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:

NOR RDC The rolling definition of hys is causing the daughters to distribute somewhat differently over hys-classes at each evaluation. Therefore some bulls occasionally may lose EDC although the number of daughters stay the same. Reliability changes is a function of the EDC changes.

USA HOL Base change dsb and msb.

INTERBULL CHANGES COMPARED TO THE PREVIOUS RUN

No changes made.

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 calving (December Routine Evaluation 2014).
Number of records for direct calving ease by breed

Country	BSW	GUE	HOL	JER	RDC	SIM
ARG						
AUS			1478			
BEL			570			
CAN	110		10606		394	
CHE	2369		943			
CHR			1136			
CZE						
DEA	5219					
DEU			16480		211	
DFS			11191		6281	
ESP						
EST						
FRA			10534			
FRM						
FRR						
GBR			2004			
HUN			1422			
IRL			1617		54	
ISR			314			
ITA			9396			
JPN						
KOR						
LTU						
LVA						
NLD	72		12493		29	
NOR					3397	
NZL			5968		938	
POL						
PRT						
SVK						
SVN						
URY						
USA	437		30736			
ZAF						
HRV						
No.Records	8207		116888		11304	
Pub. Proofs	8849	0	110105	0	11196	0

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

BSW dce

	DEA	NLD	USA	CHE	CAN
DEA	12.26				
NLD	0.90	5.45			
USA	0.64	0.79	0.13		
CHE	0.83	0.92	0.71	18.07	
CAN	0.73	0.86	0.81	0.82	7.21

BSW mce

	DEA	NLD	USA	CHE	CAN
DEA	12.05				
NLD	0.63	4.77			
USA	0.68	0.84	0.15		
CHE	0.70	0.69	0.77	20.14	
CAN	0.63	0.80	0.85	0.74	6.26

HOL dce

	AUS	CAN	CHE	DFS	FRA	ISR	ITA	NLD	USA	GBR	HUN
CHR	DEU	BEL	IRL	NZL							
AUS	3.21										
CAN	0.74	6.27									
CHE	0.74	0.88	9.22								
DFS	0.79	0.90	0.88	12.76							
FRA	0.79	0.91	0.94	0.92	0.93						
ISR	0.69	0.82	0.81	0.85	0.85	3.17					
ITA	0.59	0.66	0.67	0.74	0.67	0.69	7.25				
NLD	0.80	0.87	0.92	0.92	0.92	0.80	0.70	5.63			
USA	0.72	0.80	0.83	0.83	0.89	0.81	0.60	0.80	0.13		
GBR	0.78	0.81	0.84	0.75	0.80	0.73	0.62	0.84	0.61	0.07	
HUN	0.61	0.60	0.61	0.60	0.60	0.65	0.60	0.60	0.60	0.61	1.12
CHR	0.73	0.89	0.93	0.90	0.92	0.79	0.75	0.92	0.81	0.78	0.61
12.05											
DEU	0.77	0.85	0.89	0.90	0.91	0.76	0.65	0.88	0.79	0.82	0.60
0.90	12.43										
BEL	0.52	0.61	0.60	0.65	0.62	0.69	0.61	0.60	0.61	0.61	0.61
0.71	0.61	11.40									
IRL	0.66	0.75	0.83	0.82	0.83	0.84	0.60	0.82	0.76	0.59	0.51
0.79	0.72	0.56	1.57								
NZL	0.63	0.73	0.74	0.83	0.76	0.73	0.64	0.78	0.68	0.61	0.51
0.76	0.71	0.51	0.84	3.32							

HOL mce

	CAN	CHE	DFS	FRA	ISR	ITA	NLD	USA	GBR	HUN	CHR
DEU	BEL										
CAN	6.55										
CHE	0.83	15.93									
DFS	0.84	0.86	12.54								
FRA	0.93	0.90	0.78	1.31							
ISR	0.60	0.71	0.73	0.61	3.09						
ITA	0.77	0.75	0.57	0.81	0.59	9.22					
NLD	0.81	0.81	0.81	0.83	0.58	0.61	4.82				
USA	0.90	0.82	0.77	0.95	0.60	0.82	0.84	0.15			
GBR	0.68	0.79	0.61	0.81	0.61	0.67	0.70	0.73	0.05		
HUN	0.55	0.56	0.56	0.56	0.60	0.55	0.56	0.55	0.56	1.25	
CHR	0.90	0.93	0.80	0.95	0.72	0.80	0.82	0.87	0.78	0.58	13.63
DEU	0.84	0.83	0.91	0.78	0.62	0.63	0.81	0.78	0.58	0.55	0.77
11.73											
BEL	0.62	0.72	0.72	0.68	0.63	0.56	0.73	0.68	0.58	0.56	0.62
0.74	12.04										

HOL dsb

	AUS	CAN	CHE	DFS	FRA	ISR	ITA	NLD	USA	HUN	CHR
DEU											
AUS	3.23										
CAN	0.47	7.00									
CHE	0.83	0.54	9.21								
DFS	0.79	0.74	0.79	13.76							
FRA	0.43	0.68	0.54	0.62	0.73						
ISR	0.59	0.65	0.68	0.80	0.66	1.59					
ITA	0.76	0.46	0.85	0.78	0.45	0.70	7.25				
NLD	0.36	0.68	0.46	0.63	0.62	0.66	0.45	3.46			
USA	0.36	0.63	0.49	0.60	0.64	0.64	0.45	0.60	0.08		
HUN	0.67	0.46	0.62	0.51	0.46	0.52	0.60	0.46	0.46	1.10	
CHR	0.59	0.72	0.69	0.80	0.61	0.76	0.64	0.61	0.61	0.47	12.76
DEU	0.62	0.68	0.65	0.86	0.60	0.85	0.55	0.61	0.60	0.46	0.81
12.68											

HOL msb

	CAN	CHE	DFS	FRA	ISR	ITA	NLD	USA	HUN	CHR	DEU
CAN	6.42										
CHE	0.60	15.93									
DFS	0.96	0.63	12.97								
FRA	0.89	0.59	0.87	0.90							
ISR	0.76	0.74	0.77	0.68	2.25						
ITA	0.50	0.83	0.43	0.50	0.69	9.22					
NLD	0.93	0.48	0.94	0.81	0.72	0.40	4.30				
USA	0.71	0.50	0.70	0.72	0.62	0.44	0.66	0.13			
HUN	0.41	0.57	0.41	0.41	0.47	0.55	0.41	0.40	1.22		
CHR	0.90	0.70	0.89	0.81	0.76	0.52	0.83	0.71	0.43	14.35	
DEU	0.95	0.64	0.96	0.85	0.80	0.51	0.91	0.68	0.40	0.84	12.28

RDC dce

	CAN	DFS	NOR	NLD	DEU	IRL	NZL
CAN	6.56						
DFS	0.88	9.20					
NOR	0.82	0.95	13.03				
NLD	0.88	0.92	0.88	4.01			
DEU	0.85	0.90	0.88	0.88	11.94		
IRL	0.76	0.84	0.82	0.83	0.75	0.88	
NZL	0.75	0.81	0.75	0.78	0.75	0.84	2.70

RDC mce

	CAN	DFS	NOR	DEU
CAN	5.78			
DFS	0.79	10.73		
NOR	0.74	0.79	14.06	
DEU	0.83	0.83	0.75	10.02

^LAPPENDIX II. Number of common bulls

BSW

common bulls below diagonal
common three quarter sib group above diagonal

	DEA	NLD	USA	CHE	CAN
DEA	0	51	150	484	61
NLD	39	0	19	35	12
USA	104	16	0	175	72
CHE	386	30	139	0	67
CAN	48	9	61	51	0

BSW

common bulls below diagonal
common three quarter sib group above diagonal

	DEA	NLD	USA	CHE	CAN
DEA	0	52	89	406	24
NLD	42	0	21	30	8
USA	75	17	0	82	21
CHE	304	25	72	0	23
CAN	21	5	19	19	0

HOL

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	CHE	DFS	FRA	ISR	ITA	NLD	USA	GBR	HUN	CHR	DEU	BEL	IRL	NZL
AUS	0	449	196	418	410	32	448	357	524	248	212	108	448	187	253	390
CAN	392	0	389	990	981	43	1322	717	2352	459	515	203	1601	283	342	523
CHE	164	274	0	313	331	16	351	246	402	181	181	198	461	193	213	213
DFS	308	680	273	0	1157	63	1276	1214	1508	580	455	160	1732	316	437	620
FRA	306	621	289	527	0	54	1418	1096	1690	649	511	166	1566	354	421	567
ISR	21	29	10	48	27	0	58	64	64	29	32	7	59	19	40	57
ITA	323	767	269	710	660	37	0	1117	2196	658	562	192	1873	326	432	621
NLD	208	329	167	588	337	49	431	0	1459	575	382	176	1679	310	447	699
USA	417	2160	299	895	782	47	1052	652	0	734	653	249	2346	315	461	793
GBR	184	277	146	241	242	10	282	190	338	0	286	100	730	198	302	310
HUN	159	412	133	300	304	23	386	194	509	159	0	85	663	176	211	256
CHR	85	171	205	133	156	4	160	142	217	86	67	0	321	121	112	104
DEU	354	975	368	1027	689	44	920	896	1323	302	446	272	0	407	525	647
BEL	176	270	188	286	350	12	283	278	276	159	144	120	392	0	220	202
IRL	234	321	211	380	360	27	359	332	426	251	181	110	485	218	0	469
NZL	352	456	190	424	318	44	421	518	708	152	171	89	490	177	421	0

HOL

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	CHE	DFS	FRA	ISR	ITA	NLD	USA	GBR	HUN	CHR	DEU	BEL
CAN	0	281	785	760	46	995	599	1584	394	508	196	1402	191
CHE	185	0	256	244	13	256	234	288	190	151	179	354	113
DFS	547	204	0	1153	71	1130	1278	1301	463	528	169	1924	213
FRA	439	205	446	0	65	1241	1169	1489	414	542	146	1677	235
ISR	30	7	49	30	0	65	73	77	43	46	6	81	13
ITA	633	199	641	514	40	0	1020	1671	457	582	185	1709	211
NLD	409	197	756	430	57	530	0	1290	434	488	216	1891	249
USA	1341	219	788	612	53	914	729	0	509	696	229	2148	216
GBR	407	188	435	374	28	476	433	549	0	284	103	515	128
HUN	421	108	357	312	28	424	316	567	272	0	93	757	124
CHR	156	182	131	130	3	145	176	188	90	69	0	333	90
DEU	764	270	973	623	56	850	1136	1130	528	509	276	0	286
BEL	168	99	175	214	7	154	217	169	127	99	82	224	0

HOL

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	CHE	DFS	FRA	ISR	ITA	NLD	USA	HUN	CHR	DEU
AUS	0	310	139	296	242	18	313	309	352	130	74	309
CAN	221	0	387	953	842	39	1270	954	2074	481	203	1586
CHE	100	274	0	317	315	16	351	342	375	172	198	461
DFS	167	706	278	0	1012	65	1301	1455	1407	447	162	1771
FRA	145	565	275	491	0	43	1218	1113	1291	470	163	1471
ISR	8	28	10	49	25	0	58	68	60	32	7	59
ITA	156	764	269	732	562	37	0	1345	2018	537	192	1870
NLD	195	786	314	1027	623	56	829	0	1561	459	253	2062
USA	214	1958	278	886	581	45	970	1059	0	581	219	2162
HUN	70	377	125	292	280	23	366	306	435	0	80	634
CHR	54	171	205	135	154	4	160	229	189	60	0	321
DEU	185	977	368	1077	660	44	921	1490	1213	422	272	0

HOL

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	CHE	DFS	FRA	ISR	ITA	NLD	USA	HUN	CHR	DEU
CAN	0	278	769	690	45	975	690	1396	467	196	1369
CHE	185	0	259	232	13	256	260	264	146	179	354
DFS	559	206	0	1052	73	1135	1371	1084	508	170	1934
FRA	417	190	431	0	59	1126	1124	1105	499	142	1558
ISR	30	7	49	27	0	65	76	69	45	6	81
ITA	630	199	655	467	40	0	1122	1385	555	185	1695
NLD	547	226	913	498	59	666	0	1160	497	250	2026
USA	1254	206	777	499	51	871	791	0	588	205	1785
HUN	387	104	343	291	27	401	340	513	0	90	717
CHR	156	182	132	129	3	145	212	172	66	0	331
DEU	735	269	982	568	56	835	1332	1008	476	271	0

RDC
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 common bulls below diagonal
 common three quarter sib group above diagonal

	CAN	DFS	NOR	NLD	DEU	IRL	NZL
CAN	0	102	3	3	8	3	44
DFS	102	0	95	23	51	17	96
NOR	3	68	0	13	20	47	32
NLD	3	23	12	0	11	8	8
DEU	8	45	20	11	0	7	17
IRL	3	14	45	7	7	0	9
NZL	44	79	30	8	16	9	0

RDC
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 common bulls below diagonal
 common three quarter sib group above diagonal

	CAN	DFS	NOR	DEU
CAN	0	68	3	6
DFS	65	0	97	35
NOR	3	77	0	11
DEU	6	27	10	0