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:

NOR (RDC) Standard deviation changed from 10 to 12 to mimic the expected effect of future change to a cow-base

DEU (HOL,RDC) Data editing: only data since 01/01/1998 were used for genetic evaluation ; Change of standardisation of phenotypic variation within comparison groups for temperament.

SVN (HOL,BSW) Phenotypic data improvements and peigree corrections.

NLD (ALL) Re-defining genetic groups

NZL (ALL) Data provided by a new organization Dairy NewZealand (DNZ): daughter counts, herd counts and EDC have changed due to parentage verification. Herd count is now calculated on the daughters that are used to estimate breeding values.

CAN (ALL) Base change

CHE (BSW) New software for type of proofs, implemented new rules for publication of proofs.

ITA (BSW) Base change, changed procedure to estimate reliabilities and EDC, parentage correction. Changed formula to standardized the ebv

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

Country	BSW	GUE	HOL	JER	RDC	SIM
AUS			5953	1145	454	
BEL						
CAN	160		10698	548	740	
CHE	2411		2656			
CZE						
DEA	3759					
DEU			16797		224	
DFS			11032	1764	5990	
ESP						
EST						
FRA	297		15549			
FRM						
FRR						
GBR			4809			
HUN						
IRL						
ISR						
ITA	1812					
JPN						
KOR						
LTU						
LVA						
NLD	93		12206	24		
NOR					3514	
NZL			5180	3412	531	
POL						
PRT						
SVK						
SVN	243		344			
URY						
USA						
ZAF						
HRV						
No.Records	8775		85224	6893	11453	
Pub. Proofs	7478	0	75868	6446	11042	0

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

BSW msp

	CAN	CHE	DEA	ITA	NLD	SVN	FRA
CAN	7.31						
CHE	0.92	15.88					
DEA	0.91	0.97	11.73				
ITA	0.88	0.95	0.93	18.24			
NLD	0.93	0.94	0.94	0.90	6.25		
SVN	0.88	0.89	0.89	0.95	0.87	25.42	
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	7.60									
CHE	0.87	12.15								
DEU	0.90	0.97	11.42							
DFS	0.94	0.95	0.97	14.77						
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	23.12	
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	6.88								
CHE	0.70	11.18							
DEU	0.86	0.80	13.24						
DFS	0.79	0.83	0.86	13.21					
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	0.15	
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	8.55				
DFS	0.90	14.37			
NLD	0.94	0.97	4.70		
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	6.65					
DEU	0.90	9.39				
DFS	0.97	0.95	13.63			
NOR	0.92	0.89	0.96	15.57		
AUS	0.88	0.87	0.89	0.86	4.40	
NZL	0.91	0.87	0.90	0.91	0.92	0.41

RDC tem

	CAN	DEU	DFS	NOR	AUS	NZL
CAN	6.44					
DEU	0.85	9.59				
DFS	0.78	0.83	11.20			
NOR	0.78	0.72	0.91	16.40		
AUS	0.71	0.72	0.72	0.71	3.34	
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	61
CHE	73	0	461	365	49	35	134
DEA	82	381	0	505	72	52	161
ITA	77	313	414	0	67	49	142
NLD	25	46	62	52	0	22	47
SVN	13	36	50	49	21	0	30
FRA	55	101	120	113	38	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	629	1536	936	1088	982	850	1165	112	322
CHE	500	0	749	461	425	604	376	516	80	200
DEU	717	552	0	1651	1581	1896	874	1326	170	354
DFS	581	371	717	0	1207	1339	766	1070	138	382
FRA	546	356	522	415	0	1426	822	1161	105	421
NLD	799	569	1085	850	642	0	910	1250	144	506
AUS	691	290	455	369	411	661	0	854	86	546
GBR	1134	497	742	630	584	933	589	0	131	402
SVN	89	60	152	112	71	122	59	100	0	42
NZL	287	164	222	217	193	444	414	304	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	534	1180	804	956	937	818	1130	311
CHE	410	0	496	359	374	469	321	459	172
DEU	465	335	0	1131	1191	1490	696	1057	280
DFS	452	286	428	0	1084	1137	720	986	371
FRA	538	311	391	377	0	1320	769	1106	387
NLD	760	434	765	636	613	0	903	1244	501
AUS	669	254	326	317	409	654	0	854	545
GBR	1106	426	535	520	580	935	588	0	399
NZL	279	143	172	201	191	437	413	302	0

JER

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	DFS	NLD	AUS	NZL
CAN	0	53	8	143	62
DFS	38	0	10	70	74
NLD	6	6	0	13	12
AUS	139	43	14	0	177
NZL	64	50	11	163	0

RDC

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	DEU	DFS	NOR	AUS	NZL
CAN	0	6	87	4	32	29
DEU	6	0	30	8	17	3
DFS	84	22	0	86	92	49
NOR	4	8	62	0	44	10
AUS	29	17	69	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	4	80	4	32	28
DEU	4	0	20	8	16	2
DFS	75	15	0	88	95	48
NOR	4	7	64	0	41	9
AUS	29	15	71	33	0	33
NZL	26	2	46	8	30	0