



Two new Conformation Traits

Background

Following a collaboration between the International Committee for Animal Recording (ICAR) Conformation Working Group and the World Holstein Friesian Federation (WHFF), two new conformation traits, udder balance and front feet orientation, have been identified and approved as standard traits for Holstein and other dairy breeds. The preliminary information on trait definition and scoring of new conformation traits was collected and reviewed by ICAR and WHFF. Data supporting these traits were submitted by 10 organizations, six of which are based within the European Union (EU).

Work performed and achievements

To evaluate the level of interest among countries in the specified traits and breeds, the Interbull Centre requested participating organizations to provide information through the PREPdb database, focusing on the following aspects:

- Trait definition
- Whether an ICAR definition exists for the trait
- Availability of genetic and/or genomic evaluations for the trait and breed
- Level of interest and preferred type of international evaluation

This work aligns with the European Union's working program aimed at supporting the standardization and harmonization of performance testing methods and genetic evaluations, where relevant. Such initiatives may be driven by the European Commission (EC), Member State Competent Authorities (MS CA), breed societies or their designated third parties, or through analysis of existing data sources such as PREPdb. In this case, all information was requested from Interbull users, acting as designated third parties on behalf of breed societies.

Information on the availability of these traits across breeds, as well as their definitions, as reported by six EU-based organizations, is presented in Table 1. In addition, four non-EU countries also provided relevant information, including Switzerland, Japan, Australia and Canada.





Table 1. Two new conformation traits, breeds, definition of the trait submitted to PREPdb by each organization with the EU.

Organization (Country)*	Breed(s)	Front Feet Orientation	Definition	Udder Balance	Definition	ICAR definition?
CRV (NLD)	JER,HOL,RDC,BSW	✓	The direction of the tip of the front feet, where the direction of the most deviant foot determines the score	–	Difference in depth between front and rear udder	No
CGEN (POL)	HOL	✓	No definition provided	✓	The difference in depth between front and rear udder	Yes
CONAFE (ESP)	HOL	✓	The direction of the front feet viewed from behind	✓	The balance between the fore and the rear udder	Yes
VIT (DEU)	HOL, RDC	✓	The orientation of the front feet	✓	Levelness of udder floor	Yes
GENEVAL (FRA)	HOL	–	–	✓	The balance of the udder floor between front and rear udder	YES
NAV (DFS)	HOL, JER, RDC	–	They don't score this trait atm	✓	When classifying udder balance the depth of the rear udder is assessed in relation to the depth of the front udder. The trait is assessed from the side where the deepest point of the rear udder is compared with the point where the front teats are located. For AMS based on teat positions average difference in distance to the floor between the front and rear teat ends	YES

*NLD= the Netherlands, POL=Poland, ESP= Spain, DEU= Germany, FRA=France, DFS= Denmark-Finland-Sweden





Results and Impact

The review of trait definitions indicated that nearly all six EU countries applied a consistent definition for the two new conformation traits. This consistency supports the establishment of a common definition, which is essential for the harmonization of trait recording across countries. The current trait definition has been harmonized by collaboration between ICAR and WHFF. Trait definition plays a critical role in the estimation of heritability; therefore, consistency in definitions can contribute to higher across-country genetic correlations in international evaluations.

An assessment of the availability and use of data, specifically whether genetic and/or genomic evaluations are implemented and at what stage showed that three out of the six EU countries including Germany (DEU), Denmark-Finland-Sweden (DFS), and the Netherlands (NLD), expressed a medium level of interest in a MACE Interbull evaluation. Notably, all three countries already have genetic and/or genomic evaluations in place for these traits. Table 2 summarizes the status of countries and breeds for each of the traits, namely front feet orientation and udder balance.

Table2. Summary of breeds for countries with the level of Interest that could likely join an Interbull research MACE Evaluation for the two new conformation traits.

Fron Feet Orientation		
Breed	Country*	Level of Interest/Service
HOL	DEU, CAN, NLD	Medium /MACE
RDC	DEU, CAN	Medium / MACE
JER	CAN, NLD	Medium/MACE
Udder Balance		
HOL	DEU, CAN, DFS, JPN, NLD	Medium /MACE
RDC	DEU, CAN, DFS, NLD	Medium / MACE
JER	CAN, DFS, NLD	Medium / MACE

*EU countries are shown in bold.





International Bull Evaluation Service

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As shown in Table 2, there is an interest among EU countries, across different breeds for both traits.

The impact and outcome of this analysis support initiating a research phase aimed at integrating these new traits into international genetic evaluation frameworks. This could begin with the Interbull MACE, ultimately contributing to the expansion of the Interbull portfolio of conformation traits and encouraging broader participation from EU countries.



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