



# EURC Zootechnics (Bovine Breeding)

Toine Roozen  
Interbull Centre Director  
Director EURC Zootechnics



THE GLOBAL STANDARD  
FOR LIVESTOCK DATA





# Overview

- Interbull Centre
  - International Evaluations in Dairy and Beef
- EURC Activities (2021/2022 and 2023/2024)
  - Validation
  - Performance Recording and Harmonisation
  - Interactions with EURC Endangered Animal Breeds
- Summary and Discussion

# Interbull Centre



# Interbull Centre



# Interbull Centre



Swedish University of  
Agricultural Sciences

Section of the Department of Animal Breeding and Genetics ("HGEN") of the Swedish University of Agricultural Sciences ("SLU")



Operational unit of the ICAR's Interbull SC and Interbeef WG



European Union Reference Centre (EURC) for Zootechnics (Bovine Breeding)

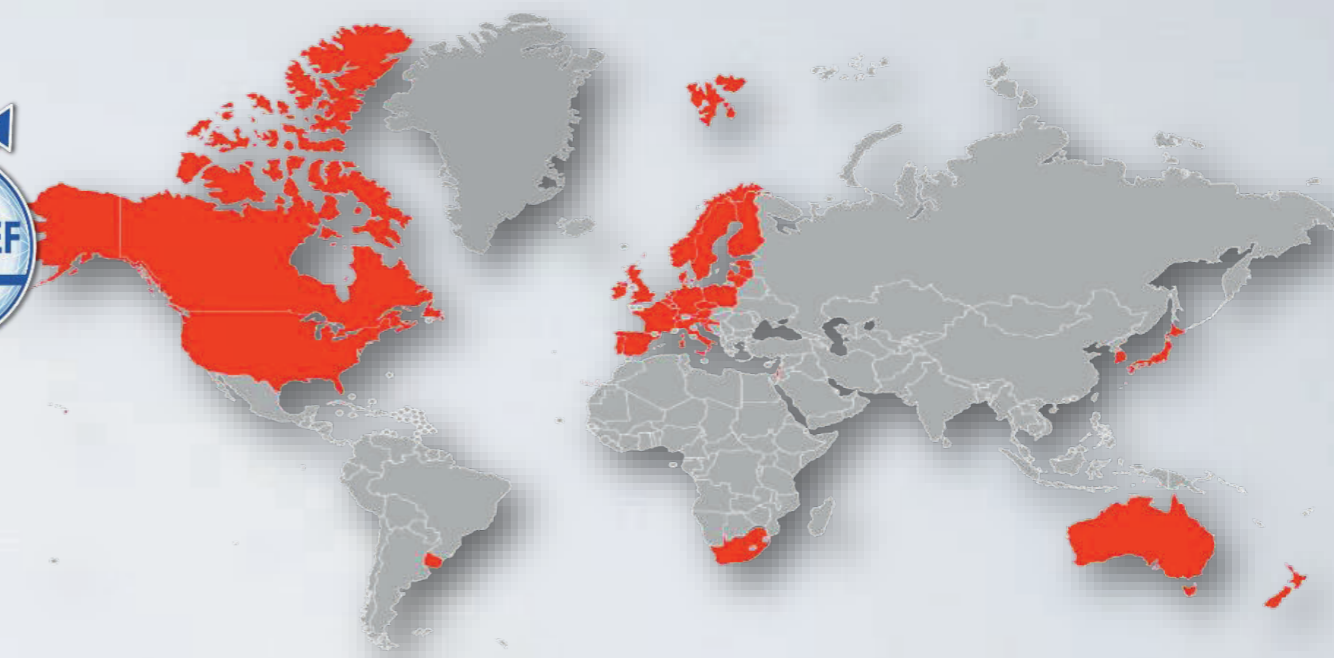


ISO 9001 certified.



# Interbull Centre

- Provide genetic information services and applied research for improvement of livestock to a worldwide network
- International Evaluations
- Validations
- Data Exchange



**IDEA - Interbull Data Exchange Area**

**GENEX**  
International Genotype Exchange Platform

**PREP db**



# International Dairy Evaluations (1995)



**Holstein**  
**Jersey**  
**Guernsey**  
**Red Dairy Cattle**  
**Brown Swiss**  
**Simmental**





# International Dairy Evaluations

## Economically important traits

- PRODUCTION (milk, protein, fat)
- CONFORMATION (body condition score, locomotion, stature, udder support + 34 other traits)
- UDDER HEALTH (somatic cell score, mastitis)
- LONGEVITY (direct longevity)
- CALVING (direct and maternal calving ease, direct and maternal stillbirth)
- FEMALE FERTILITY (heifer conception, interval, cow recycling, lactating cow ability to conceive)
- WORKABILITY (milking speed, temperament)





# International Beef Evaluations (2016)



**Aberdeen-Angus**

**Limousin**

**Charolais**

**Simmental**

**Hereford**



# International Beef Evaluations



## Economically important traits

- ADJUSTED WEANING WEIGHT
- CALVING TRAITS (birth weight, calving ease)

Under development:

- CARCASS TRAITS (carcass weight, carcass conformation score, carcass fat, age at slaughter)
- FERTILITY



**Aberdeen-Angus**

**Limousin**

**Charolais**

**Simmental**

**Hereford**



# Interbull Centre



European Union Reference Centre (EURC) for  
Zootechnics (Bovine Breeding)

Promotion of **harmonisation** or **improvement** of the  
methods of **performance testing** or **genetic evaluation**.



# Validation

Quality Assurance and  
Improvement of Genetic and Genomic Evaluations



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# EU Animal Breeding Regulation

## Genetic Evaluation and Validation

### AI Bulls must have a (g)EBV:

1. Genetic evaluation methodologies
2. Calculation of reliabilities

### Genomically evaluated bulls:

1. Genomic evaluation method validated for each genomically evaluated trait;
2. All traits to be revalidated

.....in accordance with EURC rules and standards.



# Validation

One of Interbull Centre's most important roles

- Testing national evaluation results for consistency
- Reducing bias in data, increase quality
- Public recognition:
  - Data supplied by countries is reliable
  - EU Reference Centre responsibility



# Validation (Dairy, since 1996)

- Regularly adjusted, improved, additional tests:
  - 4 Validation tests for conventional evaluations
    - “Models I – IV”
  - 1 Validation test for genomic evaluations
    - “GEBVtest”





# Validation (Dairy, results)

- International evaluations:
  - Validation of national results
  - 22 EU Member States

EU Member States	2019	2020	2021	2022 (Jan-Jul)
Conventional	99	106	53	40
Genomic	103	149	115	65
<b>Total</b>	202	255	168	105



# EURC Validation (Dairy, since 2022)

- Service introduced in August 2022:
  - For National Genetic Evaluations
  - All EU Member States
  - All breeds
  - All traits evaluated internationally
- Population size may limit relevance of tests



# Validation (Dairy, developments)

## Developments needed due to Genomic Evaluation

- “Model III” (conventional validation) needs refinement
  - Affected by shorter use of bulls: fewer bulls in test
- Focus on “GEBVtest” (genomic validation)
  - Affected by genomic pre-selection
  - Recommendations and revised software to deal with genomic pre-selection (2023)
  - (EURC Validation late 2023?)



# Validation (Beef)

## Challenges:

- Low level of AI usage
- Small contemporary groups
- Fewer “well proven” sires available

## Validation under development (2021-2023)

- Based on “old” dairy validation models / new models
- (Launch in 2024?)





# PREP DATABASE

Performance Recording, Evaluations and Publications



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# PREP DataBase

**Performance Recording, Evaluations and Publications**

## **Aims:**

- Transparency
- Comparison
- Harmonisation

## **Info collected and shared:**

- National evaluations
- International evaluations
- Beyond populations in international evaluations

## 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](mailto:interbull@slu.se)) if you require access to it.

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## Forms

[Create new form](#)

### 1. Organization Info [show/hide](#)

**Organization**  
Provide information about your organization  
[Fill in blank form](#)  
Submissions (drafts): 18 (45)

### 2. GE Dairy forms [show/hide](#)

**GE Dairy Calving**  
[Fill in blank form](#)  
Submissions (drafts): 32 (47)

**GE Dairy Production**  
[Fill in blank form](#)  
Submissions (drafts): 62 (110)

### 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](#)  
Submissions (drafts): 106 (87)

## Forms and submissions overview

Here is a list of available forms, and links to the submissions made to each form.

### Detailed info on:

- Production (dairy)
- Calving (dairy)

### Next:

- Calving (beef)
- Adjusted Weaning weight (beef)
- Fertility (dairy)
- Carcass Traits (beef)

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44 'Other traits', including:

- Health traits
- Efficiency traits
  
- Trait definition
- Number of years of data
- Method of evaluation



# Harmonisation of traits

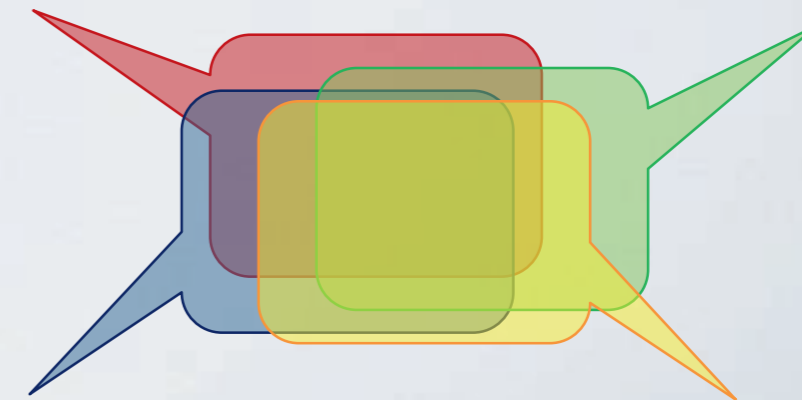
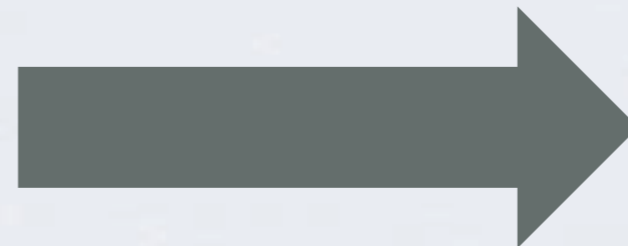
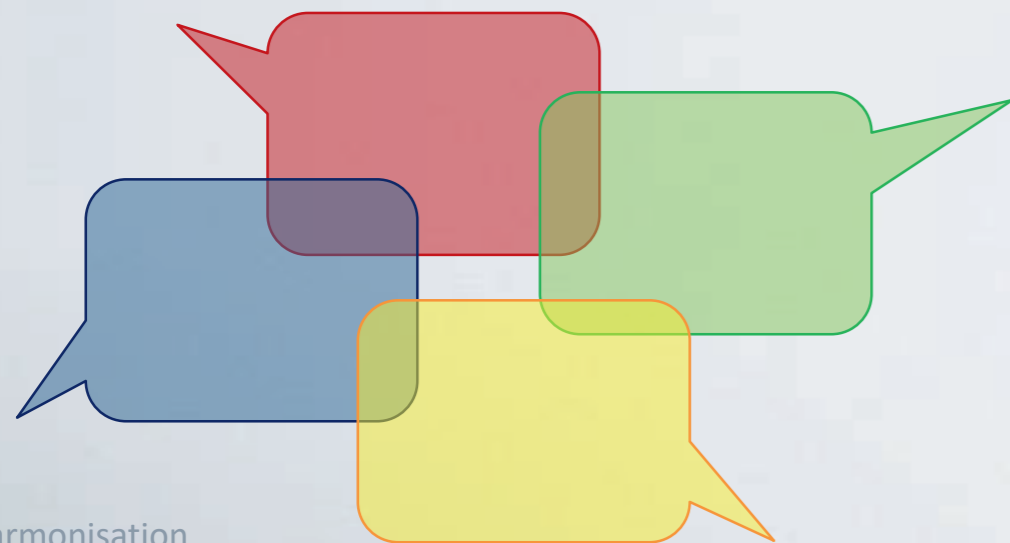
- Trait correlations play an important role in the quality of the estimations for international evaluations.
- Harmonisation of traits helps to **improve correlations** and thus to achieve **better national and international evaluations.**





# Harmonisation of traits

- Information from PREP DB
- Guidelines to improve across country compatibility of **Calving Traits**
- Next: **Fertility**









# EURC Synergies

**EURC Zootechnics (Bovine Breeding)**  
**EURC Endangered Animal Breeds**



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# EURC Synergies

**Collaborate / Organise joint meetings**

**Validation:**

- EURC Validation

**Transparency:**

- **Performance Recording, Evaluation, Publication Database**
- Possibility to work together

**Genomic Data Exchange for small cattle populations?**

- International Genotype Exchange Platform at Interbull Centre

# GENOEX



## International Genotype Exchange Platform

International Genotype Exchange platform for Animal Breeding

### About the Services

The GenoEx platform is created to allow worldwide exchange of SNP data in efficient and secure way.

It provides two alternative services, depending on the customers' needs:  
limited Parentage SNP Exchange (GenoEx-PSE) and full Genomic Data Exchange (GenoEX-GDE).

- **GenoEx-PSE** allows exchange of limited sets of SNPs - standardised for parentage analysis - to facilitate and streamline the activities carried out by organisations that are responsible and/or active in parentage integrity.
- **GenoEx-GDE** is extended to full genotypes exchange, controlled fully by the data owners and it covers a variety of available genotyping chips.

### GenoEx Documentation

- [List of Genotyping laboratories](#)
- [List of Platform-Array Combinations](#)

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# Summary

## **Increased Harmonisation:**

- **P**erformance **R**ecording, **E**valuation, **P**ublication Database
- Increased Transparency; Thorough analysis; Recommendations

## **Improvement through validation:**

- Performing Validation Tests
- Develop and introduce new tests
- Extend Populations

**Explore synergies with EURC EAB**

