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:

ISR (HOL)	Decrease in information due to the pedigree correction and data editing.
<pre>IRL (HOL, RDC)</pre>	Decrease in information due to pedigree verification
DFS (ALL)	Small decrease in information due to change in HYS definition
JPN (HOL)	Decrease in information due to pedigree changes.
AUS (ALL)	Decrease in information due to the pedigree updates and status changes of some bulls which then leads to no longer being
	qualifying
CHE (ALL)	Decrease in information due to manual edits/data correction in data base, change of hys assignment
SVN (ALL)	Decrease in information due to the changes in pedigree completeness and pheontype improvement.
BEL (HOL)	Decrease in information due to pedigree correction
ITA (BSW)	Decrease in information due to routine database adjusments.
POL (HOL)	Decrease in information due to data edits
USA (HOL)	Decrease in information due to the pedigree correction and heard-year minimum edits.
NZL (ALL)	Decrease in information due to continuous parentage verification and some phenotypic records updates.
ESP (HOL)	Base change.
GBR (ALL)	Decrease in information due to the data updates and pedigree correction.
CZE (HOL)	Drop in information due to data trimming: since last evaluation second half of year 2007 was trimmed. Pedigre
	correction

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

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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 2023).

Number of red	cords for dir	ect longevity				
Country	BSW	GUE		JER		SIM
AUS		143	8525	1817	773	
BEL			1868			
CAN	258	110	13370	843	904	
CHE	3188		3294			
CZE			5228			
DEA	5171					
DEU			23804		297	
DFS			14776	2691	9526	
ESP			4444			
EST						
FRA	490		18356			
FRM						4981
GBR	140	335	8485	899	619	106
HUN			3645			
IRL			3353	244	76	
ISR			1720			
ITA	2333		9385			
JPN			7024			
KOR						
LTU						
LVA						
NLD	216		16351	236	87	421
NOR					3958	
NZL			7849	4537	1022	
POL			12128			
PRT						
SVK						
SVN	298		639			496
URY						
USA	1206	821	41681	5280	804	97
ZAF			1259	720	134	
HRV						
CAM					43 ========	=======
No.Records	13300	1409	207184	17267	18243	6101
Pub. Proofs	10571	1153	155506	13912	16332	5691

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

BSW	dlo																				
	CAN 9.06	CHE	DEA	NLD	USA	ITA	FRA	GBR	SVN												
CAN CHE	0.71	10.83																			
DEA	0.90	0.84	12.27	222 20																	
NLD USA	0.67 0.91	0.77 0.64	0.73	332.39	2.68																
ITA	0.79	0.70	0.86	0.63	0.70	15.84															
FRA	0.63	0.77	0.73	0.66	0.66	0.51	0.94	0 20													
GBR SVN	0.85 0.66	0.59 0.64	0.65 0.79	0.60 0.70	0.84 0.67	0.64 0.74	0.58 0.55	0.32 0.56	23.14												
 GUE	dlo																				
	AUS	CAN	USA	 GBR																	
AUS CAN	0.06 0.59	8.25																			
USA	0.63	0.89	2.90																		
GBR	0.63	0.91	0.86	0.38																	
HOL	dlo																				
AUS	AUS 0.04	BEL	CAN	СНЕ	DEU	DFS	ESP	FRA	GBR	IRL	ISR	ITA	NLD	NZL	USA	HUN	CZE	SVN	ZAF	POL	
BEL	0.64	0.38																			
CAN	0.61	0.88	6.71																		
CHE	0.72	0.77	0.82	12.17	10 45																
DEU DFS	0.67 0.69	0.85 0.85	0.86 0.86	0.88 0.81	12.45 0.92	12.21															
ESP	0.55	0.80	0.87	0.78	0.83	0.76	11.41														
FRA	0.57	0.61	0.62	0.75	0.64	0.70	0.59	0.98	0 01												
GBR IRL	0.68 0.57	0.90 0.85	0.90 0.79	0.78 0.66	0.86 0.75	0.83 0.70	0.88 0.76	0.57 0.44	0.31 0.80	2.10											
ISR	0.60	0.57	0.73	0.69	0.70	0.70	0.59	0.63	0.59		106.06										
ITA	0.52	0.68	0.76	0.73	0.74	0.68	0.88	0.64	0.77	0.63	0.56	6.06									
NLD	0.54	0.66	0.66	0.72	0.70	0.75	0.62	0.66	0.63	0.48			263.58	2 22							
NZL USA	0.64 0.63	0.68 0.85	0.68 0.89	0.74 0.80	0.74 0.88	0.69 0.88	0.53 0.88	0.51 0.66	0.66 0.84	0.65 0.72	0.49 0.73	0.48 0.76	0.50 0.74	2.22 0.60	2.21						
HUN	0.44	0.59	0.70	0.58	0.60	0.54	0.77	0.53	0.65	0.49	0.44	0.71	0.47	0.45	0.73	1.20					
CZE	0.44	0.50	0.57	0.57	0.56	0.47	0.68	0.44	0.56	0.56	0.45	0.62	0.44	0.44	0.57	0.52	18.00				
SVN	0.44	0.75	0.67	0.66	0.73	0.66	0.65	0.56	0.69	0.65	0.59	0.59	0.65	0.57	0.72	0.45	0.44	22.47	20 71		
ZAF POL	0.60 0.44	0.82 0.44	0.89 0.44	0.69 0.54	0.82 0.56	0.75 0.48	0.86 0.60	0.51 0.44	0.86 0.47	0.86 0.44	0.55 0.44	0.69 0.60	0.48 0.44	0.64 0.44	0.85 0.49	0.68 0.44	0.58 0.51	0.61 0.44	29.71 0.44	12.14	
JPN	0.61	0.90	0.94	0.74	0.86	0.86	0.86	0.53	0.90	0.83	0.50	0.70	0.63	0.69	0.87	0.68	0.55	0.73	0.90	0.44	
JER	dlo																				
	AUS	CAN	DFS	NLD	NZL	USA	GBR	ZAF	IRL												
AUS CAN	0.04 0.49	7.40																			
DFS	0.49	0.70	12.00																		
	0.58	0.64	0.80	324.81																	
NLD		0.50	0.61	0.47	1.96																
NZL	0.48		0 0 0	o = -	^	~ ~ -															
NZL USA	0.58	0.82	0.80 0.74	0.73	0.54 0.52	2.35 0.79	n 29														
NZL			0.80 0.74 0.51	0.73 0.63 0.46	0.54 0.52 0.46	2.35 0.79 0.65	0.29	26.64													

RDC dlo

AUS 0 720 1452 631 1682 1414 934 1377 1574 784 132 1176 1508 1081 2010 778 952 154 470 1145 981 140 140 140 140 140 140 140 140 140 14																			
CAN 0.54 7.33 DEU 0.66 0.84 12.40 DES 0.66 0.84 12.40 DES 0.66 0.84 12.40 DES 0.66 0.84 12.40 DES 0.65 0.86 1.80 0.80 0.80 0.80 0.80 0.80 DES 0.65 0.80 0.80 0.80 0.80 0.80 0.80 0.80 0.8			AUS	CA	N	DEU	I	OFS	NZL	USA	A GBR	NLD	2	ZAF	IR	L	NOR	CAM	
No.	AUS	0	.05																
DES	CAN	0	.54	7.3	3														
DES	EU	0	.66	0.8	4	12.40													
127. 0.63 0.57 0.71 0.60 2.52 128. 0.66 0.86 0.88 0.86 0.68 2.46 128. 0.62 0.90 0.84 0.74 0.59 0.80 0.80 128. 0.62 0.90 0.87 0.77 0.57 0.58 0.80 0.80 129. 0.89 0.87 0.77 0.59 0.80 0.76 0.62 328.81 120 0.57 0.65 0.70 0.77 0.59 0.60 0.79 0.82 0.49 34.56 128. 0.53 0.73 0.73 0.69 0.60 0.64 0.71 0.49 9.79 1.52 129. 0.80 0.53 0.78 0.72 0.88 0.48 0.81 0.69 0.81 0.62 0.58 40.95 129. 0.80 0.53 0.78 0.72 0.88 0.48 0.81 0.69 0.81 0.62 0.53 0.43 0.55 8.94 130. 0.50 0.50 0.70 0.55 0.72 0.72 0.81 0.80 0.80 0.80 0.80 0.80 0.80 0.80	FS			0.7			13	.01											
SEA									2.52										
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CAM	IRL	0	.53	0.7			0 .	. 65	0.60	0.64	0.71	0.49	0.	.79	1.52	2			
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ND 0.56 290.07 NN 0.44 0.55 22.61 BBR 0.67 0.63 0.70 0.27 JSA 0.73 0.75 0.71 0.83 2.20 STA 0.73 0.75 0.71 0.83 2.20 STA 0.73 0.75 0.71 0.83 2.20 STA 0.73 0.75 0.71 0.83 2.20 STA 0.73 0.75 0.71 0.83 2.20 STA 0.73 0.75 0.71 0.83 2.20 STA 0.73 0.75 0.71 0.83 2.20 STA 0.73 0.75 0.71 0.83 2.20 STA 0.73 0.75 0.71 0.83 2.20 STA 0.73 0.75 0.71 0.83 2.20 STA 0.73 0.75 0.71 0.83 2.20 COMMON bulls below diagonal common three quarter sib group above diagonal RAUS 0.75 0.75 136 95 33 195 195 195 195 195 195 195 195 195 195	7RM																		
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	BEL CAN CHE DEU CDFS CO	1440 556 1278 1060	577 1172 856	772 1923 1473	0 1092 724	1165 0 2375	768 3012 0	591 1653 1185	2668 1925	2467 95 1981 85	55 202 2° 52 194 1°	733 3589 788 2541	849 775	3765 2501	1318 1030	2094 1532	345 263	542 2916 1 511 2014 1	11
FRA 974 973 1099 686 1624 1207 1133 0 1848 828 153 1759 2214 752 2711 1046 1484 217 503 1986 13	BEL CAN CHE DEU CDFS CO	1440 556 1278 1060	577 1172 856	772 1923 1473	0 1092 724	1165 0 2375	768 3012 0	591 1653 1185	2668 1925	2467 95 1981 85	55 202 2° 52 194 1°	733 3589 788 2541	849 775	3765 2501	1318 1030	2094 1532	345 263	542 2916 1 511 2014 1	15 11

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GBR 1441 950 2125 799 2122 1709 1074 1378 0 1160 190 1795 2212 951 2673 1027 1392 223 539 1788 1230 IRL 676 510 550 442 840 720 527 695 1237 0 125 673 985 731 894 494 624 111 333 707 504 ISR 81 51 97 43 151 140 72 94 148 92 0 176 197 115 259 136 163 50 71 192 133 ITA 933 789 1601 706 2023 1539 1050 1158 1586 610 121 0 1892 583 2788 1083 1392 258 440 1962 1245 NLD 1305 1286 1562 930 3383 2327 1098 1540 2134 928 146 1654 0 923 2754 1059 1761 269 499 2206 1177 NZL 1043 334 578 285 617 537 364 458 852 631 85 453 815 0 987 473 616 95 335 607 527 USA 2029 827 4141 972 2864 2084 1160 1575 2627 817 248 2252 2362 913 0 1448 1951 245 631 2552 2159 HUN 593 460 939 373 1066 854 684 758 960 433 93 978 892 357 1426 0 1042 153 396 1088 800 CZE 650 547 894 434 1686 1097 744 1028 1143 493 123 1093 1589 447 1609 969 0 217 430 1599 983 SVN 103 115 157 96 338 214 134 163 181 82 35 220 235 64 199 112 154 0 65 286 161 ZAF 409 260 398 211 423 388 387 386 492 293 44 355 407 264 608 316 301 46 0 417 435 POL 886 749 1432 626 2712 1750 920 1447 1710 596 146 1674 2104 455 2559 997 1374 254 312 0 1140 JPN 596 374 798 366 763 682 520 569 740 351 56 689 695 295 1109 487 506 92 313 673 0
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JER

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      common bulls below diagonal

      AUS CAN DFS NLD NZL USA GBR ZAF IRL

      AUS 0 266 184 76 391 508 256 245 63

      CAN 272 0 141 42 150 478 197 165 15

      DFS 160 139 0 155 151 260 234 172 61

      NLD 68 36 158 0 68 103 108 76 41

      NZL 426 159 132 61 0 322 238 186 145

      USA 548 492 250 109 382 0 291 321 55

      GBR 267 201 240 107 251 340 0 198 98

      ZAF 238 161 160 72 196 336 208 0 44

      IRL 61 14 57 39 160 56 106 44 0
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common bulls below diagonal

common three quarter sib group above diagonal

COILLIIO	II CIII	ee qu	arter	SID	group	abov	е ита	gonar					
	AUS	CAN	DEU	DFS	NZL	USA	GBR	NLD	ZAF	IRL	NOR	CAM	
AUS	0	98	39	218	109	 138	97	35	 36	22	75	11	
CAN	101	0	13	191	52	233	111	6	70	5	7	0	
DEU	38	12	0	63	12	24	14	18	2	6	14	0	
DFS	197	198	54	0	129	223	142	55	49	21	146	0	
NZL	110	51	12	124	0	75	64	14	30	10	29	9	
USA	140	216	22	221	76	0	142	48	61	33	84	26	
GBR	96	111	14	140	62	136	0	37	50	27	63	0	
NLD	34	6	17	53	14	47	36	0	2	17	47	0	
ZAF	37	72	2	48	26	55	43	2	0	2	0	0	
IRL	21	5	6	17	10	33	26	17	2	0	63	0	
NOR	64	6	13	120	27	85	67	46	0	61	0	0	
CAM	11	0	0	0	9	26	0	0	0	0	0	0	

SIM

common bulls below diagonal

common three quarter sib group above diagonal

FRM NLD SVN GBR USA

FRM 0 121 0 64 76
NLD 142 0 70 43 31
SVN 0 69 0 0 1
GBR 81 41 0 0 20
USA 91 32 1 27 0