Interbull Portfolio: Expansion of Traits

Anahit Nazari

Interbull Centre

Interbull Annual Meeting
Interbull Open Meeting - June 21, 2025
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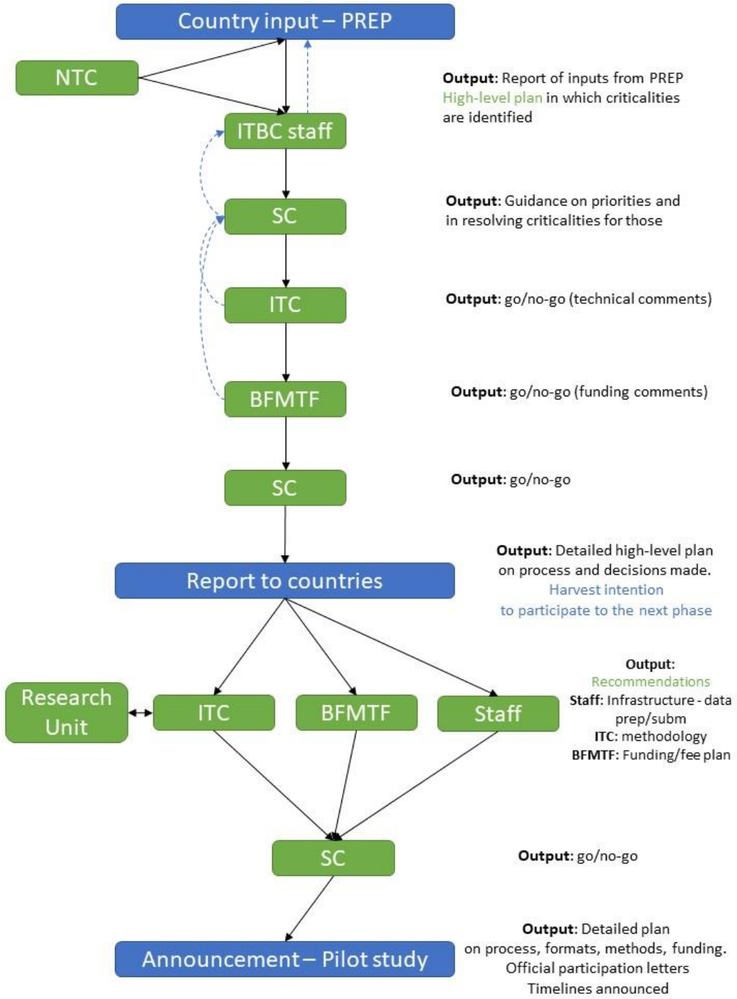
THE GLOBAL STANDARD FOR LIVESTOCK DATA

Network. Guidelines. Certification.

Background

- New traits pipeline developed in **2021**
- For introducing the potential new traits to Interbull portfolio, data collection started via **PREPdb**
- Information collected included: level of interest for the organizations, type of service, trait definition, recording, etc.
- After reviewing the results (answers), following trait and trait groups stood out: **gestation length**, **metabolic disease** and **claw health**

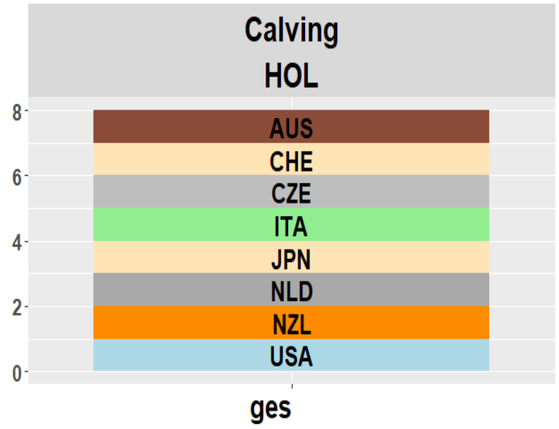


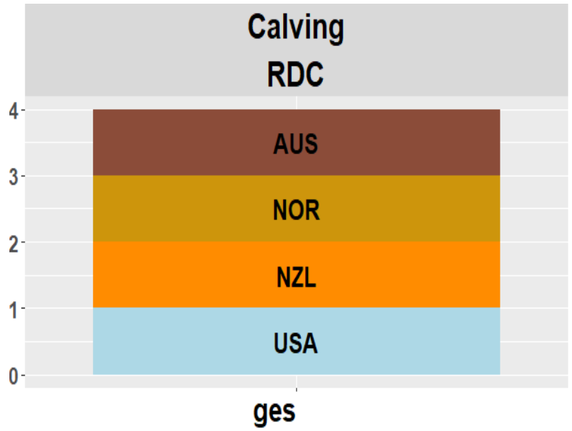
Timeline and Traits

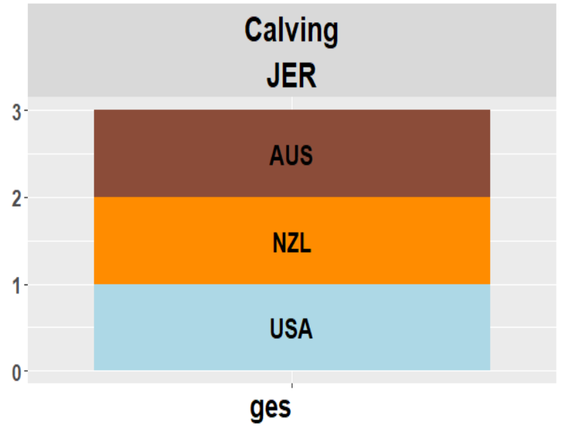
- Following the **Business meeting in 2024** → Urgent of conducting the research run for Interbull Centre
- Data call deadline for IDEA-new traits: 31 October 2024
- 13 countries – 6 breeds submitted the data
- 3 different trait groups- (10 traits in total)

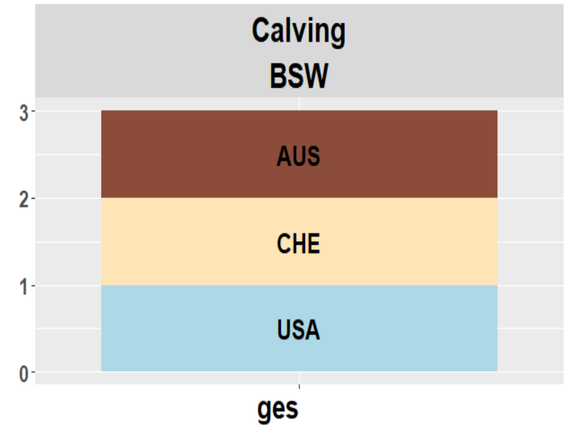
Trait group	Trait
Metabolic disease (**META**)	Clinical ketosis (cke)
	Sub- clinical ketosis (sck)
	Milk fever (mfe)
Claw health (**CLAW**)	Digital dermatitis (dde)
	Interdigital dermatitis (idd)
	Interdigital hyperplasia (idh)
	Sole hemorrhage (soh)
	Sole ulcer (sou)
	White line disease (wld)
Calving (**CALV**)	Gestation length (ges)

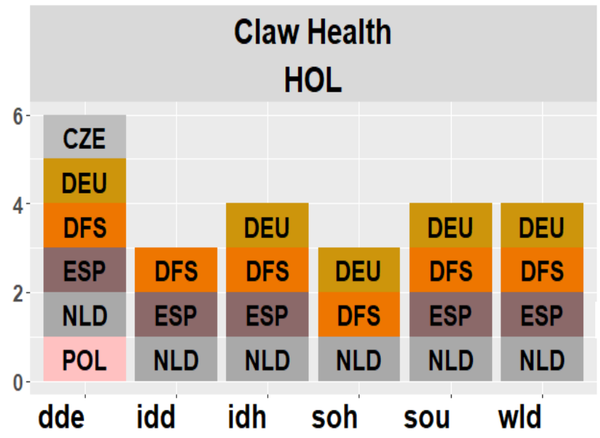
Breed x Country x Trait

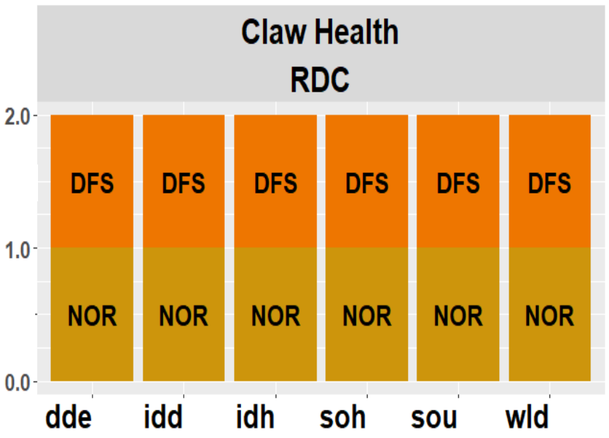


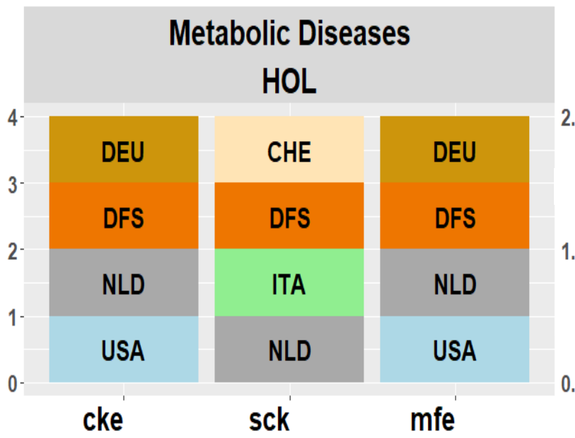


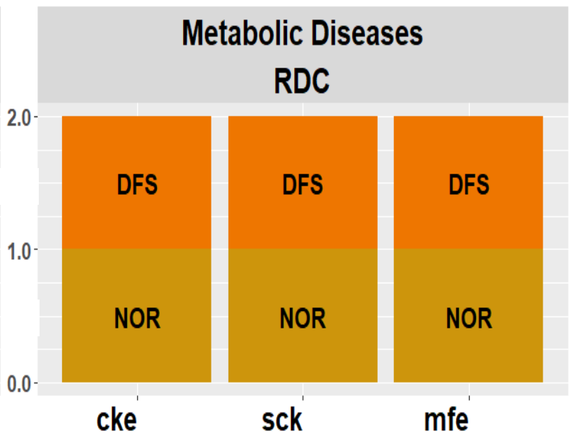












MACE setting and steps

- Bulls with 10 daughters in 10 herds
- Across-country correlation estimations
- Breeding values estimations (EBVs) and reliability correlations between national and international (MACE)

The initial across-country correlation estimations showed some negative and low correlations (mainly for Switzerland (CHE) and Italy (ITA) with other countries) for ges

Challenges – Research run

Reason for very low correlations between **ITA** and **CHE** with other countries for **gestation length** trait:

- They provided ***Maternal*** ges, other countries provided ***direct*** **Gestation length** trait → **Low correlations between Maternal and Direct traits**

- Due to the higher interest for direct ges, ITA and CHE provided ***direct ges*** **trait** as well

- To fix the negative correlations the following direction of scales also changed

Breed(s)	Trait(s)	country	Change in Direction of scale
HOL, BSW, JER, RDC	ges	USA	T+ → **T-**
HOL		NLD	B+ → **B-**
HOL, BSW		CHE	B+ → **B-**
HOL		ITA	B+ → **B-**
RDC	cke, sck and mfe	NOR	B+ → **B-**

Across-country correlation- Results

Across-country correlation estimations for **direct gestation length**

Correlation estimations; HOL-ges

	AUS	CHE	CZE	ITA	JPN	NLD	NZL	USA
AUS	1							
CHE	0.978	1						
CZE	0.901	0.926	1					
ITA	0.954	0.952	0.900	1				
JPN	0.986	0.982	0.901	0.956	1			
NLD	0.989	0.986	0.915	0.959	0.989	1		
NZL	0.979	0.959	0.901	0.929	0.969	0.975	1	
USA	0.985	0.981	0.902	0.962	0.995	0.993	0.974	1

Correlation estimations; RDC-ges

	AUS	NOR	NZL	USA
AUS	1			
NOR	0.971	1		
NZL	0.970	0.961	1	
USA	0.979	0.982	0.966	1

Across-country correlation- Results

Across-country correlation estimations for **direct gestation length**

Correlation estimations; BSW-ges

	AUS	CHE	USA
AUS	1		
CHE	0.966	1	
USA	0.980	0.974	1

Correlation estimations; JER-ges

	AUS	NZL	USA
AUS	1		
NZL	0.9605	1	
USA	0.9834	0.9435	1

Across-country correlation- Results

Summary statistics for across-country correlation estimations for **Claw Health**

Traits	Breed	Min	Mean	Max
Digital Dermatitis	HOL	0.79 (CZE,DFS)	0.86	0.928 (NLD,POL)
Interdigital Dermatitis	HOL	0.772(ESP-NLD)	0.81	0.88 (ESP-DFS)
Interdigital Hyperplasia	HOL	0.356 (ESP-NLD)	0.59	0.881 (DEU-DFS)
Sole Hemorrhage	HOL	0.593 (DEU-NLD)	0.69	0.828 (DFS-NLD)
Sole Ulcer	HOL	0.732 (ESP-NLD)	0.79	0.853 (ESP- DFS)
White Line Disease	HOL	0.633 (DEU –ESP)	0.71	0.8 (DEU-DFS)

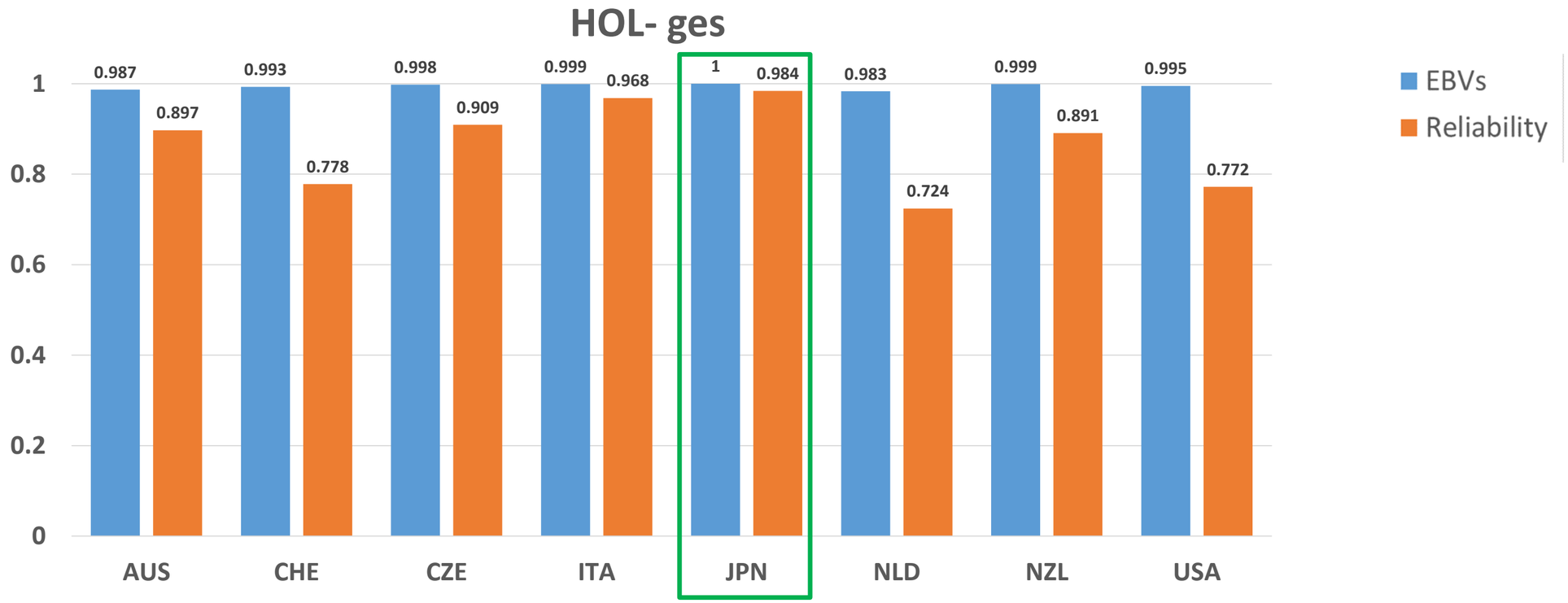
Across-country correlation- Results

Summary statistics for across-country correlation estimations for **Metabolic disease**

Traits	Breed	Min	Mean	Max
Clinical Ketosis	HOL	0.563 (DEU-USA)	0.63	0.709 (DEU-NLD)
Sub-clinical Ketosis	HOL	0.565 (CHE-ITA)	0.73	0.946 (DFS-ITA)
Milk Fever	HOL	0.444 (DEU- USA)	0.55	0.695 (DEU-NLD)

EBVs and reliability correlations

EBVs and reliability correlations between national and MACE evaluation-Direct Gestation length



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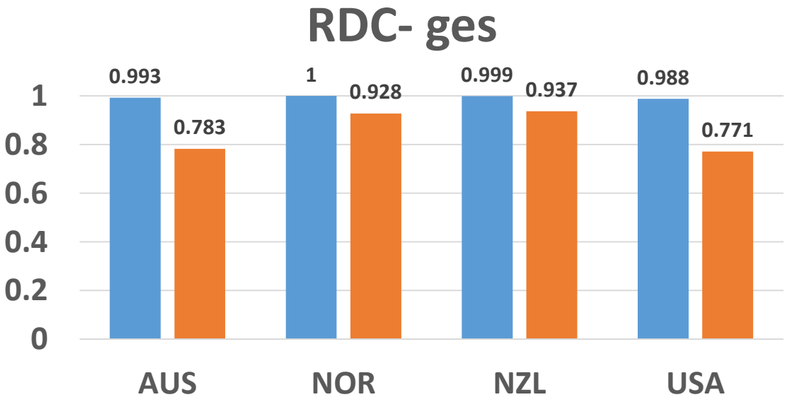
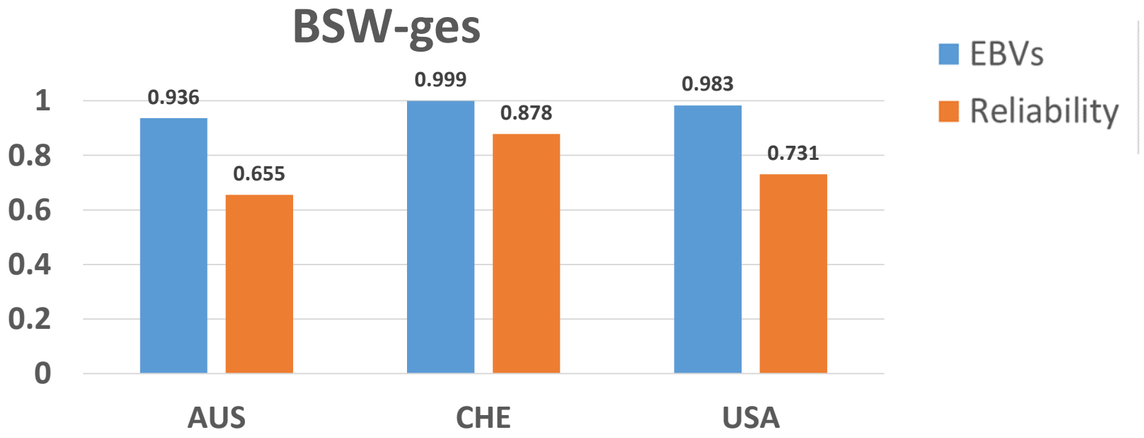
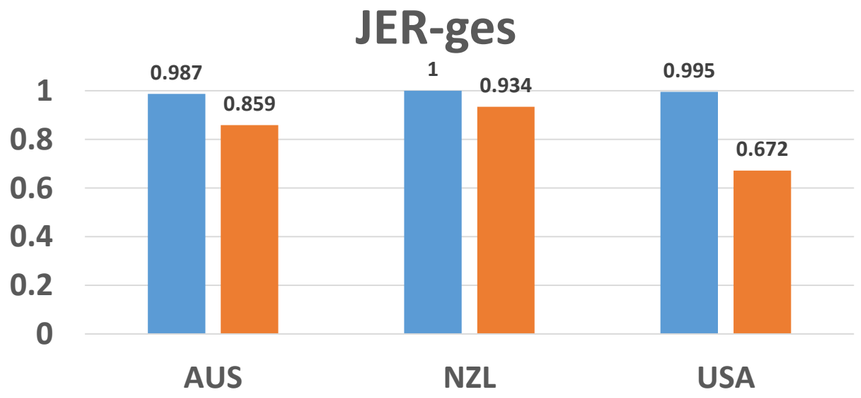






EBVs and reliability correlations

EBVs correlations between national and MACE evaluation
Claw Health and Metabolic Disease

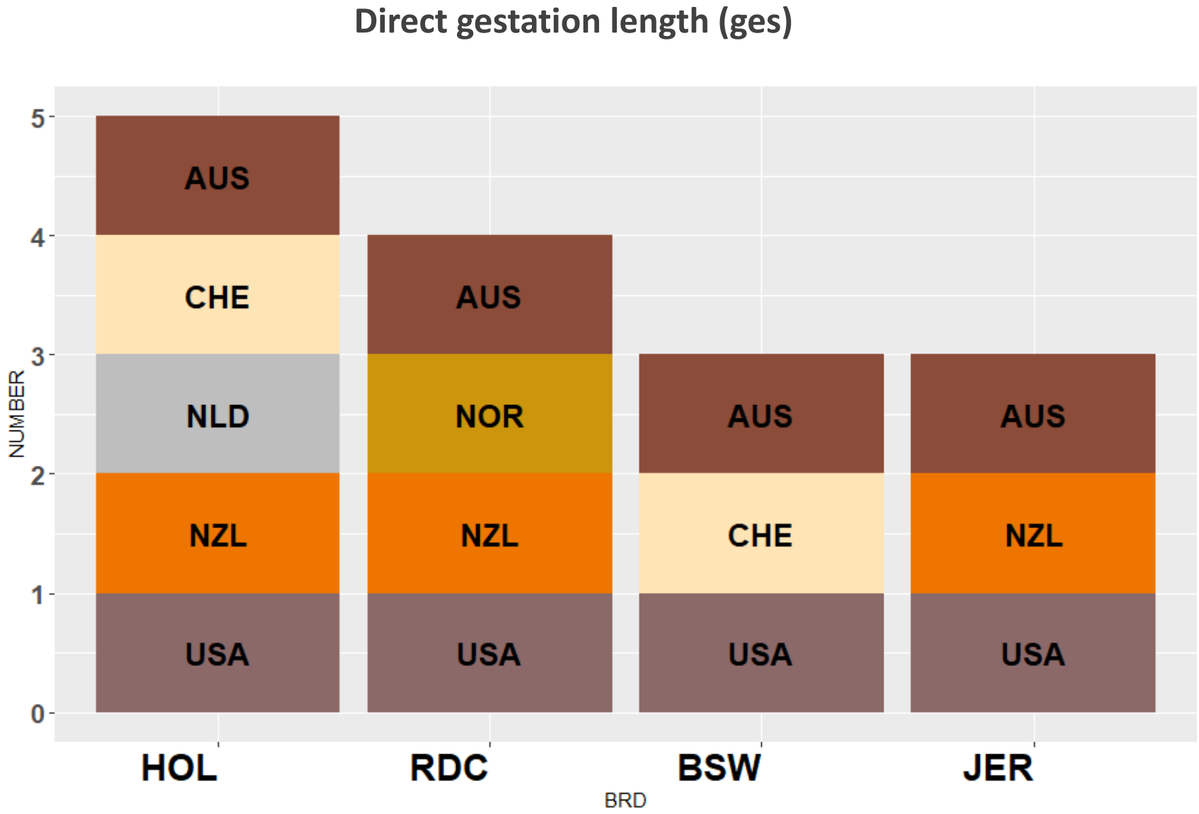
- In general for **Claw health**: EBVs correlation for **HOL** breed was between 0.9 (**dde- CZE**) and 0.977 (**wld- NLD**)

- For **Metabolic disease**: EBVs correlation for **HOL** breed ranged from 0.924 (**mfe- NLD**) and 0.998 (**sck –NLD and mfe - DFS**)

Conventional MACE for Direct Gestation Length

- Ges included in the first official test run in **May 2025**
- 5th trait in Calving Trait Group
- Results from the May test run were similar to the research run
- EBVs' correlation between May test run and research run ranged between **0.9958** and **0.9996**

Participating countries:



Remarks and Conclusions- Direct gestation length

- Low raw correlations were improved drastically by having **direct gestation length** from **ITA** and **CHE**

- **May test** run results for ***direct gestation length*** also showed the promising results both for across-country correlations and EBVs and reliability correlations

- All participating countries confirmed to participate **for ges** as the *5th* trait for calving in the **Interbull official Routine August run 2025** offered as a **Conventional MACE Service**

- **GMACE and Intergenomics for *ges***
  → **September test run 2025**

Remarks- New Trait Groups

- New Trait Groups for **metabolic disease (3 traits)** and **claw health (6 traits)**
- Test run offered in ***September 2025.***
- Type of service –> ”**Conventional MACE**”
- Seeking comfirmation on participating countries → Business Meeting.

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Interbull Centre thanks
all participating countries,
Interbull Technical Committee
and Interbull Steering Committee