

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:

BEL HOL Changes in genetic groups
USA BSW/GUE Adjustment of SD
JER/RDC
CHE HOL Sent in by QUALITAS, new parameters
Data cut-off have been altered for some traits, inclusion of RedHolstein (CHR) into B&W (CHE)
DEA BSW Base change
DEU HOL/RDC Changed mean and sd of RBV
FRA HOL/BSW model changes, new parameters, correction in EDC calculation + base change
SIM
ITA HOL Base change plus delete of records with birthyear=1999
ITA BSW Base change
NLD BSW/HOL Base change
JER/RDC
SIM
SVN HOL Changes in data preparation procedure
USA ALL Adjustment of standard deviation.

INTERBULL CHANGES COMPARED TO THE DECEMBER ROUTINE RUN

- 1) Data submission for pedigree, EBV/PTA, and parameters is possible only through uploading of the data to the Interbull Data Exchange Area (IDEA);
- 2) Interbull Centre has moved to a completely new MACE evaluation software called "Dairy System for International Evaluation (DAISIE)", partly because of the extended use of IDEA for EBV/PTA, and partly because of our continuous efforts to make the system more effective than before;
- 3) All trait groups (including conformation traits) are now evaluated in-house.
- 4) The file containing heritability values now contain more decimal places for heritability, and one extra field for the definition of reference base population;
- 5) The file containing genetic correlations has changed name from rG_columns_all to cor{RUNID}.csv, and also contains one extra field for the number of common bulls;
- 6) The file containing sire genetic standard deviations has changed name from sire_std_columns_all to std{RUNID}.csv;
- 7) Sire-MGS based pedigree files are not distributed anymore;
- 8) Parent averages in the "ipa" format are not distributed anymore;
- 9) An import AI bull (type of proof = 21) with official publication status 'Y' from a given country is included in the distribution file if the bull has a first country proof included from a different country OR a second country proof is included with minimum required number of daughters or EDC (20, 10, 150, 20, 20, and 80) and herds (20, 10, 150, 20, 20, and 80) for different breeds (BSW, GUE, HOL, JER, RDC and SIM), respectively;
- 10) Bulls with some missing pedigree information (sires and/or dam and/or birthdate) are excluded from evaluations;

- 11) Standardization factors are not used anymore;
- 12) Post-processing of genetic correlation are now applied to all trait groups.

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 (April Routine Evaluation 2015).
 Number of records for direct longevity by breed

Country	BSW	GUE	HOL	JER	RDC	SIM
ARG						
AUS		124	6793	1497	584	
BEL			880			
CAN	186	95	10271	550	734	
CHE	2949		2717			
CZE			4015			3173
DEA	5914					
DEU			23344		357	
DFS			11206	2131	7988	
ESP			2740			
EST						
FRA	314		15126			
FRM						3989
FRR						
GBR	82	271	6329	678	429	64
HUN			2809			
IRL			2143	109	45	
ISR			1172			
ITA	1882		8575			
JPN						
KOR						
LTU						
LVA						
NLD	148		12618	114	51	233
NOR						
NZL	41	55	6364	4022	1088	
POL			8017			
PRT						
SVK						
SVN	321		372			476
URY						
USA	950	723	31948	3605	579	
ZAF		28	1123	540	112	
HRV						
No. Records	12787	1296	158562	13246	11967	7935
Pub. Proofs	10660	1040	130341	10975	10908	7066

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

BSW dlo

	CAN	CHE	DEA	FRA	GBR	ITA	NLD	NZL	SVN	USA
CAN	8.18									
CHE	0.77	10.92								
DEA	0.82	0.84	14.18							
FRA	0.68	0.72	0.76	0.93						
GBR	0.81	0.55	0.44	0.52	0.34					
ITA	0.78	0.63	0.80	0.57	0.59	17.05				
NLD	0.74	0.68	0.70	0.67	0.68	0.58	346.05			
NZL	0.45	0.47	0.36	0.36	0.52	0.29	0.44	294.16		
SVN	0.72	0.66	0.81	0.67	0.55	0.79	0.78	0.47	25.43	
USA	0.93	0.66	0.77	0.65	0.82	0.67	0.80	0.54	0.72	2.81

GUE dlo

	AUS	CAN	GBR	NZL	USA	ZAF
AUS	6.93					
CAN	0.71	8.14				
GBR	0.71	0.90	0.37			
NZL	0.66	0.56	0.57	349.78		
USA	0.64	0.91	0.87	0.48	2.80	
ZAF	0.67	0.80	0.79	0.59	0.83	18.53

HOL dlo

	AUS	BEL	CAN	CHE	CZE	DEU	DFS	ESP	FRA	GBR	HUN
IRL	ISR	ITA	NLD	NZL	POL	SVN	USA	ZAF			
AUS	4.44										
BEL	0.76	0.36									
CAN	0.73	0.85	6.34								
CHE	0.77	0.78	0.84	12.28							
CZE	0.37	0.48	0.60	0.60	20.16						
DEU	0.65	0.86	0.90	0.80	0.63	12.96					
DFS	0.76	0.86	0.87	0.79	0.47	0.86	12.50				
ESP	0.46	0.68	0.78	0.73	0.62	0.81	0.66	13.46			
FRA	0.68	0.63	0.63	0.73	0.33	0.61	0.69	0.52	1.01		
GBR	0.69	0.87	0.87	0.76	0.55	0.84	0.81	0.75	0.54	0.31	
HUN	0.32	0.49	0.59	0.38	0.52	0.53	0.48	0.61	0.41	0.60	1.15
IRL	0.52	0.75	0.77	0.60	0.58	0.73	0.65	0.69	0.36	0.80	0.51
2.15											
ISR	0.62	0.59	0.54	0.48	0.28	0.53	0.66	0.49	0.73	0.54	0.35
0.43	101.77										
ITA	0.44	0.61	0.75	0.67	0.64	0.75	0.62	0.83	0.60	0.71	0.65
0.63	0.43	6.56									
NLD	0.73	0.75	0.70	0.66	0.34	0.68	0.82	0.52	0.66	0.65	0.49
0.51	0.66	0.48	307.66								
NZL	0.66	0.65	0.52	0.52	0.30	0.52	0.59	0.43	0.37	0.55	0.30
0.55	0.30	0.30	0.43	211.85							
POL	0.53	0.44	0.64	0.63	0.53	0.64	0.57	0.55	0.42	0.54	0.38
0.49	0.28	0.59	0.44	0.37	13.42						
SVN	0.53	0.71	0.72	0.58	0.38	0.75	0.74	0.73	0.48	0.69	0.58
0.58	0.57	0.53	0.73	0.59	0.51	25.46					
USA	0.69	0.84	0.91	0.75	0.58	0.85	0.88	0.77	0.63	0.84	0.68
0.74	0.64	0.72	0.79	0.53	0.54	0.80	2.33				
ZAF	0.73	0.82	0.89	0.72	0.56	0.85	0.80	0.76	0.56	0.89	0.59
0.87	0.55	0.71	0.59	0.62	0.51	0.65	0.86	26.27			

JER dlo

	AUS	CAN	DFS	GBR	IRL	NLD	NZL	USA	ZAF
AUS	5.39								
CAN	0.42	6.81							
DFS	0.72	0.68	12.21						
GBR	0.49	0.83	0.75	0.28					
IRL	0.51	0.73	0.57	0.71	1.86				
NLD	0.59	0.71	0.73	0.67	0.46	329.14			
NZL	0.64	0.37	0.62	0.37	0.42	0.44	190.67		
USA	0.70	0.84	0.82	0.79	0.60	0.79	0.56	2.48	
ZAF	0.38	0.56	0.68	0.82	0.51	0.56	0.33	0.63	29.52

RDC dlo

	AUS	CAN	DEU	DFS	GBR	IRL	NLD	NZL	USA	ZAF
AUS	5.59									
CAN	0.64	6.83								
DEU	0.59	0.88	11.48							
DFS	0.78	0.74	0.81	13.02						
GBR	0.59	0.87	0.86	0.78	0.30					
IRL	0.63	0.79	0.76	0.71	0.80	1.56				
NLD	0.72	0.71	0.69	0.80	0.67	0.57	347.91			
NZL	0.64	0.39	0.49	0.49	0.41	0.59	0.45	229.00		
USA	0.63	0.91	0.85	0.81	0.81	0.70	0.79	0.40	2.70	
ZAF	0.55	0.84	0.79	0.59	0.71	0.80	0.60	0.39	0.86	27.85

SIM dlo

	CZE	FRM	GBR	NLD	SVN
CZE	20.09				
FRM	0.33	1.00			
GBR	0.51	0.47	0.24		
NLD	0.38	0.54	0.61	291.29	
SVN	0.31	0.43	0.66	0.78	22.30

^LAPPENDIX II. Number of common bulls

BSW

common bulls below diagonal

common three quarter sib group above diagonal

	CAN	CHE	DEA	FRA	GBR	ITA	NLD	NZL	SVN	USA
CAN	0	96	107	70	50	95	41	19	22	131
CHE	81	0	506	132	52	392	72	17	52	286
DEA	90	395	0	171	53	595	114	23	75	294
FRA	62	96	126	0	41	152	67	15	36	111
GBR	52	44	39	36	0	54	28	13	14	65
ITA	84	338	492	119	43	0	100	19	71	211
NLD	35	65	107	51	24	83	0	17	33	65
NZL	19	14	17	12	11	16	10	0	6	23
SVN	20	51	69	36	12	71	32	4	0	29
USA	126	268	260	72	66	148	57	19	24	0

JER

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DFS	GBR	IRL	NLD	NZL	USA	ZAF
AUS	0	173	110	170	36	52	338	370	176
CAN	179	0	73	128	5	28	131	280	110
DFS	80	62	0	136	23	63	118	155	112
GBR	182	136	134	0	38	63	165	192	139
IRL	33	4	19	40	0	16	67	31	25
NLD	47	22	60	63	15	0	54	62	56
NZL	376	145	96	176	72	45	0	279	156
USA	398	281	134	229	33	67	349	0	223
ZAF	167	108	91	147	25	49	158	231	0

RDC

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DEU	DFS	GBR	IRL	NLD	NZL	USA	ZAF
AUS	0	78	22	150	52	7	16	102	82	28
CAN	78	0	8	89	70	2	4	65	167	61
DEU	20	7	0	42	3	3	10	6	6	0
DFS	132	86	33	0	55	11	32	125	113	38
GBR	51	70	3	54	0	7	10	51	77	41
IRL	6	2	3	8	7	0	7	5	12	1
NLD	14	4	9	32	10	6	0	6	21	2
NZL	103	64	6	121	48	5	6	0	77	29
USA	83	149	6	112	73	12	20	77	0	52
ZAF	28	61	0	37	35	1	2	27	47	0

SIM

common bulls below diagonal
common three quarter sib group above diagonal

	CZE	FRM	GBR	NLD	SVN
CZE	0	161	40	121	51
FRM	187	0	52	101	0
GBR	35	64	0	42	0
NLD	117	123	40	0	23
SVN	48	0	0	23	0
