

Interbull Technical Workshop

Welcome





# Interbull Technical Workshop

Matthew Shaffer  
Interbull Chair

14-15 February 2023



THE GLOBAL STANDARD  
FOR LIVESTOCK DATA



# Technical Workshop Organisers

## Local Organisers

- ANAPRI – Dr Daniele Vicario
- AIA – Dr Mauro Donda
- Maccarese – Dr Claudio Destro
- Interbull Centre

## Program Committee

- Pete Sullivan (Chair GPS and FutureMace WG)
- Esa Mäntysaari (Chair Validation WG)
- Gerben de Jong (Chair ITC and NTP WG)
- Valentina Palucci (Interbull Centre)
- Toine Roozen (Interbull Centre)



# Technical Workshop Program

## Today (14 February 2023)

09:00 – 12:00

New Traits

13:00 – 16:00

Validation

16:00 – 18:30

Visit to Maccaresse's Farm (Bus leaving at 16:10)

20:00 – 23:00

Dinner & return to Hotel (Bus leaving the Hotel at 19:30)

## Tomorrow (15 February)

08:15

Bus leaving from Hotel

09:00 – 12:00

Future Mace

12:00

Lunch

13:30

Bus leaving to hotel



# Technical Workshop Participants

- 58 Registrations
- 20 Countries across three continents
- 29 Organisations





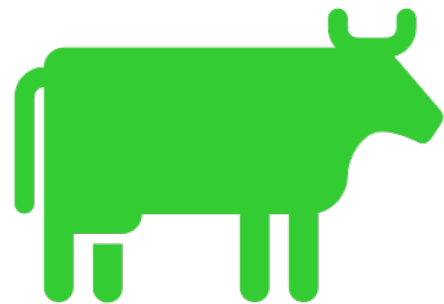
# 2020-2023 Strategic Plan - Goals



Meeting future data service needs



Continuously improve core services



Defining a new traits pipeline



Strengthening governance



Providing international evaluations in the genomic era



Driving branding and marketing



# Thank You



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Network. Guidelines. Certification.





# New Traits Pipeline

14 February 2023

G. de Jong, E. Nicolazzi, V. Palucci, T. Roozen



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# Outline

- ❖ Why interest in new traits by Interbull
- ❖ How information on traits is gathered
- ❖ Services Interbull can provide
- ❖ Goal of this session of the workshop



# New Pipeline for Additional Traits

➤ From the 2020-2023 Interbull Strategic Plan:

✓ Strategic Goal #2: *Defining a new traits pipeline*

❖ 2021 Steering Committee set up a dedicated working group

➤ G. de Jong (chair), E. Nicolazzi, V. Palucci, T. Roozen

➤ Main tasks:

- ✓ Identify key decision factors for implementing any traits
- ✓ Define infrastructure needed and programs/methodology
- ✓ Develop business model, business plan and appropriate fee structure





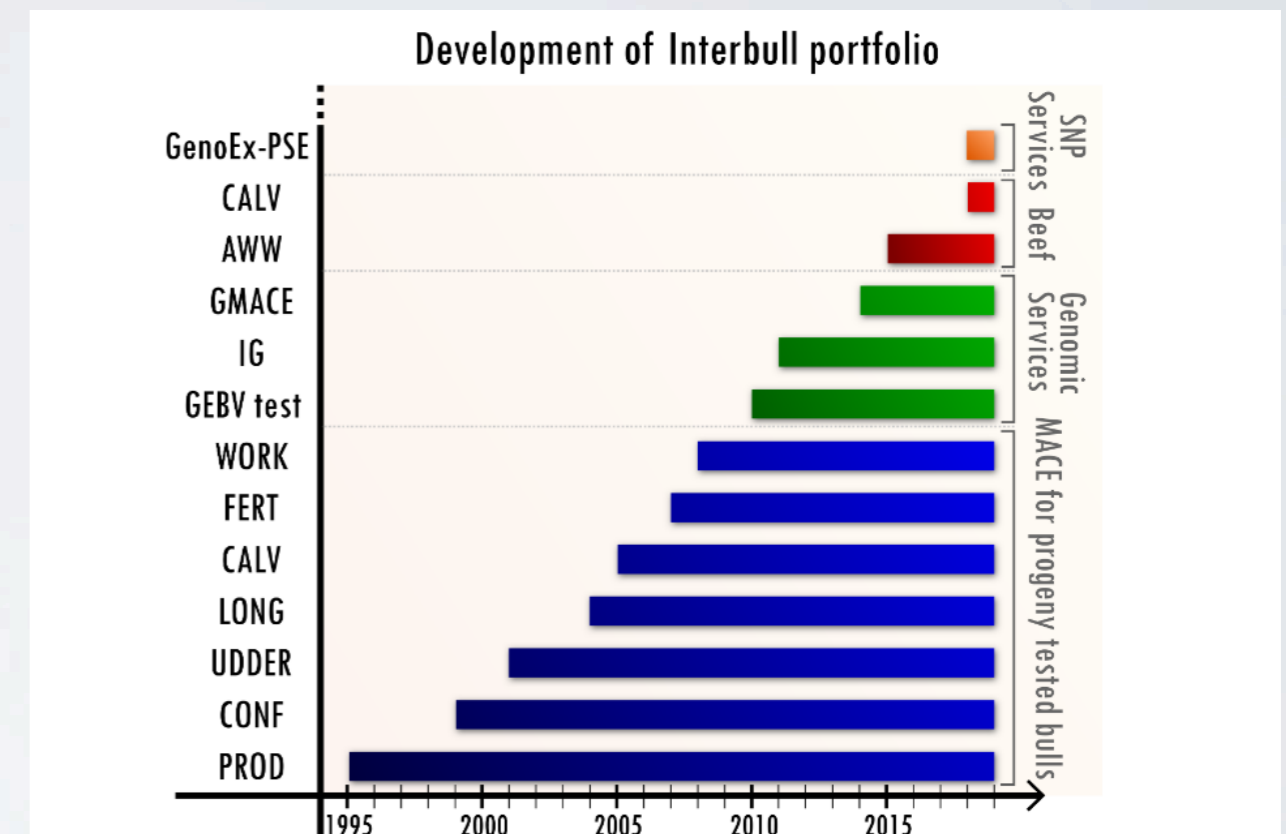
# New Traits Pipeline: Why?

❖ Over the years, countries have developed EBVs for many more traits than currently evaluated internationally (e.g. claw health, feed intake, metabolic disorders..)

❖ Interbull would like to get a better overview of the needs from its members, given that:

➤ Different countries are on different stages of:

- Collecting data
- Research phase
- Developing genomic evaluations
- Different scenarios per breeds



=> Hence the need to collect your specific feedback on a more routinary basis...



# New Traits Pipeline: Why?

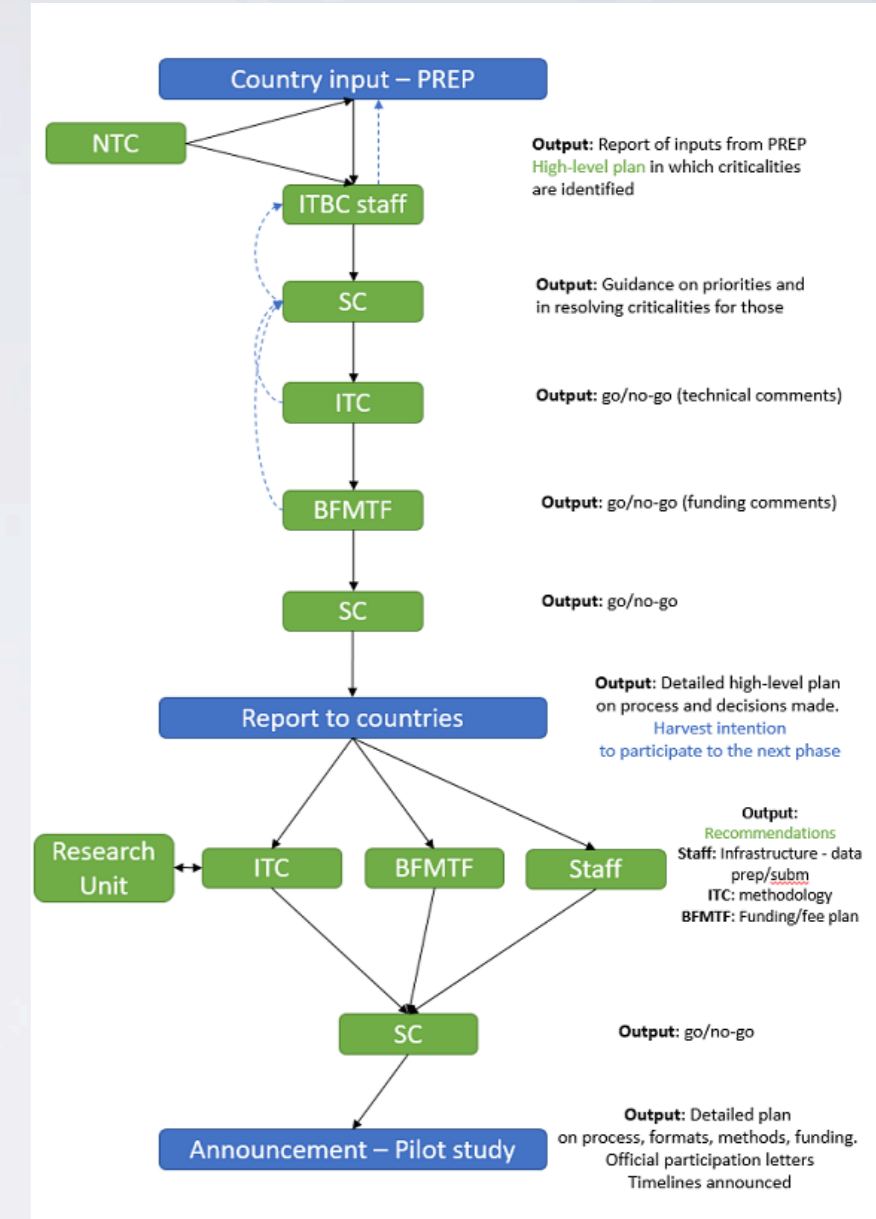
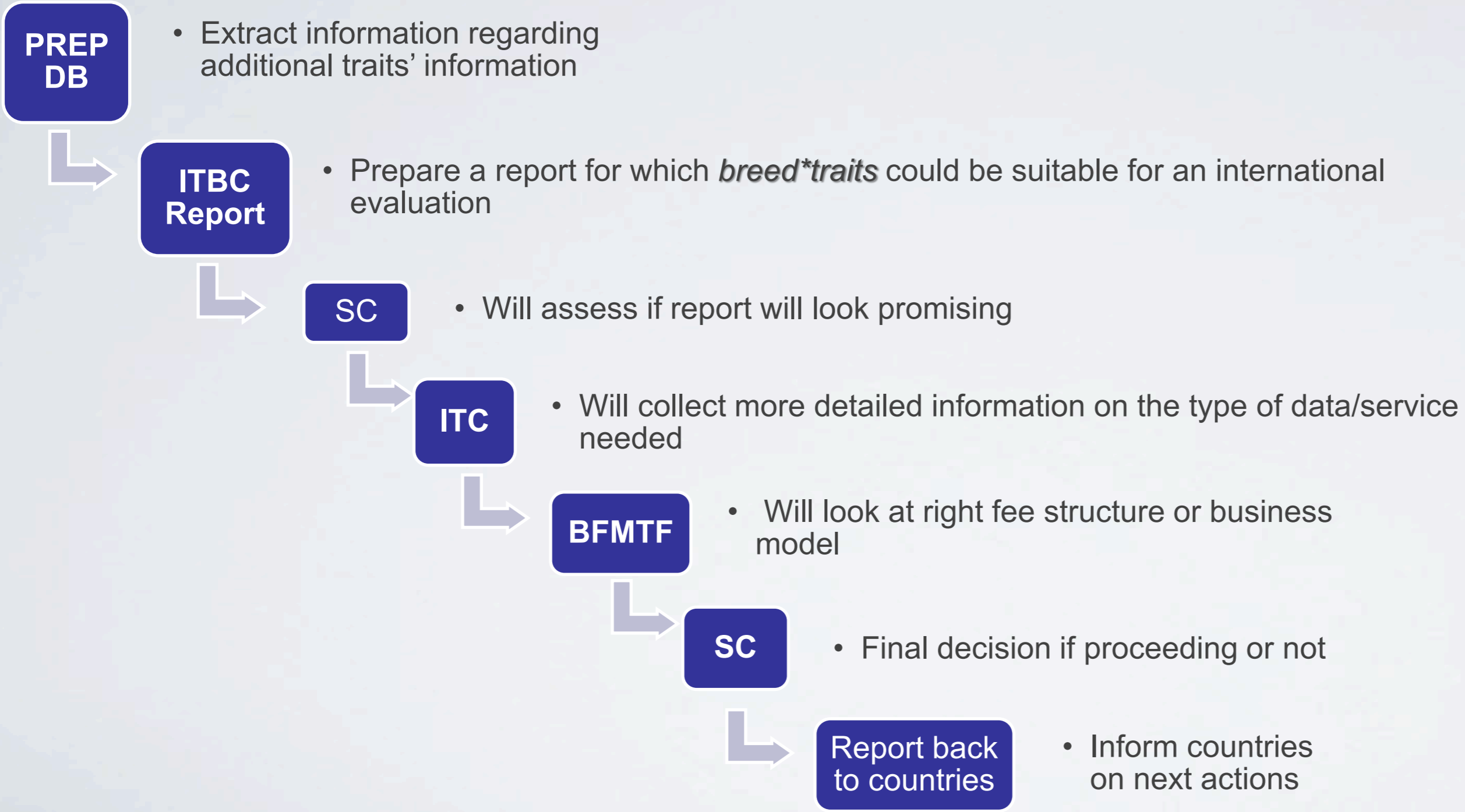
❖ Interbull would like to get a better overview of the needs from its members: trait x type service

- Which traits are considered important to have an international evaluation for?
  - Which traits have enough data available?
  - Which traits have a national evaluation (conventional/genomic) in place?
  - Is there a need to combine information (data/EBV) across countries?
- What service is requested?
  - One of the current available
  - New service
  - Service within a specified group of countries

Interbull Existing/Developing Services	Required Input	Required National Evaluation	Output
<b>MACE</b>	Nat EBV + ped	Conventional Evaluation	Int EBV
<b>GMACE</b>	Nat GEBV + int EBV + ped	Genomic Evaluation	Int GEBV
<b>InterGenomics</b>	Genotypes + int EBV + ped	Conventional Evaluation, Genomic evaluation (optional)	DGV, int GEBV, SNPs effects
<b>SNP MACE</b>	Nat SNP effects	Genomic evaluation	Int SNP effects
<b>InterBeef</b>	Phenotypes +	Conventional Evaluation	Int EBV



# New Pipeline: Process Overview





# New Traits Pipeline: Overall Outcome

➤ Main objectives that the new traits pipeline's strategy would like to achieve:

- ✓ Make Interbull Centre closer to members' needs
- ✓ Increase dynamics for expansion of Interbull portfolio
- ✓ Provide the right service(s) to members
  - ✓ Service should be financially viable
  - ✓ Take full advantage of tools already available at Interbull Centre



# New Traits Pipeline: Collect information

- ❖ Help Interbull to find the needs for its members by:
  - Make use of the PREP database
  - Submit information on traits - not currently in Interbull's portfolio - but of importance for your breed(s), using the dedicated PREP's *other traits* online form
  - Submit information on
    - All traits
    - Focus on gestation length, retained placenta, milk fever
  - Information collected reviewed and presented, together with the new pipeline's strategy, at this workshop





# Workshop

- Share information on traits from survey
  - 3 most mentioned traits -> presentation Valentina
- Discuss with panel value of these 3 traits
- Discuss in groups which service is needed from Interbull
  - combination of trait \* breed \* service
  - 'open' or 'closed' evaluation
- Input for SC how to proceed



# **PREP: A New Platform For Sharing Performance Recording And National Genetic Evaluations Information**

Valentina Palucci

Interbull Technical Workshop 2023 – Maccaresse, RM  
Italy



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# Outline

- Why sharing of descriptive information?
- A look at the current Interbull GE Form
- Interbull and EURC
- A look at the PREP database
  - Benefits and Scope
  - Other traits information collected
- What's Next



# Why sharing of descriptive information?

## ❖ Before first international evaluations....

- Back in the days, the increasing international trade in frozen semen and embryos notably remarked the need for a standardized documentation of methods, as applied in various countries, for genetic evaluation of dairy cattle:
- In 1985, Interbull Centre performed a very first “survey” among participating countries (25) focusing on production evaluations
- The results contained detailed information on which traits were included, how they were evaluated and expressed, and the definition of the genetic base with which comparisons were made (*Interbull Bulletin #2*)
- The purpose of publishing such information was that it should have been used in the international bull catalogues, by AI studs or breeders, and for educational purposes, wherever international information on sire evaluation procedures or breeding programs was needed.



# Why sharing of descriptive information?

- ❖ After commencing of international evaluations...
- ❖ Specific “National Genetic Forms” have been derived from an initial survey done in 1985
  - One form per trait group
  - Later on adjusted also to collect *Genomic* national information
- ❖ Descriptive national genetic evaluation information for each and every traits evaluated internationally has been collected and shared on the Interbull webpage with the aim of:
  - Facilitating access of information
    - Transparency of methodologies applied
    - Infer on most common methodologies used
    - Provide feedback for countries starting to evaluate, or improving, a given trait
  - Provide support on interpreting international results
  - Provide opportunity for trait harmonization





# A look at the current Interbull GE Forms

## ❖ Limitations of GE/GENO Forms:

### ➤ One form per *trait group*

- Difficult at times to provide same level of detailed information for each individual traits included in the group
- Set of questions not reviewed in a long time

### ➤ Format of questionnaire dealing only with description of national evaluation for *international* evaluation

- Not suitable for including description of phenotype recording
- Not easy to infer if differences do occur between the model meant for *national* or *international* evaluation

### ➤ Free text

- Sometimes difficult to identify clear similarities across trait definitions, recording proceedings, methodology applied etc.

### ➤ Limited to traits currently evaluated at international level



# Interbull & European Union

- ❖ Interbull Centre since 1996 Official European Reference Laboratory for Zootechnics
- ❖ In 2016 new EU Animal Breeding Regulation (Regulation EU 2016/1012)
- ❖ Animal Breeding Regulation addresses, among other things:
  - *Rules for the recognition of breed societies and breeding operations and for the approval of their breeding programmes;*
- ❖ From 2018: Interbull Centre: EURL<sub>ab</sub> -> EURC<sub>entre</sub>

L 204/78

EN

Official Journal of the European Union

5.8.2017

COMMISSION IMPLEMENTING REGULATION (EU) 2017/1422

of 4 August 2017

**designating the European Union reference centre responsible for the scientific and technical contribution to the harmonisation and improvement of the methods of performance testing and genetic evaluation of purebred breeding animals of the bovine species**

(Text with EEA relevance)

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,





# Interbull & European Union

*“Rules for the recognition of breed societies and breeding operations and for the approval of their breeding programmes”*

## What does it exactly mean for Interbull and Interbull Centre?

- Closer interaction between EURC and national Competent Authorities (political bodies)
- Providing necessary platform for any breeding organisations or breed societies in EU to:
  - Share publicly their performance recording and genetic evaluation procedures
  - Assess soundness of the models applied and refer back to C.A.

GE Forms and its current platform NOT UP for the job!



# PREP: The New Interbull Database

<https://prep.interbull.org>



PREP Login Help ▾

## Interbull PREP Database

Please, log in to use the system, or use a supplied direct link to fill in a form as a guest.

### Welcome to the Interbull Performance Recording, Evaluation and Publication information database!

The PREP database is developed and hosted at the Interbull Centre within the context of the Centre's function as the European Union Reference Centre (EURC) for Zootechnics and enables users to upload descriptive information regarding performance recording, national genetic evaluation systems and publication policies.

The platform is accessible to all European and International Cattle breeding organisations whether or not they are involved in Interbull Centre's International Bull evaluations for dairy (Interbull) and/or beef (Interbeef).

You will need to register in order to access the platform. Contact Interbull Centre (interbull at slu.se) if you require access to it.

The latest user manual is available under **Help** in the menu.

- ❖ Database platform entirely developed and hosted at the Interbull Centre
  - Database language: PostgreSQL
  - Server side: powered by Python and Web2py
  - Client side: developed in JavaScript, jQuery and JSTree
- ❖ Enables users to upload descriptive information regarding **Performance Recording, National Genetic Evaluation systems and Publication Policies.**
- ❖ Accessible worldwide to all Cattle Breeding Organisations regardless of their involvement with Interbull activities
- ❖ β-version released in March 2022



# Why PREP? What are its Benefits?

**PREP** prepares us all for new opportunities

- **PREP** is widening the scope: sharing information for additional breeds, populations and traits
  - **PREP** will, with time, replace the way National Genetic Information (GE) forms will be displayed:
    - ❖ Descriptive information per *trait* rather than *trait-group*
    - ❖ Reviewed and Improved/Expanded questions
    - ❖ Electronic Forms rather than flat files
    - ❖ List of pre-defined answers rather than free text
    - ❖ Easy comparison of different information available
    - ❖ Providing information on traits beyond what is included in the current international evaluations
- Improving the content, details and quality of information reported
- Facilitating submission and frequency of updated information
- Improving harmonization and standardization
- Central part of the newly proposed pipeline for Identifying next suitable traits to be included in the international evaluations



# PREP: What is Currently Available

New electronic forms for:

- Organisation's information
- Revised Electronic GE forms for:
  - Production Traits (milk, fat, protein)
  - Calving Traits (calving ease, stillbirth – direct & maternal)
  - Beef Adjusted Weaning Weight
  - Beef Calving
  - All forms populated with the latest GE's information available
- Other traits to be considered for international evaluation

The screenshot shows the PREP web application interface. At the top, there is a navigation bar with the PREP logo, 'PREP Overview Log out', and 'Help' with a dropdown arrow. Below the navigation bar, the main content area is titled 'Forms' and includes a 'Create new form' link. The forms are organized into four numbered sections:

- 1. Organization Info** [show/hide](#)
  - Organization**  
Provide information about your organization  
[Fill in blank form](#) | [View latest submissions](#)  
Submissions (drafts): 20 (63)
- 2. GE Dairy forms** [show/hide](#)
  - GE Dairy Calving**  
[Fill in blank form](#) | [View latest submissions](#)  
Submissions (drafts): 34 (77)
  - GE Dairy Production**  
[Fill in blank form](#) | [View latest submissions](#)  
Submissions (drafts): 65 (133)
- 3. Additional Info** [show/hide](#)
  - Other Traits**  
Provide information for additional traits to be considered for expansion of the Interbull portfolio (for dairy or Beef evaluations)  
[Fill in blank form](#) | [View latest submissions](#)  
Submissions (drafts): 137 (109)
- 4. BEEF Forms** [show/hide](#)
  - BEEF Calving**  
[Fill in blank form](#) | [View latest submissions](#)  
Submissions (drafts): 0 (9)
  - BEEF Live Animal Weight**  
[Fill in blank form](#) | [View latest submissions](#)  
Submissions (drafts): 0 (23)



# A Quick Look at How It Works

- ❖ Each electronic form is made up of a series of questions in a tree-structure
- ❖ The tree-structure gets created ad-hoc depending on the number of breeds/traits defined by the user

The screenshot displays the INTERBULL web application interface. At the top left, there is a navigation bar with the INTERBULL logo, the text 'PREP', and menu items 'Overview' and 'Log out (logged in as vale)'. Below this, there are links for 'Save', 'Submit', 'View current answers', and 'View last save'. The main content area is titled '1.1 Production trait data (Dairy)' and includes a message: 'Mark all the breeds and traits you are recording from two drop-down lists and press add. This will allow you later on to copy information between the breed-trait combinations.'

On the left side, a tree-structure shows the following items:

- 1. Production traits
  - 1.1 Production trait data (Dairy)
    - 1.1.1 Abondance (ABO)-milk
      - 1.1.1.1 Trait definition - production
      - 1.1.1.2 Recording method
      - 1.1.1.3 Data inclusion from
      - 1.1.1.4 Lactations/Parities
      - 1.1.1.5 Sire categories
      - 1.1.1.6 Data inclusion criteria
      - 1.1.1.7 Data extensions and adjustments procedures
      - 1.1.1.8 Evaluations and statistical models
    - 1.1.2 Abondance (ABO)-protein
    - 1.1.3 Abondance (ABO)-fat
    - 1.1.4 Aberdeen Angus (AAN)-milk
    - 1.1.5 Aberdeen Angus (AAN)-protein
    - 1.1.6 Aberdeen Angus (AAN)-fat
    - 1.1.7 Ayrshire (AYR)-milk
    - 1.1.8 Ayrshire (AYR)-protein
    - 1.1.9 Ayrshire (AYR)-fat

On the right side, the configuration form for '1.1 Production trait data (Dairy)' is shown. It features two drop-down lists: 'BREED' and 'TRAIT'. The 'BREED' list contains 'Abondance (ABO)', 'Aberdeen Angus (AAN)', 'Ayrshire (AYR)', and 'Beef Shorthorn (BSH)'. The 'TRAIT' list contains 'milk', 'protein', 'fat', and 'SNF (Soluble Non Fat)'. There are 'ADD' buttons next to each list.



# A Quick Look at How It Works

- ❖ Special built-in functionalities allows copying of answers between multiple sections
  - ❖ Possibility to further edit copied answers to adjust them to any specific breed/trait situation
- ❖ Possibility to either save partially filled form (for resuming work later on) or submit completed ones

The screenshot displays the INTERBULL web application interface. At the top, there is a navigation bar with the INTERBULL logo, the text "PREP Overview Log out (logged in as vale) Help", and action links "Save | Submit | View current answers | View last save". Below this, a "Message:" section is followed by a "form:" section.

The left sidebar shows a hierarchical navigation tree under "1. Production traits":

- 1.1 Production trait data (Dairy)
  - 1.1.1 Abondance (ABO)-milk
    - 1.1.1.1 Trait definition - production
    - 1.1.1.2 Recording method
    - 1.1.1.3 Data inclusion from
    - 1.1.1.4 Lactations/Parities
    - 1.1.1.5 Sire categories
    - 1.1.1.6 Data inclusion criteria
    - 1.1.1.7 Data extensions and adjustments procedures
    - 1.1.1.8 Evaluations and statistical models
  - 1.1.2 Abondance (ABO)-protein
  - 1.1.3 Abondance (ABO)-fat
  - 1.1.4 Aberdeen Angus (AAN)-milk
  - 1.1.5 Aberdeen Angus (AAN)-protein
  - 1.1.6 Aberdeen Angus (AAN)-fat
  - 1.1.7 Ayrshire (AYR)-milk
  - 1.1.8 Ayrshire (AYR)-protein
  - 1.1.9 Ayrshire (AYR)-fat

The main content area is titled "1.1 Production trait data (Dairy)" and includes the instruction: "Mark all the breeds and traits you are recording from two drop-down lists and press add. This will allow you later on to copy information between the breed combinations." Below this, there are two drop-down menus: "BREED" (with options: Abondance (ABO), Aberdeen Angus (AAN), Ayrshire (AYR), Beef Shorthorn (BSH)) and "TRAIT" (with options: milk, protein, fat, SNF (Soluble Non Fat)). An "Add" button is located to the right of the TRAIT menu.

Below the drop-downs is a table with the following structure:

Source	Item	Copy target(s)
<input type="radio"/>	Abondance (ABO)-milk	<input type="checkbox"/>
<input type="radio"/>	Abondance (ABO)-protein	<input type="checkbox"/>
<input type="radio"/>	Abondance (ABO)-fat	<input type="checkbox"/>
<input type="radio"/>	Aberdeen Angus (AAN)-milk	<input type="checkbox"/>
<input type="radio"/>	Aberdeen Angus (AAN)-protein	<input type="checkbox"/>
<input type="radio"/>	Aberdeen Angus (AAN)-fat	<input type="checkbox"/>
<input type="radio"/>	Ayrshire (AYR)-milk	<input type="checkbox"/>
<input type="radio"/>	Ayrshire (AYR)-protein	<input type="checkbox"/>
<input type="radio"/>	Ayrshire (AYR)-fat	<input type="checkbox"/>

At the bottom of the form, there are buttons for "Copy source answers to target(s)", "Invert target selection", and "Clear target selection".



# A Detailed Look at the Other Traits Form

Aim:

➤ *Collect* general, basic information

So to:

➤ *Assess* data availability, status & level of interest

➤ *Identify* potential new traits

PREP Overview Log out Help

Save | Submit | View current answers | View last save

Message:

Form:

- 1. Other Traits To Consider For Inclusion in the Interbull Centre Portfolio
  - 1.1. Select A Trait From The List
  - 1.2. Contact information
  - 1.3. Definition
  - 1.4. ICAR definition
  - 1.5. Unit of measurement
  - 1.6. Breed
    - 1.6.1. Brown Swiss (BSW)
      - 1.6.1.1. Recording
      - 1.6.1.2. Starting year for data collection
      - 1.6.1.3. Number of cows with observation
      - 1.6.1.4. Number AI bulls having offspring with observation
      - 1.6.1.5. Usage of data
        - 1.6.1.5.1. Clarification on data usage for genetic evaluation
        - 1.6.1.6. Priority or interest for international evaluations
          - 1.6.1.6.1. I will likely join the following services

**1.6.1.5 Usage of data**  
Define what use is made of the data you record. Select all that applies.

- Genetic Evaluation
- Genomic (single step) evaluation
- Genomic (two-steps) evaluation
- Evaluation still on a research phase (genetic)
- Evaluation still on a research phase (genomic)
- Only data collection

**1.6.1.5.1 Clarification on data usage for genetic evaluation**

- In development
- Implemented

**1.6.1.6 Priority or interest for international evaluations**

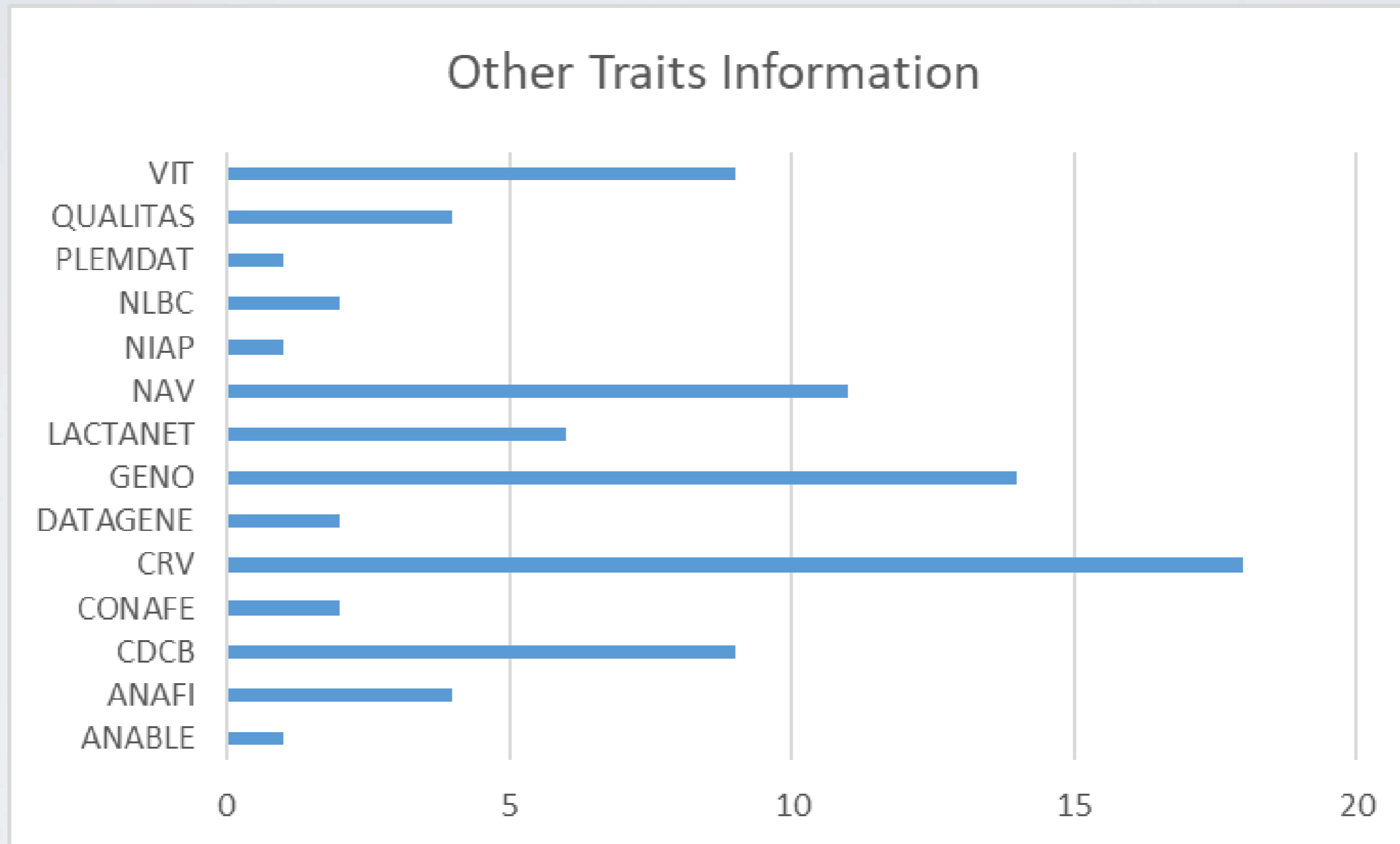
- Low
- Medium
- High
- No opinion

**1.6.1.6.1 I will likely join the following services**  
Select all that applies.

- International genetic evaluations (MACE)
- International genomic evaluation (GMACE)
- International genotypic evaluations (InterGenomics)
- Phenotype-based evaluation
- New service based on exchange of phenotype only
- Genetic evaluation based on a different model than currently available
- Genomic evaluation based on a different model than currently available
- Other Service



# “Other Traits” - Information Collected







# “Other Traits” - Information Collected

Total New Traits Reported	22	Notes
.....By 1 organisation	1	
.... By 2 organisations	12	Level of information varies
.... By 3 organisations	3	Level of information varies
.... By 4 organisations	3	Level of information varies
.... By 5 organisations	2	Level of information varies
.... By 6 organisations	1	Level of information varies

Trait	# Org
Feed intake	3
Metritis	3
Sub-clinical Ketosis	3
Clinical ketosis	4
Body Weight	4
Digital dermatitis	4
Hypocalcaemia/milk fever	5
Retained placenta	5
Gestation length	6



# Gestation length

	Cou1 (ita)	COU2 (usa)	COU3 (nld)	COU4 (nor)	COU5 (che)	COU6 (cze)
Breeds	HOL	HOL BSW RDC JER GUE	HOL BSW RDC JER SIM, DFR, MRY, MON	RDC	HOL, BSW	HOL
Evaluation	Genetic, Genomic (2-step)	Genetic, Genomic (2-step)	Genetic, Single Step	Genetic, Single Step	Genetic, Genomic (2-step)	-
Status evaluation	Implemented	Implemented	Implemented	Implemente d	-	-
Priority of Interest	Medium	Medium	Low/Medium	-	Medium	-



# Retained placenta

	Cou1 (usa)	COU2 (nld)	COU3 (nor)	COU4 (dfs)	COU5 (deu)
Breeds	HOL BSW JER	HOL BSW JER RDC SIM, DFR, MRY, MON	RDC	HOL  JER RDC	HOL
Evaluation	Genetic, Genomic (2- step)	Genetic, Single Step	Genetic, Single Step	Genetic, Genomic (2- step)	-
Status evaluation	Implemented (HOL,JER), In development (BSW)	Implemented	Implemented	Implemented	-
Priority of Interest	High	Low	Low	-	-



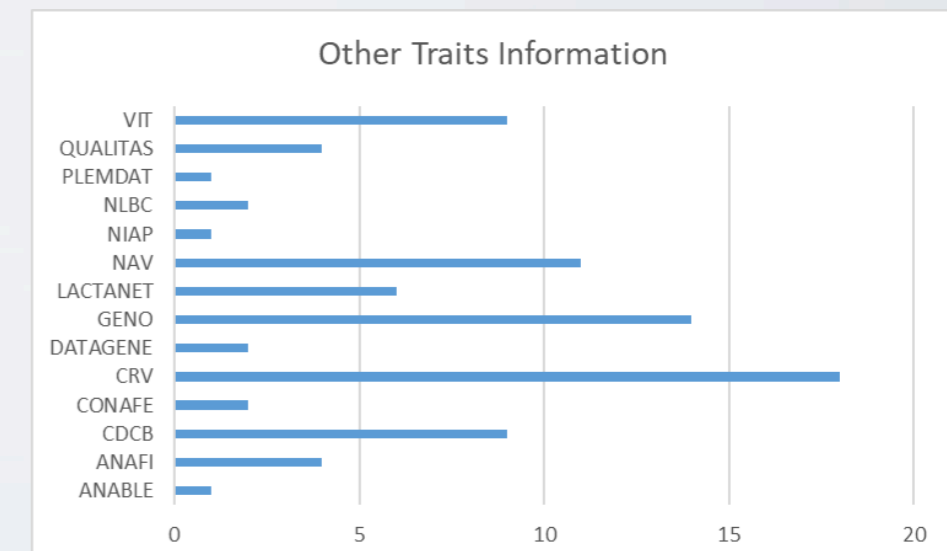
# Hypocalcaemia/Milk fever

	<b>Cou1 (usa)</b>	<b>COU2 (nld)</b>	<b>COU3 (nor)</b>	<b>COU4 (dfs)</b>	<b>COU5 (deu)</b>
<b>Breeds</b>	HOL BSW JER	HOL BSW JER RDC SIM, DFR, MRY, MON	RDC	HOL  JER RDC	HOL
<b>Evaluation</b>	Genetic, Genomic (2 step)	Genetic, Single Step	Genetic, Single Step	Genetic, Genomic (2 step)	-
<b>Status evaluation</b>	Implemented (BSW, JER) In development (HOL)	Implemented	Implemented	Implemented	-
<b>Priority of interest</b>	High	Low	Low	-	-



# Good To Remember...

- All forms always “*ON*” for editing of existing or new information
- PREP is a new platform still developing in its features
  - New features coming soon to improve user’s experience
- Almost 1 year from its launch, we hope to see an higher participation rate





# PREP: What is Next

- Inclusion of electronic forms for the remaining currently evaluated traits (*udder health, fertility, longevity, workability, conformation, interbeef traits*)
- Improving the way information are displayed
- Developing “ready to use” query for getting quick and easy overview of the information
  - At countries level
  - At breed level
  - At methodology level
  - ...

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# WELCOME TO PREP!!!!

<https://prep.interbull.org>



PREP

Login

Help ▾

PREP User Manual

Interbull Centre

## Interbull PREP Database

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# Session I – Part II

---

- Panel session (6 countries discussing 3 traits)
  - Questions from audience welcomed (time allowing)
- Break-out session (6 groups)
- Groups report
- Wrap up



---

## Panel session

*Countries experience on selected new traits*

# Panelists

---

- ITALY (ANAFIBJ): Raffaella Finocchiaro
- GERMANY (VIT): Stefan Rensing
- DNK-FIN-SWE (NAV): Gert Pedersen Aamand
- SWITZERLAND (QUALITAS): Urs Schnyder
- USA (CDCB): Ezequiel Nicolazzi
- NORWAY (GENO): Morten Svendsen

# Questions

---

- Why it is important to have an evaluation for such traits?
- What is the return value for the farmers/industry on evaluating such traits?
- Do you include them in your selection index?

# Your turn!

---

- For Break-out groups:
  - What is the return value for the farmers/industry on evaluating such traits?
  - What is your expectation for such traits on an international level?
    - What are the pros/cons of an international evaluation?
    - What is the role you envision for Interbull?
    - What kind of service is expected? (MACE, GMACE, conventional phenotypic evaluation, SNPs based)

# Grouping For WS Session I

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- GROUP I:

Simone	Savoia
Jan-Thijs	van Kaam
Juan	Pena
Gerben	de Jong
Sigbjørn	Eikje
Katrine	Haugaard
Brian	Van Doormaal
Gert	Pedersen Aamand
Adrien	Butty

- GROUP II

Kristine	Adama
Lorenzo	Degano
Javier	Lopez
Ibrahim	Jibrila
Roberta	Rostellato
Thomas	Lawlor
Toine	Roozen
Esa	Mäntysaari
Jiri	Bauer
Madeleine	Berweger

# Grouping For WS Session I

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- GROUP III

Marco	Winters
Daniele	Vicario
Noureddine	Charfeddine
Herwin	Eding
Iola	Croue
Ross	Evans
Valentina	Palucci
ismo	Stranden
Jiri	Splichal
Urs	Schnyder

- GROUP IV

Daniel	Pitt
Attilio	Rossoni
Joao	Durr
Matthew	Shaffer
Arne	Gjuvslund
Thierry	Pabiou
Zengting	Liu
Dawid	Słomian
Sebastian	Mucha
Ulrik	Nielsen

# Grouping For WS Session I

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- GROUP V

Martino	Cassandro
Reiner	Emmerling
Ezequiel	Nicolazzi
Gert	Nieuwhof
Morten	Svendsen
Fernando	Macedo
Dr. Stefan	Rensing
Barbara	Kulesza-Zydzik
Marcin	Pszczola
Marija	Klopcic

- GROUP VI

Raffaella	Finocchiaro
Christian	Edel
Andres	Legarra Albizu
Suzanne	deroo
Janez	Jenko
Joanna	Sendecka
Peter	Sullivan
Monika	Skarwecka
Magdalena	Graczyk-Bogdanowicz
Judith	Himmelbauer

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- Groups I to IV: stay in this room

- Groups V & VI: go to the “sofa” room



# Group reports

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# Wrap up

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- **Thank you panel!**
- **Thank you all for participating**
- Next steps
- Lunch time!
- Next session, **GEBV validation test**
- Back at 1pm!
- Enjoy!