

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:

DEU ALL Data editing, change of data delivery in one region

NOR RDC -The phantom groups are yearly, based on birthyear of the animal with unknown parent/parents, as before. However, groups with very few animals with data are joined into adjacent group. treated as fixed now and not random as before
-Base change

DFS HOL Change in lactation weights for all traits and breeds

FRA ALL Evaluation now performed by a new genetic centre, GENEVAL

IRL HOL/JER Base change
RDC Moved from Mixblup to Mix99

ESP HOL Some modifications in edits, assignement of censored code and slight change in heritability.

ZAF JER Data update - more cows updated to 'dead' status

CHE ALL Decrease of information due to continuous work on the raw data by herd-book organizations and joined data from two databases (for HOL-CHE and SIM-CHE)

POL HOL Data edits resulting in decrease/increase in number of herds/daughters/herds for some bulls

NZL ALL Continues DNA parentage testing resulting in pedigree editing
RDC

SVN ALL Pedigree update and phenotypic data improvement

INTERBULL CHANGES COMPARED TO THE DECEMBER ROUTINE RUN

Subsetting:

As decided by the ITC in Orlando, new subsetting was introduced in the september test run. Sub-setting is necessary for operational purposes and restrictions of time scales. To minimize the effect of subsetting, larger subsets with 10-12 countries and with 4 link providing countries have been applied.

Window:

According to the decision taken by ITC in Orlando, the following changes have been introduced in regards to the windows used for post processing:

The upper bounds have been set to 0.99 as these were judged to have very little effect on evaluations. The lower values have been set to about the 25% percentile value. The largest changes are for the lower values for conformation traits, with the lowest window being 40% for OFL otherwise it is about 50% for all other confirmation traits. It is anticipated that these low values may not have large impact on evaluations since there were very few countries combinations whose estimated correlations fell between the old limit of 0.30 and these new limits.

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 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 2018).
Number of records for direct longevity by breed

Country	BSW	GUE	HOL	JER	RDC	SIM
AUS		134	7521	1647	660	
BEL			1500			
CAN	208	101	11820	690	823	
CHE	2874		3255			
CZE			4212			3236
DEA	6335					
DEU			23777		302	
DFS			13138	2446	9049	
ESP			3553			
EST						
FRA	380		16573			
FRM						4436
GBR	104	292	7334	769	523	79
HUN			3240			
IRL			2702	176	61	
ISR			1409			
ITA	2065		9235			
JPN						
KOR						
LTU						
LVA						
NLD	169		14162	123	57	325
NOR					3758	
NZL	51	56	7496	4666	1239	
POL			9886			
PRT						
SVK						
SVN	377		530			581
URY						
USA	1073	775	36989	4375	697	43
ZAF			1229	676	131	
HRV						
MEX						
CAM					35	
=====						
No. Records	13636	1358	179561	15568	17335	8700
Pub. Proofs	11285	1083	142108	12773	15579	7743

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

BSW dlo										
	CAN	CHE	DEA	NLD	NZL	USA	ITA	FRA	GBR	SVN
CAN	8.62									
CHE	0.75	11.00								
DEA	0.80	0.85	14.16							
NLD	0.66	0.76	0.77	327.55						
NZL	0.53	0.54	0.44	0.48	303.13					
USA	0.91	0.68	0.77	0.73	0.55	2.74				
ITA	0.80	0.67	0.79	0.60	0.45	0.68	16.41			
FRA	0.65	0.79	0.78	0.68	0.47	0.67	0.55	0.94		
GBR	0.85	0.60	0.48	0.62	0.58	0.84	0.63	0.53	0.32	
SVN	0.77	0.62	0.78	0.69	0.52	0.73	0.80	0.64	0.60	24.01

GUE dlo					
	AUS	CAN	NZL	USA	GBR
AUS	7.14				
CAN	0.74	7.50			
NZL	0.73	0.55	345.95		
USA	0.71	0.91	0.53	2.84	
GBR	0.75	0.91	0.60	0.88	0.37

HOL dlo																				
	AUS	BEL	CAN	CHE	DEU	DFS	ESP	FRA	GBR	IRL	ISR	ITA	NLD	NZL	USA	HUN	CZE	SVN	ZAF	POL
AUS	4.47																			
BEL	0.82	0.37																		
CAN	0.81	0.84	5.99																	
CHE	0.85	0.81	0.85	12.25																
DEU	0.82	0.86	0.89	0.86	12.67															
DFS	0.84	0.87	0.86	0.82	0.92	12.37														
ESP	0.66	0.75	0.86	0.76	0.83	0.74	12.08													
FRA	0.72	0.65	0.60	0.76	0.64	0.70	0.55	0.99												
GBR	0.80	0.88	0.90	0.79	0.87	0.83	0.87	0.56	0.31											
IRL	0.62	0.78	0.78	0.65	0.73	0.68	0.76	0.43	0.80	2.04										
ISR	0.63	0.61	0.57	0.62	0.63	0.69	0.52	0.68	0.54	0.48	103.49									
ITA	0.58	0.62	0.76	0.70	0.74	0.65	0.87	0.60	0.74	0.62	0.51	6.17								
NLD	0.65	0.71	0.65	0.74	0.74	0.75	0.62	0.67	0.64	0.48	0.63	0.54	281.25							
NZL	0.68	0.69	0.56	0.61	0.65	0.64	0.49	0.47	0.60	0.60	0.44	0.43	0.49	208.90						
USA	0.79	0.85	0.90	0.79	0.88	0.88	0.87	0.63	0.86	0.74	0.67	0.74	0.74	0.57	2.27					
HUN	0.51	0.52	0.63	0.50	0.57	0.51	0.74	0.45	0.65	0.49	0.42	0.68	0.48	0.44	0.71	1.24				
CZE	0.50	0.49	0.63	0.58	0.61	0.49	0.71	0.43	0.59	0.58	0.41	0.69	0.45	0.43	0.61	0.53	12.76			
SVN	0.63	0.79	0.74	0.67	0.75	0.70	0.70	0.51	0.72	0.68	0.62	0.55	0.65	0.64	0.80	0.54	0.44	25.27		
ZAF	0.83	0.85	0.89	0.77	0.89	0.85	0.85	0.61	0.90	0.86	0.55	0.71	0.61	0.68	0.88	0.62	0.60	0.69	24.31	
POL	0.47	0.45	0.53	0.61	0.62	0.55	0.61	0.44	0.54	0.46	0.41	0.61	0.45	0.44	0.53	0.44	0.51	0.48	0.56	13.21

JER dlo									
	AUS	CAN	DFS	NLD	NZL	USA	GBR	ZAF	IRL
AUS	5.29								
CAN	0.60	6.87							
DFS	0.81	0.66	12.19						
NLD	0.70	0.60	0.78	338.82					
NZL	0.65	0.47	0.68	0.50	190.98				
USA	0.81	0.81	0.79	0.77	0.55	2.41			
GBR	0.66	0.83	0.74	0.64	0.48	0.79	0.29		
ZAF	0.58	0.58	0.70	0.60	0.47	0.66	0.79	28.03	
IRL	0.53	0.70	0.57	0.47	0.49	0.59	0.68	0.59	1.49

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RDC      dlo
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AUS      AUS      CAN      DEU      DFS      NZL      USA      GBR      NLD      ZAF      IRL      NOR      CAM
AUS      5.53
CAN      0.68      6.75
DEU      0.69      0.86      12.77
DFS      0.77      0.73      0.88      13.00
NZL      0.66      0.49      0.59      0.50      232.82
USA      0.66      0.87      0.86      0.83      0.50      2.55
GBR      0.68      0.89      0.82      0.74      0.51      0.80      0.30
NLD      0.62      0.66      0.75      0.76      0.48      0.78      0.64      323.58
ZAF      0.58      0.85      0.84      0.61      0.53      0.85      0.77      0.63      29.85
IRL      0.57      0.75      0.71      0.62      0.58      0.66      0.74      0.48      0.80      1.46
NOR      0.68      0.57      0.60      0.81      0.46      0.72      0.58      0.67      0.46      0.53      40.14
CAM      0.54      0.59      0.58      0.59      0.44      0.58      0.57      0.64      0.46      0.45      0.46      9.77
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SIM      dlo
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FRM      FRM      NLD      CZE      SVN      GBR      USA
FRM      0.99
NLD      0.58      289.22
CZE      0.45      0.45      20.19
SVN      0.69      0.72      0.44      22.98
GBR      0.52      0.64      0.54      0.72      0.24
USA      0.73      0.78      0.59      0.79      0.81      2.28
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^LAPPENDIX II. Number of common bulls

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BSW
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common bulls below diagonal
common three quarter sib group above diagonal
      CAN  CHE  DEA  NLD  NZL  USA  ITA  FRA  GBR  SVN
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CAN   0  109  122  38  23  151  109  78  54  29
CHE   88   0  546  83  24  303  417  159  61  72
DEA   98  439   0  127  31  313  666  208  63  97
NLD   32   78  117   0  20   63  107   68  28  41
NZL   21   19   24  13   0   29   25   22  17  10
USA  139  285  274  52  24   0  228  118  74  39
ITA   92  359  561  88  21  160   0  182  64  92
FRA   69  121  156  54  19   81  147   0  49  53
GBR   51   48   43  21  14   70  46   41   0  19
SVN   26   68   89  41   8   32   91   53  15   0
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GUE
-----
common bulls below diagonal
common three quarter sib group above diagonal
      AUS  CAN  NZL  USA  GBR
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AUS   0   46  26  59  35
CAN  46   0  13  66  28
NZL  26  11   0  28  14
USA  55  56  26   0  85
GBR  31  23  12  87   0
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HOL
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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
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AUS	0	591	1122	510	1439	1136	746	1108	1287	657	96	1051	1212	1038	1584	630	762	158	445	863
BEL	501	0	589	474	929	697	530	723	755	439	73	669	883	411	740	440	546	149	289	599
CAN	1029	550	0	755	2114	1212	1132	1255	1497	486	106	1463	1161	637	2897	896	906	182	461	1123
CHE	440	468	585	0	1027	633	492	563	678	363	60	655	758	350	895	402	486	132	250	580
DEU	981	928	1378	872	0	2495	1386	2219	2116	835	158	2391	2887	886	3293	1185	1725	289	547	2102
DFS	761	634	910	550	1664	0	913	1494	1607	713	144	1518	1885	767	1898	859	1183	238	494	1443
ESP	518	512	631	392	845	660	0	998	1022	467	104	1150	933	474	1396	703	771	175	426	917
FRA	673	677	706	471	1022	677	670	0	1493	686	122	1596	1684	716	2282	867	1155	185	451	1419
GBR	1114	759	1693	640	1734	1274	862	905	0	961	138	1577	1736	916	2148	874	1098	219	522	1323
IRL	557	429	425	362	730	582	450	517	1025	0	92	638	823	672	725	429	528	118	321	558
ISR	58	45	69	37	131	111	59	58	111	70	0	137	145	102	168	110	111	46	63	132
ITA	713	618	1025	577	1491	1091	807	752	1272	544	100	0	1506	704	2394	975	1152	227	481	1436
NLD	977	939	943	698	2424	1565	763	890	1583	751	117	1101	0	903	2100	871	1297	234	477	1482
NZL	1007	334	622	291	662	523	349	376	825	577	82	511	798	0	973	465	582	121	345	583
USA	1455	628	2940	777	2161	1354	861	1080	2012	634	154	1521	1554	909	0	1228	1485	220	613	1775
HUN	460	370	766	317	915	664	545	532	816	378	80	827	675	359	1164	0	855	156	382	866
CZE	463	429	579	350	1308	733	564	673	863	405	83	797	1085	405	1109	782	0	192	405	1149
SVN	111	120	128	99	276	199	136	123	178	92	35	189	195	83	166	120	144	0	98	227
ZAF	376	244	382	203	424	367	364	295	468	280	41	367	377	276	579	298	277	68	0	399
POL	591	533	828	461	1736	1116	617	811	1185	462	100	1041	1267	429	1593	745	890	202	291	0

JER

common bulls below diagonal

common	three	quarter	sib	group	above	diagonal						
	AUS	CAN	DFS	NLD	NZL	USA	GBR	ZAF	IRL			
AUS	0	217	131	55	384	429	200	209	49			
CAN	221	0	92	28	155	370	155	147	11			
DFS	98	81	0	74	133	182	162	134	41			
NLD	46	21	71	0	57	64	67	60	28			
NZL	426	166	109	49	0	318	208	184	105			
USA	458	371	157	68	387	0	233	285	44			
GBR	211	160	160	66	222	273	0	167	71			
ZAF	202	142	114	55	194	298	177	0	36			
IRL	46	9	35	27	117	45	74	36	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	88	36	175	117	108	83	18	35	13	52	9
CAN	89	0	14	136	74	198	88	5	69	4	5	0
DEU	35	13	0	59	18	27	19	14	3	7	18	0
DFS	153	137	50	0	149	170	110	37	48	17	118	0
NZL	118	73	17	144	0	100	74	17	35	9	35	8
USA	108	181	27	166	100	0	111	34	60	25	65	18
GBR	81	88	18	107	70	106	0	24	48	20	43	0
NLD	17	5	14	36	16	34	24	0	2	11	32	0
ZAF	35	71	3	47	31	54	41	2	0	2	0	0
IRL	12	4	7	13	9	25	19	11	2	0	50	0
NOR	43	5	18	89	33	67	45	32	0	49	0	0
CAM	9	0	0	0	8	18	0	0	0	0	0	0

SIM

common bulls below diagonal

common	three	quarter	sib	group	above	diagonal	
	FRM	NLD	CZE	SVN	GBR	USA	
FRM	0	99	160	0	62	28	
NLD	122	0	140	43	43	15	
CZE	192	133	0	59	43	15	
SVN	0	42	57	0	0	0	

GBR	79	41	39	0	0	17
USA	43	18	15	0	24	0
