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:

FRA (BSW,HOL,SIM) Some animals changed from official to unofficial as they do not pass the publication rules anymore

SVN (HOL,BSW) Some decrease in information as consequence of changes in data base related to the pedigree completeness and phenotypic data improvement.

DEU (HOL) Data and pedigree corrections

ITA (HOL) Reduction in number of information due to the one year cut-off of data implemented in April routine run but noticeable for workability only in this run since such data are only submitted twice a year

CHE (HOL) For temperament there are some bulls with large decreases in reliability. These bulls are rather old and don't have daughters with observations for temperament

NZL (ALL) Decrease in information due to continuous parentage verification

INTERBULL CHANGES COMPARED TO THE DECEMBER ROUTINE RUN

Sub-setting:

As decided by the ITC in Orlando, new sub-setting was introduced in the September test run. Sub-setting is necessary for operational purposes and restrictions of time scales. To minimize the effect of sub-setting, 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.

Table 1. National evaluation data considered in the Interbull evaluation for Workability (August Routine Evaluation 2017). Number of records for milking speed by breed

Country	BSW	GUE	HOL	JER	RDC	SIM
AUS			6085	1168	470	
BEL						
CAN	151		11347	601	768	
CHE	2506		2855			
CZE						
DEA	3883					
DEU			17576		237	
DFS			11439	1847	6295	
ESP						
EST						
FRA	315		16114			
FRM						
GBR			5154			
HUN						
IRL						
ISR						
ITA	1869		6426			
JPN						
KOR						
LTU						
LVA						
NLD	97		12681	25		
NOR					3653	
NZL			5416	3527	548	
POL						
PRT						
SVK						
SVN	261		406			
URY						
USA						
ZAF						
HRV						
MEX						
No.Records	9082		95499	7168	11971	
Pub. Proofs	7757	0	83774	6711	11520	0

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

BSW msp

	CAN	CHE	DEA	ITA	NLD	SVN	FRA
CAN	7.12						
CHE	0.92	15.73					
DEA	0.89	0.97	11.71				
ITA	0.89	0.95	0.93	17.97			
NLD	0.93	0.94	0.94	0.91	6.12		
SVN	0.87	0.89	0.90	0.94	0.87	24.54	
FRA	0.93	0.92	0.86	0.89	0.95	0.86	0.88

HOL msp

	CAN	CHE	DEU	DFS	FRA	NLD	AUS	GBR	SVN	NZL	ITA
CAN	7.62										
CHE	0.88	12.12									
DEU	0.90	0.97	11.48								
DFS	0.94	0.94	0.97	14.50							
FRA	0.93	0.97	0.96	0.96	1.08						
NLD	0.95	0.97	0.96	0.98	0.98	5.58					
AUS	0.89	0.88	0.87	0.89	0.91	0.91	3.55				
GBR	0.85	0.85	0.85	0.85	0.85	0.85	0.86	0.15			
SVN	0.86	0.86	0.85	0.85	0.86	0.85	0.86	0.86	22.86		
NZL	0.91	0.89	0.87	0.87	0.92	0.92	0.94	0.85	0.86	0.37	
ITA	0.94	0.93	0.92	0.95	0.96	0.95	0.92	0.85	0.85	0.91	7.26

HOL tem

	CAN	CHE	DEU	DFS	FRA	NLD	AUS	GBR	NZL	ITA
CAN	6.94									
CHE	0.70	10.97								
DEU	0.85	0.78	12.10							
DFS	0.79	0.82	0.87	13.21						
FRA	0.71	0.90	0.82	0.92	0.99					
NLD	0.85	0.72	0.87	0.87	0.81	4.98				
AUS	0.70	0.70	0.70	0.72	0.71	0.74	3.07			
GBR	0.70	0.79	0.72	0.81	0.86	0.71	0.70	0.14		
NZL	0.70	0.70	0.71	0.70	0.70	0.71	0.74	0.70	0.34	
ITA	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	7.25

JER msp

	CAN	DFS	NLD	AUS	NZL
CAN	8.53				
DFS	0.90	14.30			
NLD	0.94	0.97	4.63		
AUS	0.86	0.87	0.92	3.32	
NZL	0.87	0.86	0.91	0.88	0.33

RDC msp

	CAN	DEU	DFS	NOR	AUS	NZL
CAN	6.63					
DEU	0.90	9.35				
DFS	0.96	0.94	13.53			
NOR	0.91	0.88	0.96	14.48		
AUS	0.88	0.87	0.88	0.86	4.33	
NZL	0.92	0.87	0.90	0.91	0.91	0.41

RDC tem

	CAN	DEU	DFS	NOR	AUS	NZL
CAN	6.47					
DEU	0.83	10.00				
DFS	0.78	0.82	11.15			
NOR	0.78	0.72	0.92	17.01		
AUS	0.71	0.71	0.71	0.71	3.45	
NZL	0.71	0.72	0.73	0.72	0.76	0.39

^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	79	87	80	29	13	55
CHE	56	0	484	379	52	38	136
DEA	62	403	0	524	74	58	166
ITA	56	324	434	0	69	52	146
NLD	21	49	65	54	0	22	50
SVN	10	38	54	52	21	0	31
FRA	41	103	122	116	40	30	0

BSW

GUE

GUE

HOL

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	CHE	DEU	DFS	FRA	NLD	AUS	GBR	SVN	NZL	ITA
CAN	0	693	1650	1013	1175	1070	886	1269	135	344	1241
CHE	559	0	820	512	493	657	406	565	94	219	540
DEU	836	622	0	1742	1732	2011	907	1415	201	373	1620
DFS	670	416	832	0	1284	1447	801	1146	162	404	1027
FRA	610	404	632	481	0	1532	862	1231	127	438	1198
NLD	897	622	1226	976	725	0	940	1332	168	526	1126
AUS	736	324	490	413	454	702	0	889	99	565	670
GBR	1272	545	833	724	640	1029	634	0	151	423	1127
SVN	105	73	185	130	91	147	70	117	0	49	164
NZL	310	183	246	243	211	470	438	327	36	0	308
ITA	887	468	822	676	535	793	441	855	134	243	0

HOL

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	CHE	DEU	DFS	FRA	NLD	AUS	GBR	NZL	ITA
CAN	0	593	1353	861	1043	1025	853	1236	333	1232
CHE	469	0	574	394	427	516	348	503	190	481
DEU	562	391	0	1291	1454	1677	781	1204	320	1397
DFS	509	314	505	0	1136	1201	749	1036	390	918
FRA	602	355	521	425	0	1428	808	1176	404	1188
NLD	856	484	893	695	694	0	933	1322	521	1121
AUS	713	287	373	350	451	694	0	891	564	670
GBR	1246	470	624	578	636	1026	633	0	420	1127
NZL	302	162	203	219	209	463	437	325	0	307
ITA	879	411	651	568	534	786	441	855	243	0

JER

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	DFS	NLD	AUS	NZL
CAN	0	58	9	151	64
DFS	43	0	11	73	74
NLD	7	7	0	14	13
AUS	150	46	15	0	178
NZL	66	51	12	167	0

JER

RDC

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	DEU	DFS	NOR	AUS	NZL
CAN	0	7	103	5	34	31
DEU	7	0	34	10	20	3
DFS	102	25	0	99	101	52
NOR	5	10	75	0	45	10
AUS	31	20	75	37	0	35
NZL	28	3	50	9	32	0

RDC

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	DEU	DFS	NOR	AUS	NZL
CAN	0	5	92	5	34	30
DEU	5	0	23	8	18	2
DFS	91	18	0	92	101	52
NOR	5	8	68	0	42	9
AUS	31	18	75	34	0	35
NZL	28	2	50	8	32	0

SIM

SIM