Introduction

The latest routine international evaluation for longevity trait took place as scheduled at the Interbull Centre. Data from twenty one (21) 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 and Czech Republic 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:

ZAF(HOL): Inclusion of more data

GBR(SIM): First time

ISR(HOL): Changes in the procedures for computation of records

SVN(ALL): The new base year is 2008; changed time period for data inclusion;
Genetic parameters were recalculated.
Herd effect was changed to herd-year effect.
Performed cleaning data based on genomic parentage test. Because of this, the pedigree changed for some animals.

INTERBULL CHANGES COMPARED TO THE PREVIOUS RUN

No changes made.

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 in the 01x-proof file.

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 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 (December Routine Evaluation 2014).
Number of records for direct longevity by breed

Country	BSW	GUE	HOL	JER	RDC	SIM
ARG						
AUS		123	6642	1455	566	
BEL			858			
CAN	182	94	10138	535	728	
CHE	2922		1142			
CHR			1788			
CZE			3937			3141
DEA	5855					
DEU			23108		354	
DFS			11079	2116	7921	
ESP			2741			
EST						
FRA	313		15121			
FRM						3991
FRR						
GBR	82	267	6219	669	423	59
HUN			2770			
IRL			2142	109	45	
ISR			1172			
ITA	1854		8739			
JPN						
KOR						
LTU						
LVA						
NLD	142		12487	113	51	225
NOR						
NZL	39	55	6345	4018	1080	
POL			7825			
PRT						
SVK						
SVN	355		366			442
URY						
USA	939	718	31569	3548	567	
ZAF		28	1123	540	112	
HRV						
No.Records	12683	1285	157311	13103	11847	7858
Pub. Proofs	10551	1031	129624	10871	10820	7015

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

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BSW dlo

	CAN	CHE	DEA	NLD	NZL	USA	ITA	FRA	GBR	SVN
CAN	8.05									
CHE	0.78	10.91								
DEA	0.82	0.84	14.12							
NLD	0.74	0.71	0.67	365.91						
NZL	0.44	0.46	0.35	0.44	303.83					
USA	0.93	0.69	0.77	0.81	0.52	3.16				
ITA	0.79	0.63	0.80	0.57	0.29	0.69	17.13			
FRA	0.71	0.73	0.76	0.67	0.35	0.68	0.59	0.97		
GBR	0.81	0.58	0.44	0.69	0.52	0.81	0.60	0.55	0.36	
SVN	0.73	0.67	0.81	0.80	0.48	0.74	0.79	0.68	0.59	24.52

GUE dlo

	AUS	CAN	NZL	USA	GBR	ZAF
AUS	7.00					
CAN	0.71	8.28				
NZL	0.65	0.56	340.67			
USA	0.65	0.92	0.49	2.97		
GBR	0.71	0.90	0.56	0.88	0.37	
ZAF	0.66	0.78	0.58	0.79	0.76	18.26

HOL dlo

	AUS	BEL	CAN	CHE	DEU	DFS	ESP	FRA	GBR	IRL	ISR
ITA	NLD	NZL	USA	HUN	CHR	CZE	SVN	ZAF	POL		
AUS	4.47										
BEL	0.69	0.29									
CAN	0.73	0.77	6.38								
CHE	0.80	0.76	0.87	14.50							
DEU	0.64	0.77	0.90	0.85	0.42						
DFS	0.75	0.78	0.87	0.83	0.85	12.51					
ESP	0.45	0.49	0.77	0.71	0.80	0.65	13.46				
FRA	0.66	0.62	0.65	0.72	0.62	0.69	0.55	1.13			
GBR	0.68	0.79	0.87	0.81	0.83	0.80	0.74	0.56	0.31		
IRL	0.51	0.71	0.76	0.68	0.73	0.64	0.69	0.40	0.80	2.15	
ISR	0.64	0.62	0.55	0.57	0.54	0.67	0.49	0.76	0.54	0.43	101.77
ITA	0.44	0.54	0.75	0.65	0.74	0.61	0.82	0.62	0.70	0.62	0.43
6.79											
NLD	0.73	0.70	0.70	0.77	0.68	0.82	0.52	0.65	0.63	0.50	0.67
0.48	321.32										
NZL	0.66	0.62	0.52	0.58	0.52	0.59	0.43	0.37	0.55	0.55	0.30
0.30	0.43	210.63									
USA	0.69	0.79	0.91	0.82	0.85	0.88	0.76	0.65	0.84	0.74	0.65
0.71	0.79	0.53	2.33								
HUN	0.32	0.45	0.58	0.41	0.52	0.47	0.60	0.42	0.59	0.50	0.35
0.63	0.48	0.31	0.67	1.14							
CHR	0.73	0.74	0.79	0.89	0.77	0.75	0.65	0.72	0.72	0.56	0.45
0.62	0.71	0.50	0.74	0.36	12.39						
CZE	0.36	0.41	0.60	0.59	0.63	0.46	0.60	0.36	0.54	0.57	0.28
0.62	0.34	0.31	0.57	0.51	0.49	20.22					
SVN	0.56	0.70	0.75	0.75	0.76	0.75	0.75	0.48	0.71	0.59	0.60
0.54	0.75	0.60	0.82	0.59	0.61	0.40	25.30				
ZAF	0.73	0.81	0.90	0.78	0.86	0.80	0.76	0.57	0.90	0.87	0.57
0.72	0.59	0.63	0.86	0.59	0.69	0.56	0.69	26.27			
POL	0.54	0.46	0.65	0.71	0.64	0.58	0.55	0.44	0.54	0.49	0.29
0.60	0.45	0.37	0.55	0.39	0.64	0.52	0.52	0.51	13.35		

JER dlo

	AUS	CAN	DFS	NLD	NZL	USA	GBR	ZAF	IRL
AUS	5.41								
CAN	0.42	6.60							
DFS	0.72	0.67	12.19						
NLD	0.60	0.71	0.74	338.95					
NZL	0.63	0.38	0.61	0.44	188.51				
USA	0.70	0.83	0.80	0.80	0.57	2.84			
GBR	0.48	0.83	0.75	0.66	0.37	0.79	0.28		
ZAF	0.38	0.55	0.66	0.56	0.33	0.63	0.84	29.45	
IRL	0.51	0.73	0.57	0.46	0.41	0.64	0.71	0.51	1.86

RDC dlo

	AUS	CAN	DEU	DFS	NZL	USA	GBR	NLD	ZAF	IRL
AUS	5.65									
CAN	0.64	6.87								
DEU	0.61	0.87	0.37							
DFS	0.77	0.74	0.82	13.03						
NZL	0.63	0.39	0.51	0.49	228.13					
USA	0.64	0.92	0.84	0.80	0.40	2.95				
GBR	0.58	0.87	0.84	0.79	0.42	0.83	0.30			
NLD	0.71	0.71	0.69	0.81	0.48	0.78	0.65	361.02		
ZAF	0.55	0.84	0.74	0.59	0.39	0.86	0.70	0.59	27.84	
IRL	0.68	0.80	0.79	0.74	0.61	0.74	0.80	0.62	0.80	1.56

SIM dlo

	FRM	NLD	CZE	SVN	GBR
FRM	1.07				
NLD	0.57	313.11			
CZE	0.37	0.34	20.18		
SVN	0.57	0.80	0.31	22.75	
GBR	0.52	0.60	0.51	0.66	0.24

^LAPPENDIX II. Number of common bulls

BSW

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	CHE	DEA	NLD	NZL	USA	ITA	FRA	GBR	SVN
CAN	0	95	104	41	18	129	93	70	50	26
CHE	79	0	498	68	16	285	387	131	52	57
DEA	88	390	0	108	22	292	591	171	53	85
NLD	35	62	102	0	16	64	95	63	28	34
NZL	18	14	16	9	0	22	18	14	12	8
USA	124	266	258	57	18	0	209	109	65	32
ITA	82	330	488	78	15	146	0	152	53	78
FRA	62	95	126	49	11	71	119	0	41	41
GBR	52	44	39	24	10	66	42	36	0	17
SVN	23	55	77	32	6	26	77	40	14	0

GUE

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	NZL	USA	GBR	ZAF
AUS	0	43	26	53	34	3
CAN	42	0	13	60	27	2
NZL	26	11	0	28	14	2
USA	49	50	26	0	71	7
GBR	28	22	12	74	0	3
ZAF	2	0	0	4	2	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	CHR	CZE	SVN	ZAF	POL
AUS	0	369	905	295	1205	920	607	926	1071	540	76	919	1030	917	1328	518	227	669	117	394	649
BEL	269	0	341	205	521	386	317	446	451	269	42	405	561	263	442	260	189	335	79	194	323
CAN	739	288	0	402	1718	869	915	1011	1224	382	74	1211	897	536	2270	689	312	820	112	403	806
CHE	236	179	256	0	481	316	300	310	379	224	31	355	348	223	430	235	297	280	60	180	267
DEU	688	396	734	355	0	2039	1135	1895	1746	670	113	2068	2255	740	2724	960	482	1583	188	490	1514
DFS	513	296	484	254	917	0	707	1218	1237	575	108	1226	1400	625	1455	671	243	977	154	427	992
ESP	405	283	460	239	644	486	0	811	848	375	79	942	773	407	1134	557	204	684	120	373	695
FRA	501	375	492	260	702	434	531	0	1273	577	96	1502	1418	617	2018	705	214	1028	122	398	1061
GBR	875	385	1334	341	1149	854	718	704	0	774	105	1349	1419	774	1775	727	286	974	155	461	993
IRL	427	237	314	221	522	420	357	400	796	0	70	533	671	534	597	347	152	436	80	268	418
ISR	52	22	40	20	85	82	52	46	83	58	0	105	112	81	122	81	19	95	35	53	97
ITA	538	291	656	277	1034	727	628	600	985	424	78	0	1331	623	2143	795	283	1067	158	440	1085
NLD	778	546	615	316	1408	968	617	636	1204	582	91	851	0	785	1774	714	391	1170	163	416	1113
NZL	868	190	527	179	482	379	296	300	675	435	67	419	674	0	847	397	155	528	86	305	465
USA	1111	326	1990	323	1310	805	667	839	1542	493	99	1079	1153	769	0	990	413	1359	145	547	1308
HUN	363	194	548	182	682	484	447	425	678	308	64	643	540	312	900	0	169	760	108	332	675
CHR	191	174	259	318	391	207	164	195	269	143	11	243	355	129	385	137	0	230	55	121	236
CZE	395	237	504	199	1126	566	507	582	755	342	74	703	948	366	989	702	172	0	147	365	966
SVN	81	61	77	42	163	125	96	78	128	63	28	136	133	62	113	87	40	118	0	78	146
ZAF	326	150	328	145	341	305	316	247	410	230	39	314	328	243	505	270	96	251	58	0	335
POL	387	242	505	174	1029	652	462	494	788	314	74	718	854	310	1000	560	190	734	127	237	0

JER

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DFS	NLD	NZL	USA	GBR	ZAF	IRL
AUS	0	161	104	50	333	355	163	171	35
CAN	168	0	72	28	131	267	126	110	5
DFS	75	62	0	62	120	153	132	110	23
NLD	45	22	59	0	55	62	63	56	16
NZL	367	145	98	47	0	279	165	157	68
USA	381	271	131	67	347	0	189	223	29
GBR	175	136	131	63	177	228	0	138	37
ZAF	161	108	90	49	160	231	146	0	25
IRL	33	4	19	15	73	31	39	25	0

RDC

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DEU	DFS	NZL	USA	GBR	NLD	ZAF	IRL
AUS	0	77	20	146	98	79	49	15	28	7
CAN	77	0	8	84	64	167	69	4	61	2
DEU	19	7	0	42	6	5	3	10	0	3
DFS	128	80	32	0	124	108	52	32	36	11
NZL	99	62	6	120	0	73	51	6	29	5
USA	81	149	5	106	73	0	76	20	52	9
GBR	49	69	3	51	48	72	0	10	40	7
NLD	13	4	9	32	6	19	10	0	2	7
ZAF	28	61	0	35	27	47	35	2	0	1
IRL	6	2	3	8	5	9	7	6	1	0

SIM

common bulls below diagonal
common three quarter sib group above diagonal

	FRM	NLD	CZE	SVN	GBR
FRM	0	98	155	0	47
NLD	120	0	117	23	38
CZE	181	115	0	49	35
SVN	0	23	47	0	0
GBR	59	39	31	0	0