Introduction

The latest routine international evaluation for workability traits took place as scheduled at the Interbull Centre. Data from eight (8) 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 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:

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.

DFS ALL New model and new genetic parameter for tem.

SVN ALL Changed time period for data inclusion, average cut was 4 years. Changed the definition of genetic reference base to year 2010.
Genetic parameters were recalculated
for all breeds and traits. Changed herd to herd-year effect.
Performed cleaning data based on genomic parentage test as a consequence the pedigree changed for some animals.

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 Workability (December Routine Evaluation 2014). Number of records for milking speed by breed

Country	BSW	GUE	HOL	JER	RDC	SIM
ARG						
AUS			5622	1074	411	
BEL						
CAN	146		10163	506	707	
CHE	2353		1067			
CHR						
CZE						
DEA	3579					
DEU			17991		337	
DFS			10695	1710	5759	
ESP						
EST						
FRA			15084			
FRM						
FRR						
GBR			4519			
HUN						
IRL						
ISR						
ITA	1655					
JPN						
KOR						
LTU						
LVA						
NLD	86		11756	22		
NOR					3317	
NZL						
POL						
PRT						
SVK						
SVN	225		288			
URY						
USA						
ZAF						
HRV						
No.Records	8044		77185	3312	10531	
Pub. Proofs	7016	0	69678	3068	10255	0

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

BSW msp

	CAN	CHE	DEA	ITA	NLD	SVN
CAN	7.35					
CHE	0.97	15.93				
DEA	0.93	0.97	11.75			
ITA	0.93	0.95	0.92	14.85		
NLD	0.94	0.97	0.97	0.94	6.29	
SVN	0.90	0.91	0.89	0.97	0.88	25.66

HOL msp

	CAN	CHE	DEU	DFS	FRA	NLD	AUS	GBR	SVN
CAN	7.56								
CHE	0.96	12.09							
DEU	0.92	0.98	13.73						
DFS	0.95	0.97	0.97	14.91					
FRA	0.93	0.98	0.97	0.97	1.09				
NLD	0.95	0.99	0.96	0.98	0.98	5.48			
AUS	0.89	0.91	0.88	0.90	0.91	0.91	3.58		
GBR	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.15	
SVN	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	22.65

HOL tem

	CAN	CHE	DEU	DFS	FRA	NLD	AUS	GBR
CAN	6.89							
CHE	0.71	10.28						
DEU	0.87	0.81	8.83					
DFS	0.79	0.74	0.82	13.23				
FRA	0.73	0.84	0.80	0.91	1.00			
NLD	0.86	0.72	0.85	0.88	0.82	4.39		
AUS	0.70	0.71	0.70	0.72	0.72	0.75	3.06	
GBR	0.70	0.73	0.73	0.81	0.86	0.71	0.70	0.15

JER msp

	CAN	DFS	NLD	AUS
CAN	8.49			
DFS	0.90	14.42		
NLD	0.94	0.97	4.64	
AUS	0.86	0.87	0.92	3.39

RDC msp

	CAN	DEU	DFS	NOR	AUS
CAN	6.47				
DEU	0.91	10.03			
DFS	0.97	0.96	13.68		
NOR	0.92	0.92	0.95	13.40	
AUS	0.88	0.89	0.91	0.88	4.46

RDC tem

	CAN	DEU	DFS	NOR	AUS
CAN	6.39				
DEU	0.86	4.94			
DFS	0.78	0.79	11.20		
NOR	0.86	0.80	0.95	13.37	
AUS	0.72	0.73	0.72	0.77	3.37

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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

	CAN	CHE	DEA	ITA	NLD	SVN
CAN	0	79	86	71	29	14
CHE	66	0	448	292	45	30
DEA	76	368	0	449	65	48
ITA	62	229	360	0	60	44
NLD	23	41	57	46	0	20
SVN	12	30	45	43	18	0

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

	CAN	CHE	DEU	DFS	FRA	NLD	AUS	GBR	SVN
CAN	0	388	1549	880	1014	923	785	1085	86
CHE	269	0	418	299	293	320	243	327	39
DEU	629	292	0	1725	1589	1863	849	1283	136
DFS	514	234	636	0	1169	1286	719	1012	118
FRA	483	246	473	380	0	1369	778	1111	80
NLD	731	296	999	803	576	0	861	1184	123
AUS	607	184	397	328	373	606	0	789	73
GBR	1022	301	666	578	526	857	518	0	105
SVN	71	31	118	101	59	107	50	85	0

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

	CAN	CHE	DEU	DFS	FRA	NLD	AUS	GBR
CAN	0	383	1260	774	882	878	754	1053
CHE	267	0	367	281	289	321	243	327
DEU	447	234	0	1311	1286	1575	742	1108
DFS	416	215	425	0	1058	1104	686	947
FRA	474	246	387	345	0	1265	725	1056
NLD	696	295	769	603	550	0	856	1176
AUS	586	184	305	284	371	599	0	788
GBR	998	302	518	488	522	860	517	0

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

	CAN	DFS	NLD	AUS
CAN	0	52	8	128
DFS	37	0	9	67
NLD	6	6	0	13
AUS	127	41	13	0

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

	CAN	DEU	DFS	NOR	AUS
CAN	0	7	78	4	31
DEU	7	0	38	10	16
DFS	73	27	0	76	81
NOR	4	9	59	0	35
AUS	28	14	61	30	0

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

	CAN	DEU	DFS	NOR	AUS
CAN	0	3	73	4	31
DEU	3	0	17	6	10
DFS	67	11	0	77	84
NOR	4	5	60	0	32
AUS	28	9	63	27	0