An ontology approach for the collection and management of genetic traits and milk protein data

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The aim of this study is to propose a new approach for the collection of data from genetic traits and milk proteins and to manage this information in a ontology database

All input data are recorded in the database with a **priority** that is defined by **the database update algorithm**. Priority levels have been designed to represent the reliability of the data, based on the type of genetic test and the source of the data.

- **TYPE OF GENETIC TESTS' PRIORITY LEVEL:**

Direct analysis (marker-based tests) > Indirect tests (haplotypes) > Imputation

- **SOURCE OF DATA'S PRIORITY LEVEL:**

Test by Accredited laboratories > Genomic test files > Official documents by foreign herdbooks > Old genetic traits management system > Unofficial documents

In this way, the **most reliable information is considered official** herd book data, according to the established priorities.

INPUT GENETIC TRAITS' DATA

SOURCE OF DATA'S PRIORITY LEVEL

TYPE OF GENETIC TESTS' PRIORITY LEVEL

DATABASE UPDATE ALGORITHM

PRIORITY = RELIABILITY OF THE DATA

RELATIONAL DATABASE
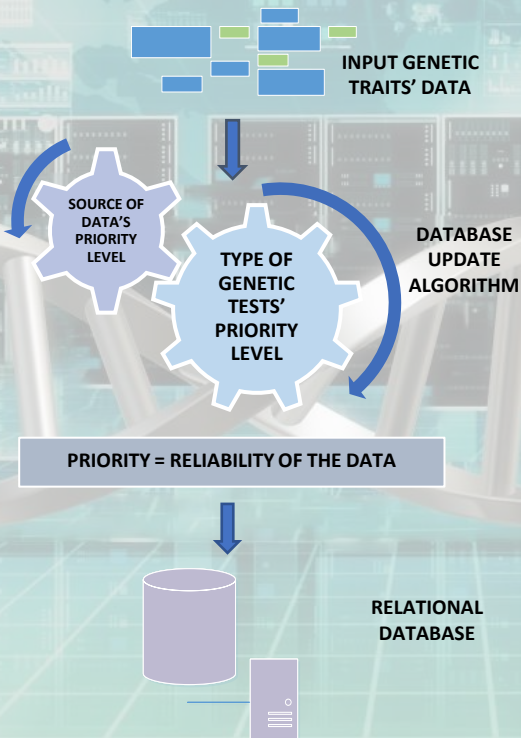
UPLOADING DATA FOR THE FIRST RELEASE ON 14 JULY 2022

0   3.000.000   6.000.000   9.000.000   12.000.000
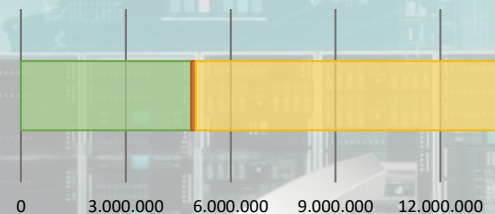
	no. of data entered
☐ MARKER-BASED TESTS	4.873.098
☐ OLD GENETIC TRAITS MANAGEMENT SYSTEM	125.522
☐ HAPLOTYPES	8.779.924

Conclusion

Key elements of the ontological system of genetic traits:

- Data reliability
- Reduction of human errors
- International harmonization and data exchange
- Flexibility and future interaction with Interbull