

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:

USA (ALL)	Separate groups for unknown foreign parents were removed because most such animals are now from countries with no domestic U.S. descendants.
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
FRA (BSW,HOL)	Base change
ITA (HOL)	Base change. Drop in information due to the yearly data cut-off for phenotypes.
DEU (ALL)	Base change
CHE (ALL)	Drop of information due to changes in the groups of fixed effects regions and level (geographical) and edits in database. Base change.
POL (HOL)	Drop in information due to the data edits.
CAN (HOL,RDC)	Base change
BEL (HOL)	Drop in information due to few pedigree correction
ITA (BSW)	Base change
NZL (HOL,JER,RDC)	Drop in information due to the DNA parentage testing.

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.

NLD	0.94	0.98	0.96	0.97	0.97	4.49													
AUS	0.82	0.83	0.78	0.80	0.83	0.81	0.25												
GBR	0.73	0.72	0.73	0.74	0.76	0.74	0.72	0.20											
SVN	0.75	0.85	0.91	0.87	0.84	0.87	0.70	0.65	27.01										
NZL	0.87	0.87	0.79	0.81	0.87	0.84	0.89	0.73	0.73	0.33									
ITA	0.75	0.82	0.79	0.81	0.84	0.82	0.69	0.58	0.76	0.69	6.23								
JPN	0.96	0.93	0.88	0.93	0.97	0.95	0.85	0.78	0.78	0.85	0.81	2.15							
ESP	0.93	0.93	0.89	0.92	0.95	0.94	0.79	0.71	0.79	0.84	0.78	0.93	13.27						
CZE	0.88	0.92	0.92	0.92	0.92	0.92	0.76	0.59	0.81	0.76	0.79	0.86	0.89	18.50					
POL	0.50	0.50	0.50	0.50	0.48	0.49	0.50	0.50	0.52	0.54	0.48	0.50	0.50	0.50	14.91				

HOL	tem																		
	CAN	CHE	DEU	DFS	FRA	NLD	AUS	GBR	NZL	ITA	JPN	POL							
CAN	7.83																		
CHE	0.68	10.30																	
DEU	0.84	0.75	11.74																
DFS	0.77	0.84	0.86	13.07															
FRA	0.70	0.91	0.79	0.91	0.90														
NLD	0.85	0.77	0.89	0.85	0.81	5.81													
AUS	0.58	0.64	0.62	0.68	0.67	0.70	0.23												
GBR	0.59	0.80	0.67	0.77	0.83	0.68	0.61	0.16											
NZL	0.59	0.51	0.72	0.59	0.58	0.70	0.72	0.50	0.35										
ITA	0.11	0.09	0.11	0.09	0.08	0.13	0.09	0.09	0.10	6.23									
JPN	0.92	0.80	0.91	0.87	0.86	0.92	0.64	0.74	0.63	0.10	2.64								
POL	0.24	0.11	0.26	0.16	0.09	0.18	0.19	0.15	0.19	0.08	0.26	19.28							

JER	msp																		
	CAN	DFS	NLD	AUS	NZL	CHE													
CAN	7.65																		
DFS	0.89	13.60																	
NLD	0.93	0.94	4.27																
AUS	0.74	0.75	0.82	0.24															
NZL	0.65	0.73	0.82	0.76	0.30														
CHE	0.92	0.93	0.95	0.78	0.74	11.57													

RDC	msp																		
	CAN	DEU	DFS	NOR	AUS	NZL	CAM												
CAN	6.74																		
DEU	0.87	11.52																	
DFS	0.92	0.91	13.21																
NOR	0.79	0.76	0.95	14.64															
AUS	0.77	0.71	0.76	0.74	0.27														
NZL	0.85	0.76	0.85	0.80	0.84	0.38													
CAM	0.67	0.67	0.69	0.67	0.59	0.68	7.47												

RDC	tem																		
	CAN	DEU	DFS	NOR	AUS	NZL	CAM												
CAN	6.26																		
DEU	0.79	10.03																	
DFS	0.66	0.75	11.07																
NOR	0.64	0.55	0.89	16.74															
AUS	0.59	0.44	0.62	0.56	0.25														
NZL	0.48	0.66	0.66	0.52	0.76	0.43													
CAM	0.54	0.49	0.49	0.50	0.42	0.49	7.45												

^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	121	134	118	37	24	83
CHE	105	0	609	469	67	58	181
DEA	121	520	0	645	93	72	232
ITA	105	409	543	0	88	69	202
NLD	30	65	84	71	0	29	59
SVN	22	55	68	65	29	0	39
FRA	75	143	186	167	50	39	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	869	1812	1328	1581	1487	1091	1735	199	328	1662	435	1163	601	1420
CHE	799	0	901	614	691	809	484	723	117	200	653	165	489	237	535
DEU	1241	789	0	1825	1936	2224	920	1617	307	313	1723	389	1113	767	1926
DFS	1031	561	1171	0	1592	1762	936	1381	199	394	1135	256	777	614	1210
FRA	1104	642	1104	872	0	1962	1052	1565	193	445	1361	351	1026	635	1535
NLD	1378	796	1738	1357	1277	0	1084	1688	225	543	1337	305	903	788	1536
AUS	946	407	594	548	657	844	0	1056	112	546	712	200	557	364	589
GBR	1812	719	1140	978	1063	1422	818	0	192	412	1360	311	888	574	1180
SVN	156	86	297	147	151	196	73	147	0	43	218	90	168	113	264
NZL	294	173	218	239	248	488	429	315	33	0	216	67	192	149	158
ITA	1441	584	1077	890	875	1107	535	1164	189	181	0	420	1064	593	1465
JPN	188	95	148	132	135	154	125	143	40	49	166	0	330	182	393
ESP	746	370	626	556	756	714	372	644	118	137	718	128	0	422	928
CZE	331	122	400	270	292	571	141	261	73	59	355	79	223	0	628
POL	1363	443	1709	960	1118	1393	417	1002	235	116	1226	180	649	444	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	785	1673	978	1449	1405	1058	1700	316	1656	435	1395
CHE	717	0	751	430	627	676	428	669	175	619	164	511
DEU	985	621	0	1421	1856	2096	895	1495	285	1613	361	1712
DFS	635	368	705	0	1342	1354	827	1138	374	885	184	887
FRA	1089	579	1018	668	0	1843	1001	1511	416	1355	349	1507
NLD	1295	664	1445	849	1228	0	1078	1642	538	1301	300	1482
AUS	924	373	520	419	656	836	0	1057	545	711	200	583
GBR	1779	654	953	677	1052	1379	817	0	409	1359	311	1167
NZL	286	154	193	213	246	482	428	314	0	215	67	157
ITA	1433	555	945	616	874	1070	534	1165	181	0	420	1438
JPN	188	95	138	94	135	150	125	143	49	166	0	389
POL	1358	423	1330	599	1111	1353	417	1002	116	1225	180	0

JER

common bulls below diagonal						
common three quarter sib group above diagonal						
	CAN	DFS	NLD	AUS	NZL	CHE
CAN	0	67	12	190	69	29
DFS	52	0	21	87	80	43
NLD	9	17	0	18	16	9
AUS	191	59	18	0	190	30
NZL	69	59	14	175	0	25

CHE 28 43 6 29 24 0

JER

RDC

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

CAN	0	6	161	6	37	28	0
DEU	6	0	28	8	22	2	0
DFS	166	20	0	113	138	48	0
NOR	6	7	91	0	61	10	0
AUS	34	21	110	52	0	39	9
NZL	25	2	47	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	8	136	6	37	27	0
DEU	8	0	48	11	28	4	0
DFS	138	42	0	108	138	48	0
NOR	6	11	86	0	58	9	0
AUS	34	27	110	49	0	39	9
NZL	25	4	47	9	36	0	1
CAM	0	0	0	0	9	1	0

SIM

SIM