.0  1716.0  1561.0  1484.0  1735.0 24486.0
ITA   672.0 23161.0  1253.0  1102.0  1097.0  1270.0 22949.0 23356.0
NLD   894.0  1989.0 28500.0 28091.0 27536.0 24986.0  1801.0  1317.0 29826.0
POL   175.0   139.0  2491.0  2617.0  2623.0  2559.0   164.0   137.0   216.0  2739.0

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Number of bulls in reference population for        ofl
-----------------------------------------------------
BEL  2394.0
CAN  1197.0 27098.0
DEU   885.0  1892.0 32111.0
DFS   798.0  1711.0 30172.0 30831.0
ESP   802.0  1646.0 29402.0 29243.0 29952.0
FRA   863.0  1925.0 27070.0 26757.0 26768.0 28717.0
GBR   764.0 24078.0  1716.0  1561.0  1484.0  1735.0 24356.0
ITA   671.0 23048.0  1253.0  1102.0  1097.0  1270.0 22836.0 23243.0
NLD   883.0  1987.0 27889.0 27483.0 26925.0 24379.0  1798.0  1316.0 28893.0
POL   175.0   139.0  2491.0  2617.0  2623.0  2559.0   164.0   137.0   216.0  2739.0

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Number of bulls in reference population for        loc
-----------------------------------------------------
BEL  2373.0
CAN  1191.0 23856.0
DEU   880.0  1866.0 26452.0
DFS   794.0  1688.0 25043.0 25506.0
ESP   797.0  1623.0 24396.0 24312.0 24776.0
FRA   858.0  1897.0 22027.0 21775.0 21742.0 23358.0
GBR   762.0 21475.0  1692.0  1538.0  1461.0  1707.0 21744.0
ITA   667.0 20581.0  1234.0  1083.0  1079.0  1252.0 20415.0 20761.0
NLD   877.0  1967.0 25256.0 25062.0 24534.0 22038.0  1778.0  1297.0 26230.0
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Number of bulls in reference population for        bcs
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BEL  2182.0
DEU   873.0 23401.0
FRA   851.0 18986.0 20161.0
GBR   760.0  1679.0  1695.0 20255.0
ITA   666.0  1221.0  1240.0 18927.0 19273.0
NLD   868.0 22227.0 18995.0  1759.0  1278.0 23201.0
CAN  1191.0  1852.0  1884.0 20005.0 19104.0  1947.0 22569.0
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