Introduction

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

International genetic evaluations for workability traits of bulls from Austria-Germany, Canada, Denmark-Finland-Sweden, France, Great Britain, Italy, Netherlands, Norway, New Zealand, Slovenia, Japan, Switzerland, Poland, Czech Republic and Spain were computed. Brown Swiss, Holstein, Jersey and Red Dairy Cattle breed data were included in this evaluation.

Changes in national procedures

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

JPN (HOL)	Some changes in proofs caused by additional records and in EDCs caused by modification of pedigree.
FRA (ALL)	Base change, HOL: Several missing bulls in current submission some traits. Those bulls donâ\200\231t appear among the publication files provided for this run. Bulls affected concern Â« old Â» bulls, 98% of them being born before 1995. Moreover, pedigree updates have also been carried out.
AUS (ALL)	Drops in 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 being qualifying
CAN (ALL)	Base change
DEU (ALL)	Base change
CHE (ALL)	Base change
DEA (BSW)	Some drops in information due to ongoing pedigree corrections based on results from ongoing genotyping of females in our populations.
SVN (HOL, BSW)	Base change
ITA (HOL)	Base change, drim of one year of phenotypic data.
ITA (BSW)	Base change
POL (HOL)	New organisation, CGen, replacing NIAP. New model and estimated new genetic parameters as part of a single step evaluation. New base change to be aligned with production traits. Only bulls with a minimum number of 10 herds were submitted. A new data editing pipeline has been implemented including stricter filters on herd size, contemporary group size, outliers identification, and the cows' breed causing a reduction in the number of daughters and herds for almost all the bulls in the evaluation. Applied the mtedc software for EDC calculation Changed Type Of Proof from 12 to 11 due to a new procedure for setting type of proof: The previous procedure counted daughters based on milk yield and used this information to set the bulls type of proof for all traits. Currently, the Type Of Proof is based on each trait-specific daughter count. Only records of cows with first calving with a cut-off year of 2005. Pedigree clean-up and verification. Some animals appear to be missing in this evaluation because they were either identified as duplicate of another animal during predigree clean-up or dropped in the numbers of daugters or herds below publication criteria or there were breed incosistency of bulls which actually were not HOL
NLD (ALL)	Base change
USA (ALL)	Base change, Base change, drops in information due to pedigree accuracy and herd-year minimum edits.
NZL (ALL)	Some drops in information, especially EDC, added a filter for which if a daughters breed didn't match a bulls breed the daughter got dropped from a bulls proof, this has affected the national herd because of the number of cross bred animals present.

INTERBULL CHANGES COMPARED TO THE PREVIOUS ROUTINE RUN

A new document called confdoc_DEFINITION{runid}.itb has been introduced reporting all the trait definitions applied by countries as reported in the PREP.

During 2023-2024, Interbull Centre and the Interbull Technical Committee (ITC) have worked on developing a new procedures for adjusting of the international correlations after a given test run in case countries would decide NOT TO implement the changes tested in the next routine run.
Until now, the relative difference between the previous routineâ\200\231s and test runâ\200\231s correlations, for each pair of countries, was assessed and the average value of the two was used whenever such difference did exceed a threshold of 0.01. Otherwise, correlations from the latest test run were used.
However, in some cases, the difference in correlations between routine/test runs were way above a 1% difference so that by using the average value the newly derived correlations would still be greatly affected by the changes tested but not implemented. This remark has been made in few occasions by some participating countries.
A new approach proposed by Peter Sullivan, was developed and extensively tested. The new approach is based on first identifying the relative impact of the changes tested by a country during the test run (but not implemented in a routine run) and then correcting the whole correlation matrix detracting such estimated impact.
This new approach would assure that the new correlations would be free from any effect from any changes tested but not implemented.
The new procedure has been fully developed during 2023 and extensively tested during 2024 and introduced officially in the April 2025 routine evaluation.

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.

From this year an extra MACE test run has been scheduled in May, data submissions' deadline and target for distribution of results are all reported in the above link.

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.

PUBLICATION OF INTERBULL TEST RUN

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 Workability (April Routine Evaluation 2025).
Number of records for milking speed by breed

Country	BSW	GUE	HOL	JER	RDC	SIM
AUS			6656	1337	573	
BEL						
CAN	223		13691	828	889	
CHE	3014		3134	62		
CZE			2145			
DEA	4633					
DEU			13912		223	
DFS			12560	2084	6902	
ESP			3715			
EST						
FRA	447		16274			
FRM						
GBR			6512			
HUN						
IRL						
ISR						
ITA	2164		7167			
JPN			2478			
KOR						
LTU						
LVA						
NLD	153		14886	67		
NOR					4103	
NZL			7028	4294	525	
POL			8926			
PRT						
SVK						
SVN	266		654			
URY						
USA						
ZAF						
HRV						
CAM					39	
No.Records	10900		119738	8672	13254	
Pub. Proofs	9084	0	100272	8035	12773	0

^LAPPENDIX I. Sire standard deviations in diagonal and genetic correlations below diagonal

BSW	msp						
	CAN	CHE	DEA	ITA	NLD	SVN	FRA

CAN	9.05						
CHE	0.93	15.08					
DEA	0.89	0.96	11.75				
ITA	0.85	0.93	0.90	17.41			
NLD	0.91	0.94	0.92	0.84	5.41		
SVN	0.83	0.89	0.87	0.91	0.82	30.09	
FRA	0.93	0.95	0.89	0.89	0.95	0.84	0.78

HOL msp

	CAN	CHE	DEU	DFS	FRA	NLD	AUS	GBR	SVN	NZL	ITA	JPN	ESP	CZE	POL
CAN	7.60														
CHE	0.94	12.49													
DEU	0.89	0.96	12.74												
DFS	0.93	0.94	0.95	14.28											
FRA	0.94	0.98	0.94	0.95	1.00										
NLD	0.94	0.97	0.96	0.97	0.97	4.66									
AUS	0.82	0.82	0.78	0.79	0.83	0.81	0.25								
GBR	0.72	0.70	0.71	0.72	0.75	0.71	0.71	0.20							
SVN	0.75	0.85	0.91	0.87	0.84	0.88	0.71	0.63	26.55						
NZL	0.87	0.87	0.79	0.80	0.87	0.83	0.88	0.73	0.73	0.33					
ITA	0.76	0.82	0.80	0.82	0.85	0.83	0.69	0.56	0.76	0.67	6.12				
JPN	0.96	0.93	0.88	0.93	0.97	0.94	0.85	0.77	0.78	0.85	0.82	2.12			
ESP	0.92	0.93	0.89	0.92	0.95	0.94	0.79	0.70	0.79	0.83	0.79	0.93	13.26		
CZE	0.88	0.92	0.92	0.92	0.92	0.92	0.76	0.57	0.82	0.75	0.82	0.87	0.89	18.93	
POL	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.49	0.52	0.48	0.48	0.48	0.48	18.73

HOL tem

	CAN	CHE	DEU	DFS	FRA	NLD	AUS	GBR	NZL	ITA	JPN	POL
CAN	7.95											
CHE	0.69	10.27										
DEU	0.84	0.76	11.69									
DFS	0.76	0.85	0.85	13.05								
FRA	0.71	0.91	0.79	0.91	0.89							
NLD	0.85	0.78	0.89	0.85	0.81	5.97						
AUS	0.57	0.64	0.61	0.68	0.68	0.70	0.23					
GBR	0.58	0.79	0.67	0.77	0.83	0.68	0.60	0.16				
NZL	0.60	0.52	0.72	0.59	0.58	0.70	0.72	0.50	0.35			
ITA	0.10	0.09	0.11	0.09	0.08	0.13	0.09	0.08	0.10	6.13		
JPN	0.92	0.80	0.91	0.86	0.85	0.93	0.64	0.72	0.63	0.10	2.60	
POL	0.19	0.09	0.21	0.11	0.08	0.18	0.10	0.08	0.11	0.08	0.27	23.47

JER msp

	CAN	DFS	NLD	AUS	NZL	CHE
CAN	7.79					
DFS	0.88	13.78				
NLD	0.92	0.94	4.43			
AUS	0.74	0.75	0.81	0.24		
NZL	0.64	0.73	0.81	0.76	0.29	
CHE	0.91	0.93	0.95	0.77	0.73	11.56

RDC msp

	CAN	DEU	DFS	NOR	AUS	NZL	CAM
CAN	6.91						
DEU	0.88	11.72					
DFS	0.92	0.91	13.20				
NOR	0.79	0.76	0.95	14.63			
AUS	0.77	0.70	0.76	0.74	0.27		
NZL	0.85	0.76	0.85	0.80	0.84	0.38	
CAM	0.68	0.68	0.69	0.68	0.59	0.68	7.51

RDC tem

	CAN	DEU	DFS	NOR	AUS	NZL	CAM
CAN	6.32						
DEU	0.79	10.15					
DFS	0.65	0.76	11.06				
NOR	0.64	0.57	0.89	16.74			
AUS	0.59	0.43	0.61	0.56	0.24		
NZL	0.49	0.66	0.66	0.53	0.76	0.43	
CAM	0.51	0.49	0.49	0.49	0.35	0.49	7.61

^LAPPENDIX II. Number of common bulls

BSW

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	CHE	DEA	ITA	NLD	SVN	FRA
CAN	0	124	136	120	38	26	84
CHE	108	0	630	478	79	63	187
DEA	123	542	0	657	105	78	238
ITA	106	418	555	0	98	73	208
NLD	31	75	95	80	0	31	63
SVN	23	59	71	67	31	0	41
FRA	76	148	190	172	53	40	0

BSW

GUE

GUE

HOL

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	CHE	DEU	DFS	FRA	NLD	AUS	GBR	SVN	NZL	ITA	JPN	ESP	CZE	POL
CAN	0	901	1865	1347	1556	1592	1112	1799	209	334	1673	456	1204	621	1604
CHE	834	0	932	618	694	845	488	742	120	202	642	172	499	241	657
DEU	1303	822	0	1849	1929	2349	931	1656	327	320	1689	403	1156	791	2198
DFS	1049	569	1202	0	1570	1802	945	1392	204	403	1093	268	792	626	1421
FRA	1127	654	1122	889	0	1934	1035	1564	196	439	1286	359	1055	641	1740
NLD	1494	831	1881	1398	1302	0	1107	1759	244	561	1324	329	949	821	1852
AUS	969	412	606	558	660	865	0	1074	118	553	675	211	572	371	725
GBR	1883	742	1182	993	1090	1498	830	0	200	418	1350	329	912	591	1439
SVN	167	90	316	151	154	214	78	154	0	47	230	95	174	120	293
NZL	297	173	224	246	248	505	434	318	36	0	192	72	198	154	235
ITA	1474	578	1088	874	866	1146	519	1167	201	163	0	442	1072	592	1662
JPN	206	99	163	144	144	176	132	161	41	53	183	0	344	197	419
ESP	783	381	656	570	783	753	382	664	123	142	739	139	0	439	1066
CZE	347	123	419	276	299	605	145	273	77	61	376	90	237	0	735
POL	1535	557	1997	1150	1290	1744	527	1306	263	166	1485	197	785	526	0

HOL

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	CHE	DEU	DFS	FRA	NLD	AUS	GBR	NZL	ITA	JPN	POL
CAN	0	819	1704	985	1465	1449	1079	1763	322	1670	456	1581
CHE	753	0	773	434	639	697	433	690	178	622	172	616
DEU	1017	641	0	1433	1842	2141	903	1526	290	1568	374	1958
DFS	640	371	717	0	1339	1365	831	1141	376	830	189	1069
FRA	1114	594	1022	672	0	1830	1002	1531	418	1283	358	1717
NLD	1346	687	1492	859	1246	0	1092	1675	556	1244	319	1741
AUS	947	378	527	422	659	851	0	1075	552	675	211	720

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  GBR 1850  677  984  680 1082 1422  829    0  416 1350  329 1430
  NZL  289  155  197  214  247  499  433  318    0  192   72  234
  ITA 1467  560  947  589  865 1060  519 1168  163    0  442 1636
  JPN  206   99  150   96  144  169  132  161   53  183    0  414
  POL 1529  526 1564  743 1285 1636  527 1306  166 1481  197    0
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JER
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 common bulls below diagonal
 common three quarter sib group above diagonal
       CAN  DFS  NLD  AUS  NZL  CHE
 ------------------------------------------------------------------------------
  CAN    0   69   15  197   71   31
  DFS   54    0   35   87   82   43
  NLD   12   31    0   20   19   10
  AUS  198   59   20    0  193   32
  NZL   71   61   17  178    0   26
  CHE   30   43    7   31   25    0
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JER
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RDC
--------
 common bulls below diagonal
 common three quarter sib group above diagonal
       CAN  DEU  DFS  NOR  AUS  NZL  CAM
 ------------------------------------------------------------------------------
  CAN    0    6  163    7   36   28    0
  DEU    6    0   28    8   23    2    0
  DFS  168   20    0  115  139   50    0
  NOR    7    7   93    0   62   10    0
  AUS   33   22  111   53    0   39    9
  NZL   25    2   49   10   36    0    1
  CAM    0    0    0    0    9    1    0
 ------------------------------------------------------------------------------
RDC
--------
 common bulls below diagonal
 common three quarter sib group above diagonal
       CAN  DEU  DFS  NOR  AUS  NZL  CAM
 ------------------------------------------------------------------------------
  CAN    0    9  136    6   35   27    0
  DEU    9    0   52   11   30    5    0
  DFS  138   46    0  110  139   50    0
  NOR    6   11   88    0   59    9    0
  AUS   32   29  111   50    0   39    9
  NZL   25    5   49    9   36    0    1
  CAM    0    0    0    0    9    1    0
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SIM
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SIM
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