

INTRODUCTION

The latest routine international evaluation for calving traits took place as scheduled at the Interbull Centre. Data from eighteen (18) 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, 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:

USA (ALL)	Separate groups for unknown foreign parents were removed because most such animals are now from countries with no domestic U.S. descendants. For HOL, BSW breeds, decrease in information due to the pedigree correction and herd-year minimum edits
AUS (ALL)	Some decrease in information due to pedigree, data updates and change in bulls' status which made bulls no longer qualifying for inclusion.
NLD (ALL)	Base change. Update of genetic correlations.
CHE (ALL)	Drop of information due to changes in the groups of fixed effects regions and level (geographical) and edits in database. Base change.
GBR (HOL)	DCE proofs scaled by 100. MCE computed according to the latest Interbull recommendation and scaled by 100
JPN (HOL)	Participating for the first time.
DEA (BSW)	Base change
DEU (ALL)	Base change. For HOL, drop in information causing some bulls to drops below the required threshold of 10 herds
ITA (HOL)	Base change. Applied a one-year cut-off of data
POL (HOL)	Drop in information due to the data edits.
CAN (ALL)	Base change
BEL (HOL)	Drop in information due to few pedigree correction
NZL (HOL, JER, RDC)	Drop in information due to changes in pedigree due to DNA parentage testing
ITA (BSW)	Base change

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

Country	BSW	GUE	HOL	JER	RDC	SIM
AUS			6757			
BEL			1322			
CAN	172		13677		542	
CHE	1726		2294			
CZE						
DEA	3711					
DEU			20809		305	
DFS			11390		6730	
ESP			2437			
EST						
FRA	414		13533			
FRM						
GBR			3357			
HUN			1765			
IRL			2478		64	
ISR			625			
ITA			8791			
JPN			4700			
KOR						
LTU						
LVA						
NLD	192		15871		87	
NOR					4017	
NZL						
POL			7457			
PRT						
SVK			735			
SVN						
URY						
USA	568		37949			
ZAF						
HRV						
CAM						
No. Records	6783		155947		11745	
Pub. Proofs	7085	0	132469	0	12100	0

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

BSW	dce						
	DEA	NLD	USA	CHE	CAN	FRA	
DEA	9.28						
NLD	0.82	5.69					
USA	0.63	0.84	0.13				
CHE	0.85	0.93	0.80	10.61			
CAN	0.78	0.94	0.90	0.92	7.68		
FRA	0.67	0.75	0.74	0.73	0.78	0.52	

BSW mce

	DEA	NLD	USA	CHE	CAN	FRA
DEA	9.70					
NLD	0.61	4.68				
USA	0.69	0.76	0.16			
CHE	0.69	0.70	0.84	13.09		
CAN	0.33	0.74	0.84	0.70	5.90	
FRA	0.82	0.74	0.78	0.87	0.69	0.78

HOL dce

	AUS	CAN	CHE	DFS	FRA	ISR	ITA	NLD	USA	GBR	HUN	DEU	BEL	IRL	SVK	ESP	POL	JPN
AUS	0.04																	
CAN	0.75	7.64																
CHE	0.73	0.93	8.89															
DFS	0.71	0.92	0.84	11.21														
FRA	0.71	0.86	0.84	0.79	0.73													
ISR	0.71	0.83	0.66	0.85	0.71	2.67												
ITA	0.37	0.45	0.51	0.46	0.41	0.49	4.19											
NLD	0.82	0.97	0.91	0.93	0.83	0.84	0.45	7.26										
USA	0.71	0.91	0.88	0.85	0.84	0.81	0.46	0.87	0.12									
GBR	0.71	0.80	0.68	0.70	0.66	0.68	0.30	0.82	0.67	6.23								
HUN	0.45	0.54	0.47	0.39	0.49	0.55	0.22	0.54	0.51	0.48	1.26							
DEU	0.79	0.94	0.90	0.89	0.86	0.80	0.40	0.93	0.86	0.75	0.56	12.44						
BEL	0.55	0.59	0.67	0.64	0.63	0.46	0.32	0.65	0.63	0.39	0.52	0.59	8.93					
IRL	0.75	0.84	0.82	0.81	0.78	0.78	0.36	0.88	0.81	0.62	0.45	0.79	0.55	0.09				
SVK	0.39	0.23	0.23	0.22	0.20	0.25	0.20	0.22	0.22	0.23	0.26	0.21	0.24	0.24	13.14			
ESP	0.59	0.85	0.82	0.71	0.79	0.64	0.42	0.82	0.80	0.55	0.55	0.83	0.58	0.74	0.20	11.70		
POL	0.39	0.48	0.45	0.50	0.41	0.43	0.18	0.44	0.44	0.38	0.22	0.44	0.30	0.49	0.23	0.26	14.24	
JPN	0.77	0.84	0.82	0.79	0.77	0.78	0.59	0.84	0.80	0.69	0.65	0.80	0.68	0.76	0.57	0.72	0.60	2.67

HOL mce

	CAN	CHE	DFS	FRA	ISR	ITA	NLD	USA	GBR	HUN	DEU	BEL	SVK	ESP	POL	JPN
CAN	7.65															
CHE	0.83	11.54														
DFS	0.83	0.67	11.58													
FRA	0.76	0.78	0.81	0.99												
ISR	0.84	0.66	0.79	0.69	2.61											
ITA	0.30	0.23	0.41	0.39	0.46	7.17										
NLD	0.78	0.70	0.78	0.77	0.74	0.42	4.79									
USA	0.92	0.89	0.77	0.76	0.86	0.28	0.76	0.15								
GBR	0.43	0.46	0.38	0.59	0.40	0.21	0.47	0.44	5.97							
HUN	0.37	0.31	0.37	0.33	0.45	0.22	0.37	0.36	0.27	1.28						
DEU	0.85	0.70	0.90	0.81	0.78	0.42	0.82	0.80	0.45	0.42	12.27					
BEL	0.64	0.67	0.66	0.69	0.53	0.32	0.76	0.65	0.42	0.41	0.70	9.86				
SVK	0.24	0.27	0.24	0.23	0.36	0.23	0.22	0.23	0.41	0.25	0.23	0.41	15.65			
ESP	0.78	0.62	0.85	0.75	0.76	0.34	0.79	0.71	0.35	0.49	0.87	0.65	0.25	12.25		
POL	0.49	0.41	0.52	0.44	0.45	0.31	0.43	0.49	0.23	0.26	0.54	0.46	0.24	0.42	15.53	
JPN	0.77	0.71	0.77	0.78	0.80	0.59	0.77	0.76	0.64	0.60	0.81	0.76	0.59	0.75	0.63	1.71

HOL dsb

	AUS	CAN	CHE	DFS	FRA	ISR	ITA	NLD	USA	HUN	DEU	POL	JPN
AUS	0.04												
CAN	0.61	8.23											
CHE	0.21	0.67	17.45										
DFS	0.64	0.88	0.65	11.16									
FRA	0.27	0.61	0.55	0.55	0.61								
ISR	0.79	0.70	0.33	0.69	0.34	1.61							
ITA	0.42	0.55	0.48	0.50	0.38	0.51	6.80						
NLD	0.32	0.79	0.75	0.72	0.58	0.44	0.48	4.50					
USA	0.35	0.73	0.65	0.63	0.59	0.39	0.41	0.61	0.07				
HUN	0.59	0.42	0.18	0.43	0.17	0.65	0.32	0.19	0.26	1.10			
DEU	0.52	0.92	0.75	0.86	0.56	0.63	0.55	0.83	0.68	0.44	12.14		
POL	0.33	0.59	0.59	0.61	0.39	0.39	0.35	0.56	0.48	0.17	0.62	16.45	

JPN 0.69 0.86 0.71 0.83 0.67 0.76 0.69 0.72 0.72 0.63 0.85 0.67 1.55

HOL msb

	CAN	CHE	DFS	FRA	ISR	ITA	NLD	USA	HUN	DEU	POL	JPN
CAN	6.41											
CHE	0.79	16.49										
DFS	0.95	0.76	10.53									
FRA	0.81	0.75	0.84	0.79								
ISR	0.88	0.72	0.86	0.68	1.71							
ITA	0.66	0.50	0.69	0.61	0.64	6.60						
NLD	0.93	0.75	0.95	0.79	0.84	0.72	4.35					
USA	0.88	0.81	0.85	0.77	0.82	0.55	0.77	0.12				
HUN	0.16	0.26	0.18	0.13	0.44	0.42	0.15	0.24	1.22			
DEU	0.95	0.79	0.97	0.81	0.86	0.73	0.95	0.83	0.16	12.55		
POL	0.84	0.75	0.81	0.75	0.81	0.62	0.77	0.75	0.17	0.79	13.90	
JPN	0.80	0.79	0.82	0.77	0.87	0.79	0.78	0.79	0.66	0.81	0.76	2.36

RDC dce

	CAN	DFS	NOR	NLD	DEU	IRL
CAN	7.07					
DFS	0.88	10.80				
NOR	0.74	0.89	11.66			
NLD	0.95	0.90	0.87	4.91		
DEU	0.92	0.87	0.84	0.92	13.56	
IRL	0.81	0.79	0.84	0.85	0.78	0.07

RDC mce

	CAN	DFS	NOR	DEU
CAN	7.11			
DFS	0.73	11.54		
NOR	0.58	0.77	13.38	
DEU	0.83	0.87	0.63	11.73

^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	123	190	447	99	201
NLD	113	0	47	86	20	58
USA	147	42	0	157	110	72
CHE	377	78	124	0	89	123
CAN	86	18	101	75	0	59
FRA	156	46	58	93	51	0

BSW

common bulls below diagonal
common three quarter sib group above diagonal

	DEA	NLD	USA	CHE	CAN	FRA
DEA	0	126	110	501	36	167
NLD	111	0	38	81	17	55
USA	99	35	0	104	32	51
CHE	406	78	90	0	33	114
CAN	32	14	30	28	0	24
FRA	130	48	45	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
AUS	0	1428	436	1062	1114	91	1065	1226	1778	784	445	1399	520	492	200	596	830	615
CAN	1375	0	705	1390	1530	122	1899	1564	3888	976	698	2486	640	456	306	972	1466	1125
CHE	380	618	0	421	507	32	541	596	734	364	196	878	372	230	112	336	494	351
DFS	718	1099	360	0	1469	114	1326	1649	1900	838	526	2181	602	471	255	682	1150	666
FRA	811	1177	452	876	0	93	1642	1764	2262	944	671	2339	716	490	305	863	1503	873
ISR	58	81	17	78	56	0	114	137	177	86	54	126	54	70	34	71	119	75
ITA	823	1649	473	1007	1068	76	0	1583	2666	1084	696	2501	652	481	317	977	1592	1038
NLD	948	1370	560	1119	1079	94	1235	0	2403	1078	561	3025	806	632	344	774	1604	822
USA	1690	4229	644	1326	1350	164	2152	1817	0	1379	843	3396	686	589	389	1092	2119	1498
GBR	596	809	315	495	534	50	779	714	1024	0	379	1277	456	470	182	514	888	581
HUN	273	554	131	333	411	34	506	313	656	214	0	833	281	235	174	400	494	424
DEU	1084	2004	803	1520	1444	96	1775	2561	2572	823	543	0	910	640	514	1083	2307	1164
BEL	485	613	365	531	739	29	656	822	638	405	209	941	0	326	162	444	592	396
IRL	435	408	211	379	439	46	411	536	549	421	184	555	303	0	116	270	387	258
SVK	96	211	48	135	193	17	213	221	275	80	110	405	91	47	0	175	276	187
ESP	472	783	283	566	757	39	800	659	872	383	283	767	443	239	88	0	789	593
POL	691	1404	397	956	1161	91	1379	1495	2272	751	370	2118	550	323	191	616	0	870
JPN	463	769	265	461	463	38	631	553	972	369	230	675	309	209	83	392	566	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	664	1311	1262	107	1523	1296	2573	893	650	2131	575	273	760	1253	1142
CHE	567	0	553	563	46	576	681	717	423	243	906	403	123	336	497	391
DFS	1155	504	0	1631	123	1402	2073	1930	885	632	2701	664	257	653	1403	911
FRA	960	503	973	0	102	1418	1859	1951	788	690	2426	726	268	707	1476	1072
ISR	65	23	83	57	0	110	137	170	97	62	138	55	30	63	115	93
ITA	1287	500	1168	912	72	0	1468	2247	879	656	2180	608	264	745	1423	1073
NLD	1232	651	1746	1227	102	1248	0	2093	971	662	3160	823	314	668	1599	990
USA	2597	625	1570	1137	155	1863	1727	0	1145	852	3092	640	327	842	1974	1667
GBR	973	399	898	793	72	951	1056	1334	0	401	1098	468	173	482	759	586
HUN	545	179	433	426	40	505	450	720	367	0	901	303	175	365	504	523
DEU	1613	817	1917	1364	104	1549	2701	2265	1167	602	0	871	386	868	2289	1356
BEL	565	400	624	748	29	598	890	586	518	240	902	0	154	401	547	405
SVK	187	50	139	148	13	183	206	235	110	118	282	82	0	159	227	196
ESP	597	282	564	601	31	639	604	684	467	287	625	386	83	0	595	547
POL	1122	395	1192	1047	86	1211	1454	2022	815	369	2000	489	170	464	0	896
JPN	715	289	558	476	41	603	583	939	475	289	674	305	80	366	518	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
AUS	0	1383	425	1066	987	91	1067	1382	1654	318	1398	821	628
CAN	1365	0	683	1346	1383	118	1914	1817	3564	488	2471	1454	1154
CHE	372	598	0	413	500	31	534	643	681	128	857	483	355
DFS	723	1104	354	0	1331	116	1335	1794	1763	411	2194	1146	681

FRA	760	1114	446	840	0	82	1590	1770	1830	485	2250	1483	875
ISR	58	80	17	78	53	0	116	140	173	35	128	116	76
ITA	830	1677	472	1026	1067	81	0	1800	2573	502	2513	1613	1073
NLD	1198	1791	622	1380	1357	105	1553	0	2481	468	3365	1699	925
USA	1601	3992	590	1271	1130	161	2122	2182	0	575	3167	2050	1520
HUN	199	382	89	256	304	26	360	320	429	0	634	303	295
DEU	1088	2009	778	1525	1427	96	1817	3058	2442	419	0	2303	1198
POL	691	1414	394	961	1163	91	1435	1638	2242	224	2143	0	882
JPN	474	806	267	472	470	39	663	644	1020	167	701	588	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	662	1317	1194	106	1626	1333	2374	469	2084	1196	1161
CHE	566	0	566	557	46	616	693	678	179	888	470	397
DFS	1188	514	0	1540	124	1542	2134	1747	510	2724	1369	947
FRA	938	499	967	0	97	1517	1761	1592	522	2295	1409	1051
ISR	65	23	84	55	0	114	139	165	45	136	111	95
ITA	1360	541	1262	948	77	0	1654	2295	508	2445	1499	1167
NLD	1306	663	1844	1225	104	1397	0	1898	518	3111	1534	1027
USA	2485	593	1573	1034	154	1938	1683	0	580	2703	1799	1557
HUN	387	134	348	320	27	377	368	508	0	708	307	407
DEU	1560	792	1942	1289	101	1664	2678	2081	464	0	2118	1374
POL	1072	368	1158	983	85	1225	1386	1859	209	1799	0	873
JPN	743	296	588	484	43	639	628	970	221	694	504	0

JER

JER

JER

JER

RDC

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	DFS	NOR	NLD	DEU	IRL
CAN	0	174	6	6	11	4
DFS	179	0	156	60	90	21
NOR	5	132	0	49	31	55
NLD	6	58	48	0	26	14
DEU	11	82	29	25	0	7
IRL	4	17	54	14	6	0

RDC

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	DFS	NOR	DEU
CAN	0	115	5	9
DFS	113	0	142	59
NOR	4	116	0	17
DEU	9	51	16	0

RDC

RDC

SIM

SIM

SIM

SIM
