

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:

FRA (HOL, BSW)	Base change. HOL: French Holstein breeding organisations have made the choice to suspend the publication of EBVs for bulls that entered progeny testing and produced daughters but were not subsequently placed on the market as public breeding bulls based on their progeny test results. As consequence, around 1000 bulls are now missing or their publication status have changed from official to unofficial
ITA (HOL)	Base change. Applied a yearly cutoff of data causing some bulls to be missings
POL (HOL)	New definition of UPG groups, pedigree pruning, new genetic base, applied new coding for status and type of proof according to new recommendation from Interbull Centre. New data filtering: HY classes with homogeneity of variation were removed (independently for $\hat{\sigma}^2_{200\ 230\ msp\ 200\ 231}$ and $\hat{\sigma}^2_{200\ 230\ temp\ 200\ 231}$), increased minimum number of records per CG. The new data filtering causes drops in information and some bulls to be missing from the evaluation
AUS (ALL)	Decrease in information due to pedigree updates and change in status of some bulls that do not qualify for inclusion any longer.
DFS (ALL)	Drops in information due to data edits
CAN (ALL)	Base change
USA (ALL)	Drops in herds/daughters/EDC are related to pedigree correctness and daughter-herd-year minimum edits.
DEU (ALL)	Base change
JPN (HOL)	Base change
CHE (ALL)	Base change, drops in information due to manual edits
GBR (ALL)	Base change
SVN (ALL)	Base change. Estimated variance components and heritability. HOL: Time period for data inclusion has been shifted forward by five years (data from 2015 to 2025 are used).
ITA (BSW)	Base change
NZL (ALL)	Canonical transformation of the phenotypes, updated variance components and heritability. Pedigree verification causing drops in information and reliability
ESP (HOL)	Base change
NLD (ALL)	Base change

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.

Direct Gestation Length (ges) has been added as the fifth trait in the calving evaluation starting from the August 2025 MACE routine evaluation, and therefore added in the calv{BRD}{RUNID}.itb and calv{BRD}{RUNID}.ipr.

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 routine $\hat{\rho}_{200\ 231s}$ and test run $\hat{\rho}_{200\ 231s}$ 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
<https://interbull.org/ib/servicecalendar>

NEXT TEST INTERNATIONAL EVALUATION

Dates for the next test run can be found on
<https://interbull.org/ib/servicecalendar>

From 2025 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 2026).
Number of records for milking speed by breed

Country	BSW	GUE	HOL	JER	RDC	SIM
AUS			6692	1345	577	
BEL						
CAN	230		13913	848	901	
CHE	3071		3212	65		
CZE			2203			
DEA	4726					
DEU			14189		236	
DFS			12616	2109	6989	
ESP			3901			
EST						
FRA	465		15466			
FRM						
GBR			6625			
HUN						
IRL						
ISR						
ITA	2202		6571			
JPN			2639			
KOR						
LTU						
LVA						
NLD	161		15171	85		
NOR					4148	
NZL			7219	4400	530	
POL			8535			
PRT						
SVK						
SVN	290		571			
URY						
USA						
ZAF						
CAM					39	
No. Records	11145		119523	8852	13420	
Pub. Proofs	9244	0	99321	8194	12905	0

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

 BSW msp

	CAN	CHE	DEA	ITA	NLD	SVN	FRA
CAN	8.90						
CHE	0.92	15.05					
DEA	0.87	0.96	11.72				
ITA	0.85	0.93	0.90	17.40			
NLD	0.90	0.94	0.91	0.84	5.28		
SVN	0.80	0.88	0.86	0.91	0.82	27.05	
FRA	0.93	0.95	0.89	0.90	0.94	0.83	0.78

 HOL msp

	CAN	CHE	DEU	DFS	FRA	NLD	AUS	GBR	SVN	NZL	ITA	JPN	ESP	CZE	POL
CAN	7.66														
CHE	0.93	12.57													
DEU	0.89	0.96	12.81												
DFS	0.93	0.94	0.95	13.92											
FRA	0.94	0.98	0.94	0.95	1.00										
NLD	0.93	0.97	0.96	0.96	0.96	4.60									
AUS	0.82	0.82	0.78	0.79	0.83	0.81	0.26								
GBR	0.71	0.68	0.68	0.70	0.73	0.68	0.71	0.20							
SVN	0.72	0.83	0.90	0.84	0.80	0.84	0.68	0.59	27.75						
NZL	0.91	0.91	0.84	0.85	0.92	0.88	0.92	0.74	0.73	0.25					
ITA	0.78	0.83	0.81	0.82	0.86	0.83	0.69	0.55	0.73	0.73	6.26				
JPN	0.96	0.93	0.88	0.93	0.97	0.94	0.85	0.75	0.74	0.91	0.83	2.13			
ESP	0.92	0.93	0.89	0.91	0.94	0.92	0.79	0.68	0.77	0.89	0.79	0.93	13.14		
CZE	0.88	0.92	0.92	0.93	0.93	0.93	0.75	0.54	0.79	0.80	0.84	0.88	0.89	19.19	
POL	0.51	0.51	0.49	0.50	0.49	0.50	0.48	0.48	0.60	0.55	0.48	0.53	0.53	0.48	18.53

 HOL tem

	CAN	CHE	DEU	DFS	FRA	NLD	AUS	GBR	NZL	ITA	JPN	POL
CAN	8.03											
CHE	0.69	10.21										
DEU	0.84	0.77	11.66									
DFS	0.76	0.86	0.85	13.00								
FRA	0.71	0.91	0.79	0.91	0.89							
NLD	0.86	0.78	0.90	0.84	0.81	6.31						
AUS	0.58	0.66	0.62	0.68	0.69	0.71	0.24					
GBR	0.57	0.79	0.66	0.76	0.83	0.68	0.61	0.18				
NZL	0.66	0.59	0.76	0.63	0.62	0.76	0.77	0.53	0.28			
ITA	0.10	0.09	0.13	0.09	0.08	0.14	0.09	0.08	0.11	6.26		
JPN	0.92	0.80	0.90	0.86	0.85	0.93	0.65	0.72	0.69	0.11	2.48	
POL	0.21	0.09	0.22	0.09	0.13	0.20	0.19	0.14	0.20	0.08	0.29	25.20

 JER msp

	CAN	DFS	NLD	AUS	NZL	CHE
CAN	7.80					
DFS	0.88	13.68				
NLD	0.91	0.92	4.67			
AUS	0.74	0.75	0.81	0.25		
NZL	0.69	0.79	0.84	0.85	0.22	
CHE	0.91	0.93	0.94	0.78	0.78	11.21

 RDC msp

	CAN	DEU	DFS	NOR	AUS	NZL	CAM
CAN	7.02						
DEU	0.88	11.71					

DFS	0.92	0.91	13.17				
NOR	0.79	0.77	0.95	14.63			
AUS	0.78	0.70	0.76	0.74	0.28		
NZL	0.88	0.82	0.88	0.82	0.87	0.29	
CAM	0.68	0.68	0.70	0.68	0.59	0.69	7.36

RDC tem

	CAN	DEU	DFS	NOR	AUS	NZL	CAM
CAN	6.49						
DEU	0.79	10.44					
DFS	0.65	0.75	11.05				
NOR	0.64	0.57	0.90	16.77			
AUS	0.60	0.43	0.62	0.57	0.25		
NZL	0.50	0.67	0.67	0.53	0.77	0.35	
CAM	0.50	0.49	0.49	0.49	0.32	0.49	7.56

^LAPPENDIX II. Number of common bulls

BSW msp

common bulls below diagonal							
common three quarter sib group above diagonal							
	CAN	CHE	DEA	ITA	NLD	SVN	FRA
CAN	0	127	142	123	39	27	85
CHE	111	0	656	492	83	72	193
DEA	128	568	0	676	111	93	245
ITA	108	432	573	0	103	85	214
NLD	32	80	101	85	0	36	65
SVN	24	67	86	77	36	0	47
FRA	76	153	196	177	55	45	0

BSW tem

GUE msp

GUE tem

HOL msp

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	934	1923	1382	1553	1663	1127	1869	174	340	1629	477	1244	640	1610
CHE	866	0	968	631	710	878	498	773	102	206	621	177	515	249	641
DEU	1362	857	0	1871	1901	2436	942	1698	288	327	1608	417	1197	811	2180
DFS	1091	581	1229	0	1552	1833	955	1420	157	409	1035	283	821	640	1477
FRA	1170	678	1160	911	0	1935	1034	1573	153	441	1152	361	1073	645	1663
NLD	1567	863	1974	1431	1348	0	1118	1812	201	574	1266	350	986	843	1799
AUS	985	422	616	567	664	877	0	1092	93	558	638	216	579	374	720
GBR	1954	773	1225	1021	1128	1553	846	0	158	424	1308	343	934	606	1438
SVN	137	76	287	113	119	176	61	121	0	33	183	87	139	100	238
NZL	303	176	230	252	251	518	440	324	24	0	180	75	202	156	221
ITA	1429	561	1061	849	836	1117	495	1129	158	155	0	446	1049	574	1569
JPN	227	103	173	158	150	192	135	174	40	56	196	0	354	206	427
ESP	820	395	683	601	815	786	391	682	96	146	747	147	0	455	1079
CZE	362	129	436	288	305	623	148	284	67	64	374	96	251	0	740
POL	1511	518	1955	1222	1261	1669	520	1289	211	158	1404	207	809	529	0

HOL tem

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	851	1730	995	1458	1493	1093	1834	328	1626	477	1371
CHE	785	0	789	446	654	719	443	721	182	605	177	525
DEU	1044	656	0	1460	1803	2183	909	1548	294	1485	383	1610
DFS	651	380	742	0	1326	1378	836	1149	377	764	192	1002
FRA	1157	618	1028	689	0	1820	1001	1539	420	1148	360	1424
NLD	1394	710	1532	871	1279	0	1102	1709	569	1183	333	1403
AUS	963	388	534	426	663	862	0	1092	557	637	216	658
GBR	1922	708	1004	687	1120	1458	844	0	422	1307	343	1261
NZL	295	158	200	215	250	511	439	324	0	179	75	201
ITA	1425	547	916	553	835	1029	495	1130	155	0	446	1361
JPN	227	103	159	101	150	181	135	174	56	196	0	388
POL	1235	408	1156	684	1026	1230	463	1095	142	1179	190	0

JER msp

common bulls below diagonal
common three quarter sib group above diagonal
CAN DFS NLD AUS NZL CHE

CAN	0	72	15	199	73	33
DFS	57	0	49	89	85	44
NLD	12	44	0	21	22	10
AUS	200	61	20	0	195	33
NZL	73	64	20	180	0	27
CHE	32	44	7	32	26	0

JER tem

RDC msp

common bulls below diagonal
common three quarter sib group above diagonal
CAN DEU DFS NOR AUS NZL CAM

CAN	0	6	173	7	36	29	0
DEU	6	0	31	9	23	4	0
DFS	178	23	0	119	141	53	0
NOR	7	8	97	0	64	11	0
AUS	33	22	113	54	0	40	9
NZL	26	3	52	11	37	0	1
CAM	0	0	0	0	9	1	0

RDC tem

common bulls below diagonal
common three quarter sib group above diagonal
CAN DEU DFS NOR AUS NZL CAM

CAN	0	9	142	7	36	28	0
DEU	9	0	53	12	30	7	0
DFS	144	47	0	114	141	52	0
NOR	7	12	92	0	61	10	0
AUS	33	29	113	51	0	40	9
NZL	26	6	51	10	37	0	1
CAM	0	0	0	0	9	1	0

SIM msp

SIM tem