INTRODUCTION

The latest routine international evaluation for calving traits took place as scheduled at the Interbull Centre. Data from seventeen (17) 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, Spain, Switzerland, the United Kingdom, Slovack Republic 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 loose EDC although the number of daughters stay the same. Reliability changes is a function of the EDC changes.

AUS ALL A small cohort of animals changed proof type from 12 previous (second crop daughters) back to 11 (only first crop daughters).The determination of a first and second crop proof type is based on the proportion of daughters born within 5 years of the bulls birth date (first crop) and those born after 5 years (second crop).The pedigree has been recently updated and completed so that a number of older daughters have been entering proofs and this has tripped the threshold from proof type causing the reversion from second to first crop daughter proof.

DEU HOL/RDC Decrease in information due to data correction.

ITA HOL Decrease in information due to editing system applied.

CHE ALL Base change
Decrease in information due to the continuous work on the rawdata by herd-book organizations and in the fact that data have been merged from two data bases (for HOL-CHE and SIM-CHE).

ESP HOL Edits applied cause decrease in information

NLD HOL All data collected by CRV has become available. So it is no longer the case that only data of bulls from bull owners who pay for it, is in the evaluation.

USA ALL Beginning with the August 2017 evaluations, a new set of edits is being applied to the incoming Calving Ease phenotypic data. Among these changes, CDCB now requires pedigree and lactation data to be included in the database before the calving event is processed, causing decrease in information

INTERBULL CHANGES COMPARED TO THE DECEMBER ROUTINE RUN

Subsetting:

As decided by the ITC in Orlando, new subsetting was introduced in the september test run. Sub-setting is necessary for operational purposes and restrictions of time scales. To minimize the effect of subsetting, larger subsets with 10-12 countries and with 4 link providing countries have been applied.

Window:

According to the decision taken by ITC in Orlando, the following
changes have been introduced in regards to the windows used for
post processing:

The upper bounds have been set to 0.99 as these were judged to have
very little effect on evaluations. The lower values have been
set to about the 25% percentile value. The largest changes are for
the lower values for conformation traits, with the lowest window being
40% for OFL otherwise it is about 50% for all other confirmation traits.
It is anticipated that these low values may not have large impact on
evaluations since there were very few countries combinations whose
estimated correlations fell between the old limit of 0.30 and these new limits.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

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 (August Routine Evaluation 2018).
Number of records for direct calving ease by breed

Country	BSW	GUE	HOL	JER	RDC	SIM
AUS			2249			
BEL			972			
CAN	146		12083		471	
CHE	1829		2157			
CZE						
DEA	5194					
DEU			18124		243	
DFS			10014		6264	
ESP			1854			
EST						
FRA	321		11872			
FRM						
GBR			2506			
HUN			1680			
IRL			1940		60	
ISR			414			
ITA			9407			
JPN						
KOR						
LTU						
LVA						
NLD	79		14178		28	
NOR					3708	
NZL			6967		1061	
POL						
PRT						
SVK			639			
SVN						
URY						
USA	531		34976			
ZAF						
HRV						
MEX						
CAM						
No.Records	8100		132032		11835	
Pub. Proofs	8528	0	120674	0	12196	0

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

BSW dce

	DEA	NLD	USA	CHE	CAN	FRA
DEA	9.82					
NLD	0.91	6.82				
USA	0.78	0.81	0.12			
CHE	0.93	0.95	0.79	12.21		
CAN	0.86	0.95	0.86	0.95	7.57	
FRA	0.80	0.91	0.85	0.86	0.90	0.76

BSW mce

	DEA	NLD	USA	CHE	CAN	FRA
DEA	10.87					
NLD	0.85	5.87				
USA	0.77	0.78	0.14			
CHE	0.88	0.82	0.86	16.06		
CAN	0.61	0.79	0.84	0.75	6.35	
FRA	0.90	0.83	0.90	0.96	0.84	0.95

HOL dce

	AUS	CAN	CHE	DFS	FRA	ISR	ITA	NLD	USA	GBR	HUN	DEU	BEL	IRL	NZL	SVK	ESP
AUS	2.98																
CAN	0.81	6.57															
CHE	0.76	0.95	10.34														
DFS	0.78	0.93	0.90	11.78													
FRA	0.79	0.96	0.96	0.91	0.93												
ISR	0.80	0.91	0.88	0.86	0.88	2.88											
ITA	0.68	0.77	0.77	0.77	0.75	0.78	7.22										
NLD	0.82	0.96	0.93	0.93	0.93	0.88	0.76	6.98									
USA	0.72	0.87	0.86	0.82	0.89	0.84	0.74	0.82	0.13								
GBR	0.81	0.80	0.78	0.77	0.78	0.81	0.74	0.84	0.74	0.07							
HUN	0.70	0.77	0.78	0.75	0.75	0.79	0.75	0.76	0.74	0.76	1.23						
DEU	0.79	0.89	0.88	0.88	0.92	0.83	0.75	0.90	0.81	0.78	0.75	13.08					
BEL	0.67	0.77	0.77	0.75	0.74	0.80	0.74	0.75	0.74	0.75	0.76	0.75	10.09				
IRL	0.69	0.86	0.82	0.83	0.83	0.90	0.73	0.85	0.77	0.74	0.74	0.77	0.74	1.45			
NZL	0.70	0.78	0.79	0.80	0.77	0.79	0.75	0.81	0.76	0.76	0.75	0.77	0.74	0.82	3.06		
SVK	0.72	0.78	0.79	0.78	0.78	0.82	0.78	0.78	0.77	0.79	0.78	0.77	0.78	0.79	0.78	12.60	
ESP	0.70	0.77	0.77	0.77	0.77	0.80	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.78	11.31

HOL mce

	CAN	CHE	DFS	FRA	ISR	ITA	NLD	USA	GBR	HUN	DEU	BEL	SVK	ESP
CAN	6.51													
CHE	0.87	13.60												
DFS	0.82	0.70	12.24											
FRA	0.92	0.97	0.76	1.30										
ISR	0.79	0.71	0.79	0.75	2.63									
ITA	0.80	0.86	0.58	0.84	0.69	9.43								
NLD	0.82	0.77	0.86	0.81	0.67	0.58	5.24							
USA	0.89	0.89	0.76	0.95	0.79	0.82	0.80	0.15						
GBR	0.66	0.79	0.58	0.78	0.63	0.67	0.64	0.71	0.04					
HUN	0.55	0.56	0.55	0.55	0.59	0.55	0.56	0.55	0.56	1.26				
DEU	0.85	0.74	0.91	0.79	0.75	0.66	0.83	0.77	0.61	0.55	13.04			
BEL	0.67	0.68	0.74	0.75	0.62	0.59	0.77	0.68	0.59	0.56	0.74	11.01		
SVK	0.56	0.58	0.56	0.56	0.64	0.56	0.56	0.56	0.57	0.56	0.55	0.57	16.02	
ESP	0.79	0.74	0.67	0.78	0.73	0.69	0.70	0.80	0.60	0.56	0.69	0.64	0.58	12.58

HOL dsb

	AUS	CAN	CHE	DFS	FRA	ISR	ITA	NLD	USA	HUN	DEU
AUS	2.99										
CAN	0.62	7.74									
CHE	0.44	0.51	16.34								
DFS	0.70	0.87	0.47	12.68							
FRA	0.43	0.74	0.58	0.65	0.75						
ISR	0.75	0.74	0.46	0.72	0.53	1.76					
ITA	0.74	0.58	0.36	0.65	0.42	0.59	7.21				
NLD	0.44	0.77	0.72	0.69	0.66	0.57	0.35	4.29			
USA	0.42	0.75	0.60	0.62	0.70	0.47	0.37	0.63	0.07		
HUN	0.76	0.53	0.37	0.53	0.37	0.72	0.54	0.36	0.37	1.10	
DEU	0.56	0.78	0.56	0.80	0.62	0.74	0.47	0.73	0.61	0.42	12.73

HOL msb

	CAN	CHE	DFS	FRA	ISR	ITA	NLD	USA	HUN	DEU
CAN	6.28									
CHE	0.85	20.34								
DFS	0.95	0.83	11.64							
FRA	0.89	0.84	0.87	0.93						
ISR	0.89	0.83	0.87	0.81	1.75					
ITA	0.53	0.58	0.52	0.54	0.67	9.43				
NLD	0.93	0.78	0.94	0.81	0.82	0.52	4.27			
USA	0.88	0.82	0.83	0.88	0.81	0.52	0.78	0.13		
HUN	0.54	0.54	0.52	0.53	0.53	0.48	0.53	0.51	1.22	
DEU	0.95	0.84	0.96	0.85	0.89	0.53	0.93	0.81	0.52	13.34

RDC dce

	CAN	DFS	NOR	NLD	DEU	IRL	NZL
CAN	6.57						
DFS	0.93	11.29					
NOR	0.89	0.95	13.11				
NLD	0.96	0.93	0.92	4.99			
DEU	0.89	0.90	0.92	0.91	13.45		
IRL	0.86	0.83	0.83	0.85	0.78	0.98	
NZL	0.79	0.80	0.80	0.82	0.79	0.83	2.69

RDC mce

	CAN	DFS	NOR	DEU
CAN	7.02			
DFS	0.81	12.22		
NOR	0.72	0.78	16.11	
DEU	0.82	0.83	0.76	11.92

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^LAPPENDIX II. Number of common bulls

BSW

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common bulls below diagonal
common three quarter sib group above diagonal

	DEA	NLD	USA	CHE	CAN	FRA
DEA	0	54	176	459	85	179
NLD	41	0	23	32	13	34
USA	129	20	0	193	99	71
CHE	371	29	144	0	82	123

CAN	70	10	87	64	0	47
FRA	127	22	50	85	40	0

BSW

common bulls below diagonal
common three quarter sib group above diagonal

	DEA	NLD	USA	CHE	CAN	FRA
DEA	0	45	107	404	30	127
NLD	35	0	18	26	9	23
USA	89	15	0	95	26	45
CHE	305	24	82	0	27	81
CAN	25	6	23	23	0	21
FRA	89	18	39	60	19	0

BSW

BSW

GUE

GUE

GUE

GUE

GUE

HOL

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	CHE	DFS	FRA	ISR	ITA	NLD	USA	GBR	HUN	DEU	BEL	IRL	NZL	SVK	ESP
AUS	0	678	296	531	574	47	624	547	771	370	288	653	311	332	520	117	362
CAN	678	0	616	1075	1210	72	1567	1122	3027	630	650	1950	480	414	628	261	761
CHE	252	502	0	376	450	29	500	502	673	278	235	767	326	260	268	118	312
DFS	402	780	301	0	1202	82	1266	1270	1547	644	490	1716	451	466	648	217	516
FRA	450	831	390	588	0	76	1561	1382	1926	765	611	1867	527	498	660	263	633
ISR	27	51	16	58	42	0	80	93	95	47	47	88	34	54	69	26	51
ITA	501	1174	412	797	822	53	0	1341	2402	835	675	2119	501	506	707	276	775
NLD	435	886	440	731	640	67	810	0	1897	763	509	2228	564	578	872	288	549
USA	732	3183	562	940	990	80	1511	1249	0	950	796	2764	519	540	915	323	857
GBR	301	456	216	313	342	22	462	394	561	0	348	906	310	391	388	150	382
HUN	202	527	165	313	360	32	471	276	628	199	0	785	250	246	306	164	371
DEU	555	1382	655	1038	929	71	1238	1636	1765	466	505	0	662	604	748	460	835
BEL	302	467	328	392	523	19	485	570	479	270	195	680	0	309	302	139	343
IRL	318	405	251	385	436	35	445	507	513	349	203	556	312	0	555	114	260
NZL	496	564	229	423	399	51	520	715	852	220	192	577	264	496	0	161	316
SVK	68	181	54	109	162	12	177	172	220	61	105	359	76	53	97	0	146
ESP	289	547	252	392	497	30	575	425	590	270	271	536	335	248	248	73	0

HOL

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	CHE	DFS	FRA	ISR	ITA	NLD	USA	GBR	HUN	DEU	BEL	SVK	ESP
CAN	0	507	970	955	64	1192	879	2011	570	616	1675	414	217	673
CHE	387	0	423	415	29	445	512	559	316	252	722	327	108	280
DFS	772	363	0	1305	93	1240	1504	1524	630	608	2159	476	207	535
FRA	620	357	595	0	80	1350	1369	1704	558	642	1949	517	214	606
ISR	43	15	63	40	0	81	96	99	62	59	105	37	21	53
ITA	879	367	810	654	48	0	1193	1902	628	676	1898	479	223	682
NLD	768	455	1120	723	76	820	0	1545	624	598	2219	599	247	544
USA	1905	458	1062	807	79	1216	1094	0	724	828	2555	477	265	785

GBR	607	303	611	519	39	646	661	805	0	369	722	333	132	369
HUN	517	185	414	374	37	504	394	693	339	0	867	272	159	382
DEU	1078	599	1292	827	80	1059	1647	1552	751	580	0	636	325	824
BEL	411	319	446	528	21	443	633	431	378	221	652	0	115	309
SVK	145	47	101	108	8	144	150	181	74	110	233	59	0	125
ESP	400	217	378	409	25	447	415	451	340	271	443	292	53	0

HOL

common bulls below diagonal

common three quarter sib group above diagonal

	AUS	CAN	CHE	DFS	FRA	ISR	ITA	NLD	USA	HUN	DEU
AUS	0	502	215	391	370	29	458	448	561	137	479
CAN	456	0	613	1033	1067	68	1539	1259	2743	488	1939
CHE	163	502	0	377	438	29	499	570	634	189	770
DFS	244	782	301	0	1064	84	1271	1389	1432	408	1732
FRA	246	771	382	543	0	65	1407	1333	1527	472	1773
ISR	13	50	16	58	40	0	80	94	91	35	88
ITA	294	1171	412	802	740	53	0	1498	2270	533	2115
NLD	332	1153	528	960	836	74	1093	0	1879	462	2450
USA	473	2963	529	896	788	78	1437	1458	0	585	2584
HUN	73	384	136	256	282	26	368	311	438	0	632
DEU	342	1387	658	1043	896	71	1238	1970	1661	414	0

HOL

common bulls below diagonal

common three quarter sib group above diagonal

	CAN	CHE	DFS	FRA	ISR	ITA	NLD	USA	HUN	DEU
CAN	0	504	952	881	63	1177	889	1823	468	1639
CHE	386	0	428	404	29	444	526	524	210	713
DFS	786	369	0	1204	93	1241	1590	1310	510	2164
FRA	593	344	581	0	75	1270	1329	1319	505	1824
ISR	43	15	63	38	0	81	96	91	45	104
ITA	877	366	825	611	48	0	1238	1659	551	1874
NLD	783	472	1203	700	74	846	0	1419	510	2281
USA	1819	434	1055	682	77	1178	1086	0	589	2206
HUN	387	154	346	295	27	401	357	515	0	710
DEU	1044	582	1295	760	79	1028	1650	1430	469	0

JER

JER

JER

JER

RDC

common bulls below diagonal

common three quarter sib group above diagonal

	CAN	DFS	NOR	NLD	DEU	IRL	NZL
CAN	0	142	5	3	10	3	56
DFS	143	0	115	21	58	18	119
NOR	4	89	0	13	20	51	35
NLD	3	21	13	0	11	6	10
DEU	10	51	19	11	0	6	17
IRL	3	15	50	6	6	0	11
NZL	56	101	34	10	17	11	0

RDC

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	DFS	NOR	DEU
CAN	0	89	4	9
DFS	88	0	117	40
NOR	4	89	0	13
DEU	9	32	13	0

RDC

RDC

SIM

SIM

SIM

SIM
