Introduction

The latest routine international evaluation for **workability traits** took place as scheduled at the Interbull Centre. Data from ten (10) countries were included in this evaluation.

International genetic evaluations for workability traits of bulls from Austria-Germany, Canada, Denmark-Finland-Sweden, France, Italy, Netherlands, Norway, New Zealand, Slovenia and Switzerland were computed. Brown Swiss, Holstein, Jersey and Red Dairy Cattle breed data were included in this evaluation.

Changes in national procedures

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

SVN (HOL, BSW, SIM) Some bulls losing informations (herds/daugters/EDC). These changes are mostly consequences of changes in data base
CHE (HOL) Reductions in EDCs for milkability are due to slight changes in definition of contemporary groups (herd*3 year period, starting with the most recent year with data)

INTERBULL CHANGES COMPARED TO THE APRIL ROUTINE RUN

None

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 Workability (August Routine Evaluation 2016).
Number of records for milking speed by breed

Country	BSW	GUE	HOL	JER	RDC	SIM
AUS			5964	1144	457	
BEL						
CAN	161		10844	558	746	
CHE	2440		2703			
CZE						
DEA	3789					
DEU			16991		231	
DFS			11179	1803	6122	
ESP						
EST						
FRA	301		15666			
FRM						
FRR						
GBR			4879			
HUN						
IRL						
ISR						
ITA	1833					
JPN						
KOR						
LTU						
LVA						
NLD	94		12336	24		
NOR					3539	
NZL			5184	3411	531	
POL						
PRT						
SVK						
SVN	249		358			
URY						
USA						
ZAF						
HRV						
No.Records	8867		86104	6940	11626	
Pub. Proofs	7554	0	76501	6490	11185	0

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

BSW msp

	CAN	CHE	DEA	ITA	NLD	SVN	FRA
CAN	7.19						
CHE	0.92	15.86					
DEA	0.91	0.97	11.72				
ITA	0.88	0.95	0.93	18.08			
NLD	0.93	0.94	0.94	0.90	6.19		
SVN	0.88	0.89	0.89	0.95	0.87	25.36	
FRA	0.93	0.92	0.86	0.89	0.95	0.86	0.91

HOL msp

	CAN	CHE	DEU	DFS	FRA	NLD	AUS	GBR	SVN	NZL
CAN	7.59									
CHE	0.87	12.10								
DEU	0.90	0.97	11.44							
DFS	0.94	0.95	0.97	14.62						
FRA	0.93	0.96	0.96	0.97	1.09					
NLD	0.95	0.96	0.96	0.98	0.98	5.59				
AUS	0.89	0.88	0.87	0.89	0.91	0.91	3.57			
GBR	0.85	0.85	0.85	0.85	0.85	0.85	0.86	0.15		
SVN	0.86	0.86	0.85	0.86	0.86	0.86	0.86	0.86	22.91	
NZL	0.91	0.89	0.87	0.87	0.92	0.92	0.94	0.85	0.87	0.37

HOL tem

	CAN	CHE	DEU	DFS	FRA	NLD	AUS	GBR	NZL
CAN	6.90								
CHE	0.70	11.05							
DEU	0.86	0.80	13.18						
DFS	0.79	0.83	0.86	13.20					
FRA	0.72	0.90	0.81	0.91	1.00				
NLD	0.85	0.73	0.86	0.88	0.82	4.96			
AUS	0.70	0.71	0.70	0.72	0.71	0.74	3.06		
GBR	0.70	0.80	0.72	0.81	0.86	0.71	0.70	0.14	
NZL	0.70	0.71	0.71	0.70	0.70	0.72	0.76	0.70	0.34

JER msp

	CAN	DFS	NLD	AUS	NZL
CAN	8.50				
DFS	0.90	14.57			
NLD	0.94	0.97	4.71		
AUS	0.86	0.87	0.91	3.34	
NZL	0.87	0.86	0.91	0.89	0.33

RDC msp

	CAN	DEU	DFS	NOR	AUS	NZL
CAN	6.64					
DEU	0.90	9.41				
DFS	0.97	0.95	13.58			
NOR	0.92	0.89	0.96	15.35		
AUS	0.88	0.87	0.89	0.86	4.38	
NZL	0.91	0.87	0.90	0.91	0.92	0.41

RDC tem

	CAN	DEU	DFS	NOR	AUS	NZL
CAN	6.47					
DEU	0.85	9.92				
DFS	0.78	0.83	11.19			
NOR	0.78	0.72	0.91	17.05		
AUS	0.71	0.72	0.72	0.71	3.40	
NZL	0.71	0.72	0.73	0.72	0.77	0.40

^LAPPENDIX II. Number of common bulls

BSW

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	CHE	DEA	ITA	NLD	SVN	FRA
CAN	0	86	92	88	32	15	62
CHE	72	0	467	373	50	36	135
DEA	81	384	0	509	73	55	162
ITA	76	319	420	0	68	50	143
NLD	25	47	63	53	0	22	49
SVN	13	36	51	50	21	0	30
FRA	56	102	121	114	40	29	0

HOL

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	CHE	DEU	DFS	FRA	NLD	AUS	GBR	SVN	NZL
CAN	0	640	1554	959	1105	1001	854	1183	117	323
CHE	511	0	762	475	433	613	380	522	83	202
DEU	738	566	0	1684	1599	1924	881	1350	177	354
DFS	616	386	761	0	1223	1374	778	1095	145	384
FRA	561	366	537	434	0	1435	833	1175	111	422
NLD	827	575	1115	895	653	0	916	1272	149	506
AUS	697	297	461	385	424	665	0	861	90	548
GBR	1163	506	762	664	597	958	595	0	138	403
SVN	93	63	163	119	80	129	64	107	0	42
NZL	289	166	223	223	196	445	416	306	31	0

HOL

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	CHE	DEU	DFS	FRA	NLD	AUS	GBR	NZL
CAN	0	546	1219	816	973	955	822	1149	312
CHE	422	0	516	364	381	477	326	466	175
DEU	533	362	0	1164	1228	1544	716	1100	283
DFS	466	293	468	0	1096	1150	727	999	374
FRA	553	321	430	388	0	1331	780	1120	388
NLD	786	439	845	648	625	0	910	1264	501
AUS	676	262	361	326	422	658	0	861	547
GBR	1136	433	596	535	593	956	594	0	400
NZL	281	145	177	204	194	438	415	304	0

JER

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	DFS	NLD	AUS	NZL
CAN	0	54	8	143	60
DFS	39	0	10	71	73
NLD	6	6	0	13	12
AUS	139	44	14	0	175
NZL	62	50	11	162	0

RDC

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	DEU	DFS	NOR	AUS	NZL
CAN	0	6	92	4	32	29
DEU	6	0	35	10	19	3
DFS	89	26	0	97	95	49
NOR	4	10	73	0	44	10
AUS	29	19	71	36	0	33
NZL	26	3	47	9	30	0

RDC

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	DEU	DFS	NOR	AUS	NZL

CAN	0	5	86	4	32	28
DEU	5	0	24	8	17	3
DFS	84	19	0	91	95	49
NOR	4	8	67	0	41	9
AUS	29	17	71	33	0	33
NZL	26	3	47	8	30	0