

INTRODUCTION

The latest routine international evaluation for calving traits took place as scheduled at the Interbull Centre. Data from twenty-one (21) countries were included in this evaluation.

International genetic evaluations for calving traits of bulls from Australia, Austria-Germany, Belgium, Canada, Denmark-Finland-Sweden, France, Germany, Hungary, Ireland, Israel, Italy, Netherlands, New Zealand, Norway, Japan, Spain, Switzerland, the United Kingdom, Slovak Republic, Poland and the United States of America were computed. Brown Swiss, Holstein, and Red Dairy Cattle breed data were included in this evaluation.

CHANGES IN NATIONAL PROCEDURES

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

ITA (HOL)	The decrease in information is due to strict editing criteria.
NLD (HOL, HER)	Reduction in information due to pedigree verification.
IRL (HOL, RDC)	Evaluation is multitrait Dairy Cow and Dairy Heifer. Has previously submitted Dairy Cow, are now testing Dairy Heifer. The new trait submitted has a different heritability from the old trait. Some bulls will drop in information compared to previously, as bulls are not used equally in the two traits.
CHE (BSW, HOL, SIM)	Reduction in information is due to data edits.
BEL (HOL)	The observed decreases in information is attributed to the existence of breeds alias or errors/corrections in the pedigree.
AUS (HOL, JER)	Reduction in information is a result of data clean-up and pedigree verification.
DEA (BSW)	Base change.
JPN (HOL)	Reduction in information due to pedigree verification.
USA (ALL)	Drops in information due to pedigree verification and data edits.
GBR (ALL)	Drops in information due to data changes and edits.
NZL (ALL)	Pedigree verification due to genomic information, causing change in information for many animals.
NZL (HOL, RDC)	Re-entering the evaluation for calving. Trait definition: the heifer calving difficulty breeding value for a sire is calculated from the difficulty its calves have, being born from a two-year-old dam. Sires with more negative heifer calving difficulty breeding values are expected to produce calves that exhibit less calving difficulties in first calving heifers than those with more positive breeding values for heifer calving difficulty. Calving difficulty is 0 if calving assistance code is 'not reported' or 'reported no assistance'. Calving difficulty is 1 if calving assistance code is 'minor assistance' or 'major assistance'.
HUN (HOL)	First data submission since 2021. Revision of scope of data used in breeding value estimation, data editing cut-off changed cows having their first lactation from 2000 onwards.
ESP (HOL)	Reduction in daughters due to pedigree verification.
POL (HOL)	Reduction in information due to data edits.

INTERBULL CHANGES COMPARED TO THE PREVIOUS ROUTINE RUN

In 2020 new post-processing windows\200\231 correlations for all breeds and traits have been applied: the upper bounds have been set to 0.99 as these were judged to have very little effect on evaluations while the lower values have been reduced to the 10th percentile. This reduction would provide post-processed correlations to be closer to the real estimated ones. The previously lower value adopted (based on the 25th percentile) had been found too high causing estimated and post-processed correlations to differ significantly from each other. It is a recommendation from the Interbull Technical Committee to review such windows every 5 years. The weight assigned to the magnitude of the changes tested by each country has also been revised. The new weight will allow post-processed correlations to take more in consideration the value of the new estimated ones even when no changes are applied by the countries. More information can be read on https://interbull.org/ib/rg_procedure

Since 2021 a new trait group has been added to the MACE evaluation, called stcm (SNP Training for clinical mastitis) evaluating the trait cma (pure clinical mastitis). New trait group codes have been issued as follows: 041 for international ebv files (.itb), 071 for parent average (ipr).

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>.

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 calving (December Routine Evaluation 2024).
Number of records for direct calving ease by breed

Country	BSW	GUE	HOL	JER	RDC	SIM
AUS			6873			
BEL			1346			
CAN	174		13829		547	
CHE	1755		2360			
CZE						
DEA	3753					
DEU			21085		314	
DFS			11541		6759	
ESP			2528			
EST						
FRA	420		13664			
FRM						
GBR			3421			
HUN			1766			
IRL			1160		25	
ISR			648			
ITA			8786			
JPN			4853			
KOR						
LTU						
LVA						
NLD	197		16031		87	
NOR					4058	
NZL			612		33	
POL			7711			
PRT						
SVK			741			
SVN						
URY						
USA	577		38360			
ZAF						
HRV						
CAM						
=====						
No. Records	6876		157315		11823	
Pub. Proofs	7161	0	133184	0	12197	0

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

BSW	dce					
	DEA	NLD	USA	CHE	CAN	FRA
DEA	9.29					
NLD	0.82	5.57				
USA	0.63	0.84	0.13			
CHE	0.84	0.92	0.79	10.60		
CAN	0.77	0.94	0.90	0.91	7.73	
FRA	0.65	0.75	0.74	0.73	0.78	0.52

BSW mce						
	DEA	NLD	USA	CHE	CAN	FRA
DEA	9.70					
NLD	0.62	4.63				
USA	0.68	0.75	0.15			
CHE	0.70	0.68	0.84	13.12		
CAN	0.32	0.74	0.83	0.70	5.84	
FRA	0.83	0.74	0.78	0.88	0.70	0.77

HOL dce																			
	AUS	CAN	CHE	DFS	FRA	ISR	ITA	NLD	USA	GBR	HUN	DEU	BEL	IRL	SVK	ESP	POL	JPN	NZL
AUS	0.04																		
CAN	0.74	7.64																	
CHE	0.71	0.92	8.84																
DFS	0.71	0.92	0.84	11.15															
FRA	0.70	0.86	0.83	0.79	0.73														
ISR	0.69	0.82	0.66	0.84	0.70	2.66													
ITA	0.37	0.44	0.50	0.46	0.41	0.47	4.21												
NLD	0.81	0.97	0.90	0.93	0.83	0.82	0.45	7.23											
USA	0.70	0.90	0.88	0.84	0.83	0.80	0.45	0.87	0.12										
GBR	0.70	0.80	0.65	0.71	0.65	0.67	0.29	0.82	0.66	6.18									
HUN	0.44	0.53	0.46	0.38	0.48	0.55	0.22	0.54	0.50	0.48	1.26								
DEU	0.79	0.94	0.89	0.89	0.86	0.79	0.40	0.93	0.86	0.75	0.55	12.37							
BEL	0.55	0.59	0.67	0.63	0.62	0.45	0.32	0.65	0.39	0.50	0.58	8.85							
IRL	0.58	0.76	0.75	0.75	0.67	0.70	0.39	0.80	0.76	0.48	0.45	0.73	0.51	0.11					
SVK	0.38	0.22	0.22	0.21	0.20	0.24	0.20	0.22	0.21	0.22	0.24	0.21	0.23	0.22	13.20				
ESP	0.59	0.85	0.81	0.72	0.79	0.63	0.42	0.83	0.80	0.56	0.55	0.83	0.58	0.69	0.20	11.64			
POL	0.38	0.38	0.36	0.39	0.35	0.34	0.18	0.35	0.37	0.28	0.21	0.36	0.30	0.39	0.21	0.22	14.25		
JPN	0.71	0.80	0.78	0.77	0.71	0.71	0.47	0.80	0.75	0.62	0.54	0.77	0.59	0.64	0.40	0.67	0.48	2.67	
NZL	0.66	0.65	0.56	0.67	0.64	0.57	0.28	0.71	0.64	0.52	0.35	0.63	0.48	0.80	0.25	0.58	0.25	0.46	4.61

HOL mce																
	CAN	CHE	DFS	FRA	ISR	ITA	NLD	USA	GBR	HUN	DEU	BEL	SVK	ESP	POL	JPN
CAN	7.65															
CHE	0.83	11.49														
DFS	0.84	0.67	11.50													
FRA	0.76	0.78	0.81	0.99												
ISR	0.85	0.67	0.79	0.69	2.60											
ITA	0.30	0.23	0.41	0.39	0.47	7.14										
NLD	0.78	0.71	0.78	0.77	0.75	0.42	4.77									
USA	0.92	0.89	0.77	0.76	0.86	0.28	0.77	0.15								
GBR	0.43	0.45	0.38	0.58	0.39	0.21	0.46	0.44	5.92							
HUN	0.37	0.31	0.36	0.34	0.45	0.22	0.37	0.36	0.27	1.29						
DEU	0.85	0.70	0.90	0.81	0.78	0.41	0.81	0.80	0.44	0.41	12.20					
BEL	0.64	0.68	0.66	0.69	0.54	0.32	0.76	0.66	0.42	0.42	0.70	9.76				
SVK	0.23	0.27	0.24	0.23	0.36	0.23	0.22	0.23	0.39	0.24	0.23	0.41	15.62			
ESP	0.78	0.63	0.85	0.75	0.76	0.34	0.79	0.71	0.34	0.49	0.87	0.64	0.25	12.23		
POL	0.43	0.37	0.43	0.36	0.45	0.27	0.38	0.41	0.22	0.24	0.45	0.36	0.23	0.39	15.46	
JPN	0.73	0.72	0.72	0.79	0.76	0.49	0.76	0.73	0.57	0.53	0.77	0.72	0.50	0.73	0.46	1.73

HOL dsb													
	AUS	CAN	CHE	DFS	FRA	ISR	ITA	NLD	USA	HUN	DEU	POL	JPN
AUS	0.04												
CAN	0.61	8.19											
CHE	0.22	0.67	17.43										
DFS	0.64	0.88	0.66	11.11									
FRA	0.27	0.61	0.54	0.55	0.61								
ISR	0.79	0.71	0.34	0.69	0.34	1.61							
ITA	0.42	0.55	0.49	0.50	0.38	0.50	6.81						
NLD	0.32	0.79	0.75	0.72	0.58	0.44	0.48	4.56					
USA	0.35	0.73	0.65	0.63	0.59	0.40	0.41	0.61	0.07				
HUN	0.58	0.43	0.18	0.43	0.17	0.66	0.31	0.19	0.26	1.10			

DEU	0.52	0.92	0.76	0.86	0.56	0.63	0.55	0.82	0.68	0.44	12.07		
POL	0.23	0.48	0.49	0.46	0.39	0.34	0.31	0.48	0.43	0.15	0.51	16.45	
JPN	0.53	0.77	0.70	0.73	0.61	0.63	0.60	0.69	0.68	0.46	0.77	0.53	1.55

HOL msb

	CAN	CHE	DFS	FRA	ISR	ITA	NLD	USA	HUN	DEU	POL	JPN
CAN	6.39											
CHE	0.80	16.34										
DFS	0.95	0.76	10.47									
FRA	0.81	0.75	0.84	0.78								
ISR	0.88	0.73	0.86	0.68	1.70							
ITA	0.66	0.50	0.69	0.62	0.64	6.54						
NLD	0.93	0.75	0.95	0.79	0.85	0.71	4.38					
USA	0.88	0.82	0.85	0.77	0.82	0.54	0.78	0.12				
HUN	0.15	0.25	0.17	0.13	0.44	0.42	0.14	0.24	1.22			
DEU	0.95	0.79	0.97	0.81	0.86	0.72	0.95	0.82	0.15	12.49		
POL	0.80	0.75	0.78	0.75	0.70	0.55	0.76	0.75	0.15	0.77	13.75	
JPN	0.80	0.79	0.80	0.78	0.82	0.71	0.77	0.78	0.48	0.80	0.76	2.36

RDC dce

	CAN	DFS	NOR	NLD	DEU	IRL	NZL
CAN	7.06						
DFS	0.88	10.79					
NOR	0.73	0.90	11.75				
NLD	0.95	0.90	0.87	4.78			
DEU	0.93	0.88	0.84	0.92	13.41		
IRL	0.74	0.72	0.76	0.78	0.72	0.12	
NZL	0.64	0.66	0.64	0.69	0.63	0.77	4.28

RDC mce

	CAN	DFS	NOR	DEU
CAN	7.09			
DFS	0.73	11.52		
NOR	0.57	0.78	13.42	
DEU	0.83	0.87	0.64	11.66

^LAPPENDIX II. Number of common bulls

BSW

common bulls below diagonal
common three quarter sib group above diagonal

	DEA	NLD	USA	CHE	CAN	FRA
DEA	0	125	193	454	100	202
NLD	115	0	47	87	20	61
USA	150	42	0	159	111	74
CHE	384	79	126	0	90	126
CAN	87	18	102	76	0	60
FRA	159	49	60	97	52	0

BSW

common bulls below diagonal
common three quarter sib group above diagonal

	DEA	NLD	USA	CHE	CAN	FRA
DEA	0	129	112	514	37	165
NLD	115	0	39	85	17	57
USA	102	36	0	107	32	52
CHE	418	83	93	0	34	111
CAN	33	14	30	29	0	24

FRA 130 50 46 86 21 0

BSW

BSW

GUE

GUE

GUE

GUE

HOL

common bulls below diagonal

common three quarter sib group above diagonal

	AUS	CAN	CHE	DFS	FRA	ISR	ITA	NLD	USA	GBR	HUN	DEU	BEL	IRL	SVK	ESP	POL	JPN	NZL
AUS	0	1466	452	1087	1123	93	1074	1255	1828	806	445	1437	527	218	204	617	862	634	134
CAN	1413	0	732	1438	1550	126	1931	1604	3966	1008	700	2541	651	206	306	1010	1530	1158	53
CHE	395	647	0	442	523	33	553	610	753	376	196	902	375	117	113	347	514	364	21
DFS	740	1148	381	0	1500	118	1342	1704	1954	861	528	2239	615	212	262	702	1198	693	62
FRA	820	1204	465	908	0	96	1647	1792	2279	959	673	2384	729	185	308	881	1548	885	59
ISR	59	83	17	81	57	0	117	141	188	90	54	129	54	46	35	74	123	79	16
ITA	835	1679	483	1020	1081	77	0	1604	2704	1101	696	2524	665	205	322	1001	1662	1062	42
NLD	974	1413	575	1169	1112	98	1273	0	2444	1107	563	3104	820	275	346	805	1658	852	76
USA	1746	4321	661	1375	1374	174	2208	1862	0	1418	845	3460	700	260	393	1135	2214	1552	75
GBR	616	844	328	516	556	52	803	744	1059	0	380	1309	467	235	185	529	930	599	32
HUN	273	556	131	335	412	34	505	315	656	216	0	834	283	99	174	401	496	426	21
DEU	1120	2067	828	1577	1484	98	1807	2640	2640	857	544	0	929	259	519	1118	2397	1205	53
BEL	491	625	369	544	754	29	666	839	653	415	211	963	0	159	164	456	618	408	23
IRL	204	176	102	175	166	28	182	250	243	214	74	225	145	0	53	123	195	124	67
SVK	98	211	49	139	196	17	217	223	278	81	110	411	93	24	0	179	284	189	12
ESP	485	817	293	583	769	41	820	689	912	396	285	799	453	112	90	0	834	615	31
POL	724	1467	415	997	1212	95	1450	1555	2378	792	372	2215	576	167	198	660	0	904	26
JPN	480	796	275	478	477	40	656	579	1027	385	232	710	320	100	84	409	596	0	27
NZL	115	33	15	33	30	12	27	48	60	16	11	35	17	54	6	19	21	16	0

HOL

common bulls below diagonal

common three quarter sib group above diagonal

	CAN	CHE	DFS	FRA	ISR	ITA	NLD	USA	GBR	HUN	DEU	BEL	SVK	ESP	POL	JPN
CAN	0	675	1362	1282	112	1548	1335	2618	919	650	2180	588	275	778	1300	1167
CHE	579	0	570	574	46	585	694	725	436	242	930	407	123	340	508	397
DFS	1208	521	0	1667	128	1443	2139	1994	917	632	2790	687	260	679	1470	941
FRA	987	514	1012	0	104	1428	1884	1969	805	688	2461	740	271	730	1523	1082
ISR	70	23	87	58	0	114	142	184	101	62	142	57	30	68	122	96
ITA	1312	505	1211	928	75	0	1486	2296	907	653	2206	618	267	773	1497	1094
NLD	1270	666	1813	1256	105	1275	0	2131	998	662	3237	847	316	693	1661	1015
USA	2655	633	1642	1159	169	1919	1768	0	1181	852	3145	653	332	869	2067	1698
GBR	998	413	934	813	75	975	1086	1378	0	399	1128	486	174	494	797	606
HUN	545	178	434	424	40	499	450	718	365	0	901	301	175	366	503	523
DEU	1668	842	2010	1400	107	1586	2786	2330	1196	600	0	896	391	901	2375	1384
BEL	576	403	649	764	31	602	913	599	536	238	926	0	155	407	568	413
SVK	190	50	142	151	14	187	209	241	112	119	287	83	0	160	231	199
ESP	616	285	592	619	37	661	629	711	477	284	649	391	83	0	636	561
POL	1168	403	1255	1089	92	1290	1512	2126	857	368	2096	507	175	495	0	927
JPN	740	292	582	486	46	621	605	974	489	289	698	313	84	374	543	0

HOL

common bulls below diagonal

common three quarter sib group above diagonal

	AUS	CAN	CHE	DFS	FRA	ISR	ITA	NLD	USA	HUN	DEU	POL	JPN
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AUS	0	1421	441	1091	996	93	1078	1415	1701	318	1439	855	646
CAN	1403	0	707	1394	1405	122	1947	1879	3642	488	2529	1521	1185
CHE	388	619	0	435	516	32	546	659	702	128	883	506	365
DFS	745	1153	376	0	1363	120	1351	1853	1816	411	2252	1194	705
FRA	769	1142	459	872	0	85	1604	1802	1849	485	2296	1531	888
ISR	59	82	17	81	54	0	119	143	184	35	131	120	80
ITA	841	1709	480	1037	1084	82	0	1835	2618	501	2542	1696	1097
NLD	1226	1858	639	1435	1395	108	1593	0	2550	468	3473	1771	964
USA	1653	4087	607	1319	1152	171	2181	2261	0	575	3232	2147	1569
HUN	199	382	89	256	304	26	359	320	428	0	634	303	295
DEU	1125	2074	804	1581	1467	98	1859	3170	2508	419	0	2397	1237
POL	725	1478	412	1003	1216	95	1513	1712	2349	224	2240	0	918
JPN	490	831	277	488	485	41	687	676	1070	167	736	620	0

HOL

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	CHE	DFS	FRA	ISR	ITA	NLD	USA	HUN	DEU	POL	JPN
CAN	0	673	1366	1212	111	1654	1372	2415	469	2133	1240	1184
CHE	578	0	582	569	46	623	704	685	179	912	479	404
DFS	1243	531	0	1575	130	1580	2200	1805	510	2803	1429	974
FRA	963	511	1008	0	99	1527	1790	1609	522	2329	1457	1062
ISR	70	23	89	56	0	119	143	179	45	139	119	97
ITA	1392	542	1313	970	80	0	1689	2352	504	2475	1574	1186
NLD	1356	678	1920	1264	106	1452	0	1932	519	3191	1589	1055
USA	2538	601	1647	1056	168	2007	1732	0	580	2756	1889	1589
HUN	387	134	348	320	27	372	368	507	0	708	307	407
DEU	1614	816	2029	1325	103	1717	2772	2148	464	0	2197	1404
POL	1117	378	1222	1032	91	1319	1447	1962	209	1887	0	906
JPN	767	300	614	499	47	663	656	1011	222	722	537	0

JER

JER

JER

JER

RDC

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	DFS	NOR	NLD	DEU	IRL	NZL
CAN	0	178	6	5	11	2	0
DFS	183	0	160	60	95	10	3
NOR	5	136	0	50	33	25	2
NLD	5	58	49	0	27	7	1
DEU	11	87	31	26	0	3	1
IRL	2	7	24	7	2	0	0
NZL	0	3	2	1	1	0	0

RDC

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	DFS	NOR	DEU
CAN	0	116	5	9
DFS	114	0	144	62
NOR	4	118	0	18
DEU	9	54	17	0

RDC

RDC

SIM

SIM

SIM

SIM
