

### Interbull Centre Activity Report 2015-2016

Puerto Varas, Chile – 24-25 October 2016

#### **Interbull Centre**



- Section of the Department of Animal Breeding and Genetics of the Swedish University of Agricultural Sciences (SLU)
- Operational unit of the ICAR permanent sub-committee Interbull
- European Union Reference Laboratory (EURL) for Zootechnics (Bovine Breeding)
- ISO 9001:2008 certified.



Swedish University of Agricultural Sciences













Department of Animal Breeding and Genetics Swedish University of Agricultural Sciences Uppsala, Sweden

SLU











 European Union Reference Laboratory (EURL) for Zootechnics (Bovine Breeding)
Since 1996

- Usually annual grant
- Currently grant for 2016 and 2017





- Since January 2016 Interbull Centre has been ISO certified according to the ISO 9001:2008 standard.
- In December 2016, Interbull Centre will undergo its first surveillance visit

Starting upgrading to the new standard ISO 9001:2015





#### Contents



### PERSONNEL

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#### Interbull Centre

$\diamond$	Haifa Benhajali (PhD)	Geneticist		(09 March '15)
$\diamond$	Eva Hjerpe (MSc)	Geneticist		(01 March '04)
*	Hossein Jorjani (PhD)	Service Manager	(01	November '98)
*	Valentina Palucci (MSc)	Geneticist		(07 March '07)
*	Marcus Pedersén	Systems Administrator		(23 May '16)
*	Petri Pennanen	Programmer, Systems Administr	ator	(01 May '14)
*	Toine Roozen (MSc, MBA)	Director	(08	September '15)
$\diamond$	Joanna Sendecka (PhD)	Geneticist	(	(15 January '15)
*	Carl Wasserman	Systems Developer, IT Coordinat	or	(01 August '11)



Mohammad Nilforooshan (PhD) Geneticist, until 16 Oct. '15
Erling Strandberg (PhD) - Interbull Secretary, until 16 Nov. '15



### **SERVICE AND OPERATIONS**

#### **Evaluation runs in the period**



- September 2015
- January 2016
- September 2016
- Routine runs
  - August 2015
  - December 2015
  - April 2016
  - August 2016

#### Validation of National EBVs and GEBVs

Methods I, II and III

- Follow the official test evaluations calendar
- The GEBV test
- Validation software
  - GEBV test
  - Methods I, II, III
- Mendelian sampling trend validation



#### **Populations in MACE (April 2016)**

Breed Group	PROD (3)	CONF (23)	UDER (2)	LONG (1)	CALV (4)	FERT (5)	WORK (2)	ALL (40)	Δ	Publishable bulls (PROD)
BSW	11	9	10	10	6	9	7	62	2	10 332
GUE	6	4	6	6	0	6	0	28	0	1 104
HOL	30	24	29	20	16	20	10	149	1	143 283
JER	11	9	8	9	0	9	5	51	0	11 922
RDC	14	9	13	10	7	11	6	70	0	15 218
SIM	13	0	12	6	0	0	0	31	3	30 587
ALL	85	55	78	61	29	55	28	391	6	212 446
Δ	0	0	1	1	2	1	1	6		5 224

The number of traits by trait group is given in parenthesis.

Number of bulls with published MACE EBVs for production traits is shown in the last column.

#### Size of operations - MACE

Multiple Across Country Evaluation (MACE)	December 2014	December 2015
Countries	34	34
Evaluation breeds	6	6
Country-breed-trait combinations	1,833	1,825
Breed-trait evaluations	171	171
Animals in the pedigree database	23,084,236	24,981,462
Submitted national estimated breeding values	11,030,135	11,573,393
Qualified national estimated breeding values	6,086,142	6,348,587
Calculated international estimated breeding values	265,634,220	270,221,873
Distributed international estimated breeding values	102,965,388	103,108,350
Multiple Across Country Evaluation (MACE)	September 2014	September 2015
Estimated across country genetic correlations <sup>1</sup>	13,168	12,548
Validation tests <sup>2</sup>	183	132

<sup>1</sup> Merging of 2 populations in one country during 2015

<sup>2</sup> Subject to natural fluctuations



#### **Size of operations - GMACE**

Genomic	Multiple	Across	Country	Evaluation	December 2014	December 2015		
(GMACE)								
Countries					33	33		
Evaluation breeds 1 1								
Country-br	eed-trait co	mbinatio	326	339				
Breed-trait	evaluation	S		38	38			
Animals in	the pedigre	e databa	se		23,084,236	24,981,462		
Submitted	national es	timated b	lues	12,398,617	17,324,351			
Qualified n	ational esti	mated br	9,823,735	14,135,403				
Calculated international estimated breeding values 129,211,446 15								
Distributed	internatio	nal estima	ated breedi	ng values	363,705	322,431		



#### **Size of operations - InterGenomics**

InterGenomics (Genomic evaluation of BSW	December	December	December
populations)	2013	2014	2015
Countries	7	8	8
Country-trait combinations	177	212	219
Unique submitted genotypes	13,905	16,599	20,561
Genotypes entering imputation & genomic evaluation	13,186	15,808	19,500
Distiributed international GEBVs	Not reported	Not reported	4,202,064

#### **Size of operations - Interbeef**

Interbeef	January 2015	January 2016
Countries	10	10
Evaluation breeds	2	2
Country-breed-trait combinations	18	18
Animals in the pedigree database	23,927,437	25,389,096
Submitted national estimated breeding values	7,210,100	7,472,166
Distributed international estimated breeding values	69,569,165	57,996,544
Number of distributed international estimated breeding values	938,179	1,108,658



#### **RESEARCH AND DEVELOPMENT**



GenoEx (separate presentations)

- ITC coordinated activities:
  - Robust MACE see Open Meeting
  - GEBV-test
  - Post-processing of rG
  - MS trend validation
  - Genomic Reliability
  - Etc.
- ITBC's own activities:
  - Continuous improvement of workflows

#### Expansion of services to additional populations

#### **GMACE for other Breeds**

 During the month of March, Interbull Centre sent out a doodle to all organization centres enquiring on their interest to extend GMACE to other breeds:

BSW	GUE	JER	RDC	SIM
NLD		ITA, JER	ZAF	ITA

#### InterGenomics for additional populations

See separate presentation



- Since the introduction of IDEA there has been 2 weeks time to upload MACE data and 1 week time for uploading of GMACE
  - Several discontent due to the limited time allowed for GMACE
- In April 2016 Interbull Centre has introduced a parallel uploading of data:
  - GMACE data can now be uploaded at the same time as MACE data
    - Due to parameter dependencies new MACE data should be provided before new GMACE data
  - GMACE uploading time has extended from 1 to 3 weeks during routine runs.



#### **Additional GMACE info**

Starting from January 2017 test run:

Files 734 & 733 will be uploaded in IDEA using the AnimInfo module

🚱 🛷 Ġ 🕒 https://idea.interbull.org/pedigree/upload

IDEA - Interbull Data Exchange	Area	TO D
Start page Pedigree Software Proofs Animal file upload	AnimInfo Query/Report Upload Permissions Types	Settings Help
Pedigree/link file upload:     Choose File   No file chosen     Upload		
AnimInfo upload: Choose File No file chosen Upload		



- Duplicates are not allowed
- Animals missing from IDEA data base will be discarded
- Aliases are discarded
- you can not upload information for other countries
- you can not change a 'Y' to 'N' in the 734 file.
- Upload always open but GMACE deadline will be considered for extraction



- Usability test conducted on April 1, 2016
  - 3 people from SLU with different knowledge about Interbull and Interbull Centre
  - Several tasks to perform
- Observing them made us identify some limitations and ways to solve them:
  - Struggle: Difficulty noticing different links (with/without arrow)
  - Plan: content of submenu displayed also when hovering over main link
  - Struggle: Never noticing "site map"
  - Plan: Move "site map" below the "search"; make the "search" functionality more visible by displaying it in bold and capital letters



**Genetic Correlations** 

# The effect of the new windows and 4 linking countries on the rG

## Joanna Sendecka



#### The effect of the new windows and 4 linking countries on the rG

- correlation windows haven't been revised since at least 2007

- introducing linking countries increases between-country correlations



#### new windows: estimated from averages per breed and 25<sup>th</sup>/95<sup>th</sup> percentiles (only CB >50)

#### - linking countries:

## defining 4 countries with the strongest link to the others (USA, CHE, FRA, NZL)

#### - analyses:

# the effect of new DATA, new SETTINGS (new windows and 4-linking countries) & both DATA + SETTINGS

#### RESULTS



EFFECT	PREVIOUS	CURRENT	AVERAGE CHANGE
	ES	TIMATED	
DATA	0.757	0.764	0.003
SETTINGS	0.764	0.763	0.0
DATA + SETTINGS	0.757	0.763	0.003
	WI	NDOWED	
DATA	0.795	0.799	0.0
SETTINGS	0.799	0.817	0.025
DATA + SETTINGS	0.795	0.817	0.029
	POST	- PROCESS	
	ED		
DATA	0.796	0.798	0.003
SETTINGS	0.798	0.799	0.004
DATA + SETTINGS	0.796	0.799	0.012



EFFECT	PREVIOUS	CURRENT	AVERAGE CHANGE				
	ES	ESTIMATED					
DATA	0.757	0.764	0.003				
SETTINGS	0.764	0.763	0.0				
DATA + SETTINGS	0.757	0.763	0.003				
	WI	NDOWED					
DATA	0.795	0.799	0.0				
_							
SETTINGS	0.799	0.817	0.025				
S E T T I N G S DATA + SETTINGS	0.799 0.795	0.817 0.817	0.025 0.029				
SETTINGS DATA + SETTINGS	0.799 0.795 POST ED	0.817 0.817 - PROCESS	0.025 0.029				
SETTINGS DATA + SETTINGS DATA	0.799 0.795 POS7 ED 0.796	0.817 0.817 - PROCESS 0.798	0.025 0.029 0.003				
SETTINGS DATA + SETTINGS DATA SETTINGS	0.799 0.795 POS7 ED 0.796	0.817 0.817 - PROCESS 0.798 0.799	0.025 0.029 0.003 0.004				



EFFECT	PREVIOUS	CURRENT	AVERAGE CHANGE	
	ES	TIMATED		
DATA	0.757	0.764	0.003	
SETTINGS	0.764	0.763	0.0	
DATA + SETTINGS	0.757	0.763	0.003	
	W	INDOWED		
DATA	0.795	0.799	0.0	
SETTINGS	0.799	0.817	0.025	
DATA + SETTINGS	0.795	0.817	0.029	
	POST	- PROCESS		
DATA	0.796	0.798	0.003	
SETTINGS	0.798	0.799	0.004	
DATA + SETTINGS	0.796	0.799	0.012	







#### CHANGES BY BREED



The effect of both new DATA and new SETTINGS

#### Correlations increased between runs for all breeds





#### new windows setting and introducing 4 linking countries resulted in a general increase in correlations

new settings were introduced into production in September 2015