

Introduction

The latest routine international evaluation for longevity trait took place as scheduled at the Interbull Centre. Data from twenty two (22) populations were included in this evaluation.

International genetic evaluations for direct longevity trait of bulls from Australia, Belgium, Canada, Switzerland, Germany, Denmark-Finland-Sweden Spain, France, The United Kingdom, Ireland, Israel, Italy, New Zealand, The Netherlands, The United States of America Hungary, Norway, Slovenia, Czech Republic and Japan were computed. Brown Swiss, Guernsey, Holstein, Jersey, Red Dairy Cattle and Simmental breed data were included in this evaluation.

Changes in national procedures

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

NOR (RDC)	The rolling definition of effects redistribute the daughters and some bulls loose EDC.
CHE (HOL,BSW)	Drops in information due to manual edits
ISR (HOL)	Drops in information due to pedigree corrections and edits.
DFS (ALL)	Quality check editing on data causing drops in information
AUS (HOL,JER,RDC)	Decreasing in information due to pedigree changes, changes in status of bull which leads to a good number of bulls no longer being qualified
JPN (HOL)	Some changes in proofs caused by additional records and in EDCs caused by modification of pedigree.
POL (HOL)	Drops in information due to data edits.
ITA (HOL)	Drops in information for some bulls due to data edits.
ESP (HOL)	Change in base definition. Some Bulls lost some EDC, due to some daughters that were assigned as culled but did contribute more information now. Changed the way to assign officially so many bulls do loose that status.
FRA (HOL,SIM,MON)	The reliability from the singlestep is now used as a factor for the publication rule. As the single step reliability showed differences between traits, even belonging to the same trait group, there are a different amount of bulls no more qualifying for publication across all traits due to the fact that such bulls do not meet anymore the new threshold set by the organisation.

INTERBULL CHANGES COMPARED TO THE PREVIOUS ROUTINE RUN

Post-processing Windows:

According to the decision taken by ITC in Orlando (2015) to review the post-processing windows every 5 years, during the 2020 the relative working group has been re-activated and new windows have been identified.

As before, 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. Over the past five years, in fact, the previous adopted lower value (25th percentile) had been found too high causing estimated and post-processed correlations to differ significantly from each other. The new lower values have been applied to all breeds and traits.

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.

The new weights are as follows:

No changes :: 2
Small changes:: 1
Big changes :: 0

More information can be read on https://interbull.org/ib/rg_procedure

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 Longevity (August Routine Evaluation 2022).
Number of records for direct longevity by breed

Country	BSW	GUE	HOL	JER	RDC	SIM
AUS		140	8335	1780	750	
BEL			1808			
CAN	256	106	13076	819	895	
CHE	3133		3202			
CZE			5085			
DEA	5091					
DEU			23337		287	
DFS			14423	2554	9460	
ESP			4262			
EST						
FRA	440		18158			
FRM						4884
GBR	135	323	8297	873	596	83
HUN			3646			
IRL			3200	231	73	
ISR			1648			
ITA	2271		9253			
JPN			6818			
KOR						
LTU						
LVA						
NLD	204		16052	210	81	394
NOR					3912	
NZL			7547	4412	1004	
POL			11618			
PRT						
SVK						
SVN	434		701			671
URY						
USA	1180	811	40803	5112	782	83
ZAF			1257	711	134	
HRV						
CAM					41	
No. Records	13144	1380	202526	16702	18015	6115
Pub. Proofs	10504	1135	153504	13566	16174	5730

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

BSW dlo

	CAN	CHE	DEA	NLD	USA	ITA	FRA	GBR	SVN
CAN	8.99								
CHE	0.72	10.80							
DEA	0.90	0.84	12.26						
NLD	0.66	0.78	0.73	329.80					
USA	0.90	0.64	0.84	0.72	2.69				
ITA	0.79	0.71	0.87	0.63	0.70	15.93			
FRA	0.64	0.77	0.72	0.66	0.67	0.51	0.94		
GBR	0.85	0.58	0.63	0.60	0.84	0.64	0.56	0.32	
SVN	0.72	0.67	0.83	0.74	0.72	0.76	0.62	0.55	23.56

GUE dlo

	AUS	CAN	USA	GBR
AUS	0.06			
CAN	0.60	8.39		
USA	0.63	0.90	2.90	
GBR	0.62	0.91	0.87	0.38

HOL dlo

	AUS	BEL	CAN	CHE	DEU	DFS	ESP	FRA	GBR	IRL	ISR	ITA	NLD	NZL	USA	HUN	CZE	SVN	ZAF	POL	JPN
AUS	0.04																				
BEL	0.64	0.39																			
CAN	0.62	0.88	6.38																		
CHE	0.73	0.77	0.83	12.21																	
DEU	0.67	0.86	0.87	0.87	12.54																
DFS	0.69	0.85	0.86	0.82	0.92	12.26															
ESP	0.55	0.80	0.88	0.77	0.83	0.76	11.51														
FRA	0.58	0.60	0.61	0.75	0.63	0.70	0.58	0.98													
GBR	0.68	0.90	0.90	0.78	0.86	0.83	0.88	0.56	0.31												
IRL	0.57	0.85	0.79	0.65	0.75	0.70	0.76	0.44	0.80	2.09											
ISR	0.60	0.57	0.55	0.66	0.68	0.71	0.57	0.62	0.57	0.57	105.48										
ITA	0.51	0.67	0.75	0.73	0.74	0.68	0.88	0.63	0.76	0.62	0.54	5.91									
NLD	0.54	0.64	0.65	0.72	0.71	0.75	0.61	0.66	0.63	0.47	0.68	0.53	268.49								
NZL	0.63	0.66	0.67	0.72	0.72	0.67	0.51	0.49	0.65	0.62	0.44	0.46	0.49	2.24							
USA	0.63	0.86	0.89	0.79	0.88	0.88	0.88	0.65	0.84	0.72	0.71	0.76	0.73	0.58	2.22						
HUN	0.44	0.59	0.69	0.57	0.59	0.54	0.77	0.52	0.65	0.49	0.44	0.71	0.46	0.45	0.72	1.20					
CZE	0.44	0.51	0.57	0.57	0.56	0.48	0.69	0.44	0.58	0.55	0.44	0.65	0.44	0.44	0.57	0.52	17.37				
SVN	0.44	0.77	0.71	0.60	0.73	0.67	0.68	0.50	0.69	0.64	0.58	0.53	0.65	0.55	0.77	0.45	0.44	23.89			
ZAF	0.60	0.82	0.88	0.66	0.80	0.74	0.85	0.49	0.85	0.86	0.49	0.67	0.46	0.62	0.85	0.68	0.56	0.67	29.73		
POL	0.44	0.44	0.45	0.55	0.56	0.48	0.59	0.44	0.47	0.44	0.44	0.61	0.44	0.44	0.49	0.44	0.51	0.45	0.44	12.54	
JPN	0.60	0.90	0.94	0.73	0.86	0.86	0.86	0.52	0.90	0.83	0.49	0.68	0.61	0.68	0.87	0.68	0.54	0.76	0.90	0.44	1.62

JER dlo

	AUS	CAN	DFS	NLD	NZL	USA	GBR	ZAF	IRL
AUS	0.04								
CAN	0.49	7.34							
DFS	0.68	0.70	12.08						
NLD	0.58	0.63	0.79	339.20					
NZL	0.47	0.50	0.62	0.47	1.97				
USA	0.60	0.83	0.81	0.74	0.55	2.36			
GBR	0.53	0.88	0.74	0.64	0.54	0.80	0.30		
ZAF	0.46	0.65	0.54	0.46	0.46	0.67	0.66	26.80	
IRL	0.52	0.70	0.60	0.46	0.48	0.68	0.71	0.72	1.58

RDC dlo

	AUS	CAN	DEU	DFS	NZL	USA	GBR	NLD	ZAF	IRL	NOR	CAM
AUS	0.05											
CAN	0.54	7.10										
DEU	0.66	0.85	12.18									
DFS	0.65	0.75	0.92	13.00								
NZL	0.62	0.56	0.71	0.64	2.49							

USA	0.56	0.86	0.88	0.86	0.68	2.45						
GBR	0.62	0.90	0.84	0.75	0.56	0.81	0.31					
NLD	0.55	0.65	0.72	0.76	0.55	0.77	0.62	333.98				
ZAF	0.51	0.86	0.78	0.56	0.51	0.79	0.81	0.49	32.49			
IRL	0.53	0.76	0.72	0.64	0.58	0.65	0.72	0.49	0.80	1.50		
NOR	0.54	0.79	0.73	0.80	0.45	0.80	0.66	0.79	0.61	0.65	41.04	
CAM	0.47	0.61	0.77	0.74	0.77	0.80	0.62	0.73	0.51	0.44	0.54	9.12

SIM dlo

	FRM	NLD	SVN	GBR	USA
FRM	0.98				
NLD	0.55	288.75			
SVN	0.46	0.70	22.05		
GBR	0.66	0.60	0.69	0.26	
USA	0.74	0.75	0.74	0.82	2.07

^LAPPENDIX II. Number of common bulls

BSW

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	CHE	DEA	NLD	USA	ITA	FRA	GBR	SVN
CAN	0	135	148	45	178	137	90	64	40
CHE	116	0	601	103	323	495	174	77	97
DEA	130	503	0	149	328	716	225	79	126
NLD	39	96	138	0	79	128	76	34	54
USA	173	299	291	68	0	251	122	93	50
ITA	123	435	627	103	179	0	205	82	118
FRA	80	133	171	61	85	166	0	59	67
GBR	64	61	56	30	91	62	52	0	25
SVN	37	91	118	53	40	116	66	22	0

GUE

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	USA	GBR
AUS	0	50	64	37
CAN	49	0	70	31
USA	61	61	0	89
GBR	32	26	91	0

HOL

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	BEL	CAN	CHE	DEU	DFS	ESP	FRA	GBR	IRL	ISR	ITA	NLD	NZL	USA	HUN	CZE	SVN	ZAF	POL	JPN
AUS	0	697	1380	602	1617	1363	902	1341	1515	753	121	1143	1458	1043	1917	757	926	196	469	1084	942
BEL	605	0	740	553	1099	869	661	947	899	508	88	765	1115	423	900	533	666	184	303	783	542
CAN	1365	706	0	849	2417	1563	1326	1573	1802	579	145	1742	1596	605	3582	1060	1193	238	473	1534	1406
CHE	531	553	737	0	1119	736	573	722	778	413	73	724	919	328	1004	439	552	160	251	701	486
DEU	1209	1117	1808	1053	0	2844	1589	2605	2373	919	185	2576	3446	809	3631	1316	2019	379	541	2731	1497
DFS	1006	821	1339	687	2189	0	1123	1871	1907	816	181	1676	2396	742	2339	1014	1465	299	510	1861	1092
ESP	656	650	831	473	1054	875	0	1313	1213	534	122	1318	1191	480	1635	828	957	221	443	1161	965
FRA	947	947	1070	665	1571	1158	1089	0	1816	805	151	1758	2161	734	2679	1039	1462	259	501	1899	1318
GBR	1378	915	2038	771	2029	1621	1039	1345	0	1124	177	1731	2126	921	2567	1020	1349	272	539	1685	1204
IRL	652	496	522	422	807	689	515	676	1196	0	112	672	948	703	854	483	605	142	331	673	485
ISR	75	49	90	40	142	130	67	93	136	84	0	164	184	109	229	135	151	57	71	172	127
ITA	884	756	1434	665	1813	1396	987	1111	1509	593	113	0	1781	592	2642	1091	1349	274	460	1793	1230
NLD	1252	1238	1466	901	3204	2178	1051	1491	2039	890	135	1511	0	885	2642	1058	1696	315	500	2068	1137
NZL	1003	327	556	273	582	508	352	445	823	604	84	439	776	0	942	457	595	125	333	573	508
USA	1908	793	3893	937	2691	1894	1092	1550	2504	774	217	2020	2229	864	0	1446	1869	283	630	2351	2099

HUN	580	451	936	369	1056	835	676	756	950	426	91	979	892	344	1423	0	1034	191	395	1073	792
CZE	630	534	849	423	1610	1036	716	1003	1100	481	112	1030	1526	428	1527	962	0	256	429	1514	955
SVN	136	146	169	119	369	243	168	190	219	109	39	236	271	83	221	143	195	0	102	303	198
ZAF	408	258	397	210	422	387	385	383	492	291	44	367	408	263	606	315	299	73	0	416	434
POL	835	713	1301	589	2496	1590	850	1353	1590	563	132	1476	1957	424	2315	983	1287	270	311	0	1095
JPN	569	360	753	355	724	645	500	548	715	335	54	656	660	276	1052	481	481	116	312	635	0

JER

common bulls below diagonal

common three quarter sib group above diagonal

	AUS	CAN	DFS	NLD	NZL	USA	GBR	ZAF	IRL
AUS	0	255	160	73	376	490	242	236	60
CAN	260	0	113	40	142	458	187	162	14
DFS	131	106	0	112	134	214	202	155	53
NLD	66	34	112	0	62	94	100	73	37
NZL	407	151	114	55	0	309	223	178	133
USA	528	471	198	100	368	0	277	314	50
GBR	255	192	207	99	238	327	0	193	91
ZAF	230	158	139	69	189	329	203	0	42
IRL	58	13	49	35	149	51	98	42	0

RDC

common bulls below diagonal

common three quarter sib group above diagonal

	AUS	CAN	DEU	DFS	NZL	USA	GBR	NLD	ZAF	IRL	NOR	CAM
AUS	0	97	37	209	107	132	94	31	36	21	71	10
CAN	100	0	13	183	52	226	104	6	70	5	7	0
DEU	37	12	0	58	12	23	14	15	2	6	14	0
DFS	188	189	49	0	127	216	130	51	49	20	144	0
NZL	108	51	12	122	0	75	61	13	30	10	29	8
USA	133	209	22	213	76	0	133	46	61	31	80	22
GBR	93	103	14	127	60	127	0	36	50	26	60	0
NLD	30	6	14	49	13	45	35	0	2	16	45	0
ZAF	37	72	2	48	26	55	43	2	0	2	0	0
IRL	20	5	6	16	10	31	25	16	2	0	61	0
NOR	61	6	13	117	27	81	63	44	0	59	0	0
CAM	10	0	0	0	8	22	0	0	0	0	0	0

SIM

common bulls below diagonal

common three quarter sib group above diagonal

	FRM	NLD	SVN	GBR	USA
FRM	0	116	0	65	62
NLD	137	0	63	43	28
SVN	0	62	0	0	1
GBR	82	41	0	0	19
USA	77	30	1	26	0