

Interbull Routine Genetic Evaluation for Longevity Traits

August 2014

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:

CHR (HOL): The breeding association for Holstein (mainly red&white) and Simmental revised their breed code assignment for Holstein X Simmental crossbreds.

This caused a decrease in number of herds/daughters/EDC for some bulls.

GBR (ALL): Base change

DEU (HOL): There is no longer a distinction nationally between 1st and 2nd crop of daughters (as consequences of genomically proven bulls), thus type of proof is either

11 (German bull) or 21 (foreign bull), there are quite a number of bulls mentioned as "missing", however most of these appear now with another (correct) ID, these are mostly danish bulls. Pedigree updates.

INTERBULL CHANGES COMPARED TO THE DECEMBER ROUTINE RUN

No changes.

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

The next routine evaluation of Interbull for production, conformation, udder health, longevity, calving, female fertility and workability traits is scheduled for November 2014. Deadline for sending data to the Interbull Centre is Tuesday November 11, 2014, 17:00 CET; confidential distribution of results is targeted for Thursday 20 Nov, 2014, with earliest possible official release of results on November 2, 2014. Please remark the three week turn around time.

NEXT TEST INTERNATIONAL EVALUATION

The next test run for production, conformation, udder health, longevity, calving, female fertility and workability traits will take place in September 2014.

Countries planning to introduce changes in their national evaluation procedures and wishing to have them included in the routine Interbull evaluation, should have their data examined in this test run. New data and validation results should be sent to the Interbull Centre no later than September 2, 2014, 17:00 CET.

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 2014).
Number of records for direct longevity by breed

Country	BSW	GUE	HOL	JER	RDC	SIM
ARG						
AUS		123	6642	1455	566	
BEL			850			
CAN	178	94	10027	525	721	
CHE	2892		1130			
CHR			1765			
CZE			3881			3110
DEA	5809					
DEU			22837		352	
DFS			10948	2097	7847	
ESP			2655			
EST						
FRA	305		14885			
FRM						3933
FRR						
GBR	81	265	6155	663	418	
HUN			2735			
IRL			2130	109	40	
ISR			1139			
ITA	1845		8504			
JPN						
KOR						
LTU						
LVA						
NLD	140		12375	105	50	220
NOR						
NZL	38	54	6119	3898	1046	
POL			7665			
PRT						
SVK						
SVN	380		363			552
URY						
USA	928	712	31223	3496	561	
ZAF		28	1101	540	112	
=====						
No. Records	12596	1276	155129	12888	11713	7815
Pub. Proofs	10498	1025	128044	10693	10703	7036

JER	dlo								
	AUS	CAN	DFS	NLD	NZL	USA	GBR	ZAF	IRL
AUS	5.41								
CAN	0.42	6.64							
DFS	0.72	0.66	12.21						
NLD	0.59	0.71	0.74	342.84					
NZL	0.63	0.38	0.60	0.44	191.06				
USA	0.71	0.83	0.80	0.80	0.58	2.66			
GBR	0.47	0.82	0.75	0.66	0.36	0.79	0.29		
ZAF	0.38	0.55	0.64	0.57	0.32	0.64	0.86	29.30	
IRL	0.54	0.73	0.58	0.46	0.40	0.67	0.71	0.50	1.88

RDC	dlo									
	AUS	CAN	DEU	DFS	NZL	USA	GBR	NLD	ZAF	IRL
AUS	5.65									
CAN	0.65	6.87								
DEU	0.62	0.86	0.37							
DFS	0.76	0.74	0.82	13.01						
NZL	0.62	0.38	0.51	0.49	229.62					
USA	0.65	0.92	0.83	0.80	0.40	2.91				
GBR	0.58	0.86	0.83	0.79	0.42	0.82	0.30			
NLD	0.71	0.71	0.69	0.81	0.50	0.79	0.65	363.83		
ZAF	0.56	0.84	0.71	0.58	0.38	0.85	0.69	0.59	27.84	
IRL	0.74	0.81	0.80	0.77	0.64	0.81	0.80	0.66	0.80	1.58

SIM	dlo			
	FRM	NLD	CZE	SVN
FRM	1.07			
NLD	0.63	315.05		
CZE	0.43	0.32	20.38	
SVN	0.75	0.76	0.32	21.77

^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	94	102	40	17	126	92	69	50	26
CHE	78	0	493	67	16	281	385	130	51	55
DEA	86	387	0	106	22	287	588	167	53	83
NLD	35	61	100	0	15	62	94	61	28	33
NZL	17	14	16	9	0	21	18	14	12	8
USA	123	264	257	56	17	0	207	108	64	33
ITA	81	329	485	78	15	146	0	150	52	76
FRA	61	94	122	48	11	70	117	0	40	41
GBR	52	44	39	24	10	65	42	35	0	17
SVN	22	53	74	29	6	27	74	39	14	0

GUE

common bulls below diagonal

	common three quarter			sib group			above diagonal
	AUS	CAN	NZL	USA	GBR	ZAF	
AUS	0	43	25	53	34	3	
CAN	42	0	12	60	27	2	
NZL	25	10	0	27	14	2	
USA	49	50	25	0	70	7	
GBR	28	22	12	72	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	370	902	293	1199	912	601	919	1069	539	76	914	1027	906	1324	511	222	667	116	386	643
BEL	270	0	337	203	514	381	311	443	448	268	41	403	555	256	439	257	185	330	79	190	319
CAN	737	282	0	397	1690	850	894	989	1206	379	72	1180	870	513	2234	675	299	798	108	392	782
CHE	236	181	252	0	477	313	293	306	373	221	30	347	342	217	427	232	286	273	59	177	261
DEU	680	390	704	349	0	2005	1103	1867	1724	666	109	2024	2219	718	2688	944	469	1559	186	477	1472
DFS	510	289	473	252	892	0	691	1202	1220	572	103	1208	1375	610	1430	655	236	960	156	419	960
ESP	399	277	437	234	626	475	0	789	830	373	78	910	751	396	1113	548	197	670	115	366	671
FRA	496	371	468	256	682	427	505	0	1260	573	94	1477	1391	602	1982	691	205	1013	119	392	1032
GBR	873	381	1318	338	1114	840	695	680	0	771	102	1328	1404	755	1757	717	278	959	151	450	966
IRL	427	236	310	220	513	417	350	391	789	0	68	528	668	528	594	344	149	433	79	263	416
ISR	53	23	41	20	82	79	52	46	80	57	0	100	108	80	118	78	19	93	36	53	92
ITA	536	291	629	272	1003	714	610	575	968	419	75	0	1305	605	2092	781	274	1041	151	432	1047
NLD	775	539	592	312	1375	942	595	608	1180	577	89	835	0	760	1745	697	383	1151	158	406	1085
NZL	861	186	505	178	469	370	285	289	658	429	65	410	649	0	820	383	146	511	84	297	445
USA	1108	321	1934	321	1269	793	642	806	1517	483	96	1048	1124	740	0	972	402	1340	143	533	1275
HUN	360	192	536	181	661	476	438	409	665	303	62	629	528	304	876	0	161	748	103	322	657
CHR	186	170	246	306	376	200	154	183	259	137	11	233	344	120	375	131	0	222	54	115	227
CZE	394	233	485	195	1107	555	497	566	742	336	73	689	930	355	971	692	165	0	144	356	937
SVN	81	61	73	41	158	126	91	74	123	63	29	129	129	59	110	82	39	115	0	75	142
ZAF	321	149	319	146	336	300	312	241	403	228	40	309	324	238	493	265	94	248	57	0	325
POL	385	238	488	173	993	629	440	468	769	310	69	695	833	293	969	546	182	715	123	231	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	101	50	328	355	163	171	35
CAN	168	0	67	27	127	262	124	110	5
DFS	70	56	0	54	117	147	127	107	22
NLD	45	21	52	0	51	58	59	52	16
NZL	361	139	93	43	0	272	161	155	68
USA	381	268	124	62	338	0	184	223	29
GBR	175	134	125	59	172	222	0	137	37
ZAF	161	108	85	46	156	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	145	98	79	49	15	28	6
CAN	77	0	8	81	62	166	68	4	61	2
DEU	19	7	0	42	6	5	3	10	0	2
DFS	127	77	32	0	120	105	51	32	34	8
NZL	99	60	6	116	0	70	49	6	29	4
USA	80	148	5	103	70	0	76	20	52	9
GBR	49	68	3	50	46	72	0	10	39	7
NLD	13	4	9	32	6	19	10	0	2	7
ZAF	28	61	0	33	27	47	34	2	0	1
IRL	5	2	2	6	4	9	7	6	1	0

SIM

common bulls below diagonal
 common three quarter sib group above diagonal

	FRM	NLD	CZE	SVN
FRM	0	97	153	0
NLD	119	0	116	23
CZE	178	114	0	50
SVN	0	23	48	0
