

INTRODUCTION

The latest routine international evaluation for calving traits took place as scheduled at the Interbull Centre. Data from sixteen (16) countries were included in this evaluation.

International genetic evaluations for calving traits of bulls from Australia, Austria-Germany, Belgium, Canada, Denmark-Finland-Sweden, France, Germany, Hungary, Ireland, Israel, Italy, Netherlands, Norway, Switzerland, the United Kingdom, and the United States of America were computed. Brown Swiss, Holstein, and Red Dairy Cattle breed data were included in this evaluation.

CHANGES IN NATIONAL PROCEDURES

Changes in the national genetic evaluation of calving traits are as follows:

CHE HOL Data sent in by QUALITAS, new parameters ,New trait definition for dsb and msb
Data cut-off have been altered for some traits, Inclusion of Red Holstein (CHR) in B&W
(CHE)
DEA BSW Base change
DEU HOL/RDC Changed time inclusion
BEL HOL Changed base
FRA HOL Base change
NLD BSW/HOL Base change
JER/RDC
GBR HOL Solved an error in count of herd for mce
ITA HOL Base change plus delete birthyear=1999

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 0lx-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 calving (April Routine Evaluation 2015).
Number of records for direct calving ease by breed

Country	BSW	GUE	HOL	JER	RDC	SIM
ARG						
AUS			1635			
BEL			592			
CAN	115		10832		401	
CHE	2392		1690			
CZE						
DEA	5277					
DEU			16526		214	
DFS			11269		6329	
ESP						
EST						
FRA			10714			
FRM						
FRR						
GBR			2041			
HUN			1459			
IRL			1676		56	
ISR			314			
ITA			9249			
JPN						
KOR						
LTU						
LVA						
NLD	75		12563		31	
NOR					3449	
NZL			5976		938	
POL						
PRT						
SVK						
SVN						
URY						
USA	444		31078			
ZAF						
HRV						
===== No. Records	8303		117614		11418	
===== Pub. Proofs	8938	0	110704	0	11275	0
=====						

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

BSW dce

	CAN	CHE	DEA	NLD	USA
CAN	7.25				
CHE	0.81	18.07			
DEA	0.73	0.83	12.09		
NLD	0.87	0.92	0.89	6.24	
USA	0.81	0.70	0.64	0.79	0.13

BSW mce

	CAN	CHE	DEA	NLD	USA
CAN	6.92				
CHE	0.74	20.38			
DEA	0.63	0.71	12.03		
NLD	0.80	0.69	0.64	5.25	
USA	0.85	0.77	0.68	0.83	0.15

HOL dce

	AUS	BEL	CAN	CHE	DEU	DFS	FRA	GBR	HUN	IRL	ISR
ITA	NLD	NZL	USA								
AUS	3.20										
BEL	0.52	11.25									
CAN	0.74	0.61	6.31								
CHE	0.75	0.66	0.88	12.33							
DEU	0.79	0.61	0.85	0.88	12.18						
DFS	0.79	0.64	0.90	0.89	0.91	12.73					
FRA	0.79	0.62	0.91	0.94	0.91	0.92	0.93				
GBR	0.80	0.61	0.80	0.81	0.81	0.75	0.79	0.07			
HUN	0.62	0.61	0.60	0.61	0.60	0.60	0.60	0.61	1.13		
IRL	0.63	0.58	0.77	0.81	0.72	0.80	0.81	0.57	0.52	1.55	
ISR	0.68	0.69	0.83	0.81	0.76	0.85	0.85	0.73	0.65	0.82	3.17
ITA	0.59	0.61	0.66	0.68	0.65	0.74	0.68	0.61	0.60	0.56	0.68
NLD	0.81	0.61	0.89	0.92	0.89	0.92	0.92	0.85	0.61	0.80	0.78
NZL	0.64	0.51	0.74	0.74	0.73	0.82	0.76	0.61	0.51	0.80	0.72
USA	0.72	0.61	0.80	0.82	0.79	0.83	0.89	0.61	0.60	0.74	0.80
7.21	0.60	0.68	0.13								

HOL mce

	BEL	CAN	CHE	DEU	DFS	FRA	GBR	HUN	ISR	ITA	NLD
USA											
BEL	11.92										
CAN	0.63	6.56									
CHE	0.66	0.84	14.28								
DEU	0.73	0.86	0.78	11.70							
DFS	0.73	0.84	0.82	0.92	12.50						
FRA	0.69	0.93	0.91	0.79	0.78	1.31					
GBR	0.61	0.68	0.77	0.59	0.60	0.80	0.05				
HUN	0.56	0.55	0.56	0.55	0.56	0.56	0.56	1.26			
ISR	0.63	0.60	0.70	0.63	0.73	0.61	0.62	0.60	3.09		
ITA	0.56	0.78	0.78	0.65	0.57	0.82	0.66	0.55	0.59	9.22	
NLD	0.74	0.81	0.80	0.80	0.81	0.83	0.70	0.56	0.58	0.61	5.34
USA	0.67	0.90	0.84	0.78	0.77	0.95	0.73	0.55	0.60	0.82	0.84
0.15											

HOL dsb

	AUS	CAN	CHE	DEU	DFS	FRA	HUN	ISR	ITA	NLD	USA
AUS	3.22										
CAN	0.46	6.99									
CHE	0.51	0.62	15.48								
DEU	0.66	0.69	0.59	11.94							
DFS	0.78	0.74	0.58	0.87	13.74						
FRA	0.41	0.68	0.53	0.60	0.62	0.73					
HUN	0.70	0.46	0.61	0.46	0.51	0.46	1.10				
ISR	0.58	0.64	0.59	0.85	0.80	0.65	0.51	1.59			
ITA	0.77	0.46	0.60	0.56	0.78	0.45	0.60	0.67	7.21		
NLD	0.36	0.69	0.56	0.61	0.62	0.63	0.46	0.64	0.45	3.76	
USA	0.36	0.64	0.59	0.60	0.61	0.65	0.46	0.64	0.45	0.60	0.07

HOL msb

	CAN	CHE	DEU	DFS	FRA	HUN	ISR	ITA	NLD	USA
CAN	6.38									
CHE	0.86	20.31								
DEU	0.95	0.78	12.14							
DFS	0.96	0.81	0.96	12.97						
FRA	0.89	0.77	0.84	0.87	0.91					
HUN	0.41	0.55	0.40	0.41	0.41	1.22				

ISR	0.75	0.70	0.78	0.76	0.66	0.45	2.25			
ITA	0.50	0.57	0.51	0.44	0.52	0.55	0.68	9.23		
NLD	0.92	0.77	0.90	0.94	0.81	0.41	0.70	0.40	4.28	
USA	0.76	0.80	0.74	0.73	0.76	0.40	0.63	0.46	0.72	0.13

RDC dce

	CAN	DEU	DFS	IRL	NLD	NOR	NZL
CAN	6.46						
DEU	0.85	12.19					
DFS	0.88	0.91	9.18				
IRL	0.78	0.74	0.82	0.90			
NLD	0.88	0.89	0.92	0.81	4.73		
NOR	0.82	0.89	0.95	0.81	0.89	13.23	
NZL	0.76	0.76	0.81	0.80	0.78	0.76	2.71

RDC mce

	CAN	DEU	DFS	NOR
CAN	5.82			
DEU	0.84	9.94		
DFS	0.79	0.84	10.73	
NOR	0.74	0.76	0.80	13.86

^LAPPENDIX II. Number of common bulls

BSW

common bulls below diagonal
common three quarter sib group above diagonal
CAN CHE DEA NLD USA

CAN	0	68	64	12	77
CHE	51	0	496	36	176
DEA	50	395	0	52	152
NLD	9	31	40	0	19
USA	65	139	106	16	0

BSW

common bulls below diagonal
common three quarter sib group above diagonal
CAN CHE DEA NLD USA

CAN	0	24	25	8	21
CHE	20	0	416	32	85
DEA	22	313	0	53	90
NLD	5	27	42	0	21
USA	19	75	77	17	0

HOL

common bulls below diagonal

common three quarter sib group above diagonal

	AUS	BEL	CAN	CHE	DEU	DFS	FRA	GBR	HUN	IRL	ISR	ITA	NLD	NZL	USA
AUS	0	210	496	205	490	452	445	271	226	270	33	479	383	416	567
BEL	197	0	298	211	420	326	375	204	188	228	19	336	322	210	325
CAN	438	285	0	418	1619	1009	1017	478	533	355	46	1335	733	530	2429
CHE	158	203	298	0	573	305	320	181	173	201	18	362	295	191	464
DEU	386	411	1000	463	0	1747	1605	743	680	539	59	1885	1689	650	2349
DFS	330	298	705	243	1047	0	1179	589	461	443	63	1273	1226	624	1519
FRA	337	371	651	266	715	544	0	659	526	432	54	1440	1120	577	1720
GBR	200	167	286	143	312	249	247	0	293	307	29	673	582	312	749
HUN	166	150	434	127	460	308	314	165	0	219	32	576	395	264	673
IRL	253	230	336	192	496	385	370	260	189	0	40	440	453	471	473
ISR	22	12	32	10	44	48	27	10	23	27	0	58	64	57	64
ITA	345	300	810	271	940	731	685	293	395	371	37	0	1110	627	2185
NLD	219	289	342	213	901	595	353	190	199	337	49	435	0	700	1464
NZL	372	183	465	164	495	426	327	154	175	421	44	436	520	0	796
USA	463	287	2298	355	1336	913	806	348	527	435	47	1080	655	709	0

HOL

common bulls below diagonal

common three quarter sib group above diagonal

	BEL	CAN	CHE	DEU	DFS	FRA	GBR	HUN	ISR	ITA	NLD	USA
BEL	0	195	147	291	216	242	134	126	13	216	253	218
CAN	174	0	366	1416	799	779	406	513	46	1004	609	1616
CHE	131	243	0	553	301	275	199	181	12	323	331	399
DEU	229	777	417	0	1945	1700	531	766	81	1726	1903	2159
DFS	180	567	236	992	0	1166	477	533	71	1128	1286	1315
FRA	219	459	227	640	460	0	425	546	65	1247	1180	1508
GBR	130	421	179	540	447	383	0	287	45	472	441	524
HUN	101	427	129	517	362	317	274	0	46	589	491	705
ISR	7	30	6	56	49	30	29	28	0	65	74	77
ITA	159	651	240	863	653	523	485	428	40	0	1017	1683
NLD	221	413	261	1138	761	432	438	315	57	532	0	1296
USA	174	1381	298	1135	808	630	564	576	53	931	727	0

HOL

common bulls below diagonal

common three quarter sib group above diagonal

	AUS	CAN	CHE	DEU	DFS	FRA	HUN	ISR	ITA	NLD	USA
AUS	0	345	139	336	320	264	132	18	332	332	381
CAN	256	0	417	1608	978	874	484	43	1294	992	2152
CHE	94	298	0	574	310	311	162	18	361	412	427
DEU	202	1005	464	0	1784	1507	635	59	1883	2083	2166
DFS	180	735	249	1093	0	1029	447	65	1294	1471	1419
FRA	167	592	261	685	505	0	470	43	1248	1141	1319
HUN	70	383	119	424	292	281	0	32	536	460	581
ISR	8	31	10	44	49	25	23	0	58	68	60
ITA	167	807	271	942	754	591	366	37	0	1349	2014
NLD	212	829	359	1519	1044	653	309	56	847	0	1585
USA	249	2095	323	1231	904	603	434	45	998	1093	0

HOL

common bulls below diagonal

common three quarter sib group above diagonal

	CAN	CHE	DEU	DFS	FRA	HUN	ISR	ITA	NLD	USA
CAN	0	365	1380	782	708	467	45	986	706	1425
CHE	243	0	550	304	267	170	12	323	376	364
DEU	748	411	0	1954	1581	717	81	1711	2048	1796
DFS	579	238	997	0	1064	508	73	1130	1388	1100
FRA	435	220	583	443	0	499	59	1136	1139	1124

HUN	387	118	476	343	292	0	45	556	498	587
ISR	30	6	56	49	27	27	0	65	77	69
ITA	648	240	847	665	474	401	40	0	1126	1404
NLD	569	314	1354	932	520	343	59	674	0	1173
USA	1293	279	1016	794	515	512	51	888	811	0

RDC

common bulls below diagonal
common three quarter sib group above diagonal
CAN DEU DFS IRL NLD NOR NZL

CAN	0	8	105	3	3	3	44
DEU	8	0	51	7	11	20	17
DFS	105	45	0	18	24	96	98
IRL	3	7	14	0	8	49	9
NLD	3	11	24	7	0	14	8
NOR	3	20	69	47	13	0	32
NZL	44	16	80	9	8	30	0

RDC

common bulls below diagonal
common three quarter sib group above diagonal
CAN DEU DFS NOR

CAN	0	6	71	3
DEU	6	0	35	11
DFS	67	27	0	99
NOR	3	10	79	0