# MONTBELIARDE

## NEW PROOFS 2022

> NEW ISU

> NEW SINGLE STEP CALCULATION METHOD

UMOTEST
GENETIQUE MONTBELIARDE

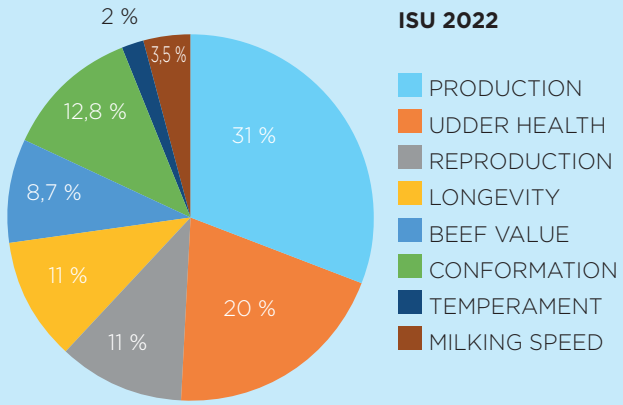
# Revision of the Montbeliarde ISU

The last revision of the ISU index was in 2012. A reform of a breed's selection index was necessary for the selection objectives to correspond to the economic conditions of the Montbeliarde herds, the genetic progress of the breed, and to integrate new traits available. The new ISU has been created by Montbeliarde Association in partnership with the selection companies and IDELE support.

## Major changes in the new ISU

> Affirm body condition and beef value of the Montbeliarde breed
> Give more weight to functional traits: longevity and udder health
> Rebalance the fat & protein % in the production category
> Integrate selection for improved temperament

| % | ISU 2012 | ISU 2022 | |
|---|---|---|---|
| PRODUCTION | 45,0 | 31,0 | ↘ ↘ |
| UDDER HEALTH | 14,5 | 20,0 | ↗ ↗ |
| REPRODUCTION | 18,0 | 11,0 | ↘ |
| LONGEVITY | 5,0 | 11,0 | ↗ |
| BEEF VALUE | - | 8,7 | ↗ ↗ |
| CONFORMATION | 12,5 | 12,8 | |
| TEMPERAMENT | - | 2 | ↗ |
| MILKING SPEED | 5,0 | 3,5 | ↘ |




## PRODUCTION

For production, the former INEL category changes its name to **PRODUCTION INDEX**.
The weights evolve with more importance given to fat production.

**PRODUCTION +56**

***Daughters** 476 **Rel.** 95%*

| MILK | P kg | F kg | P% | F% | digeR |
|---|---|---|---|---|---|
| +713 | +28 | +37 | +0,06 | +0,03 | +0,1 |

Kappa Casein **AB** Beta Casein **A1A2**

# CONFORMATION

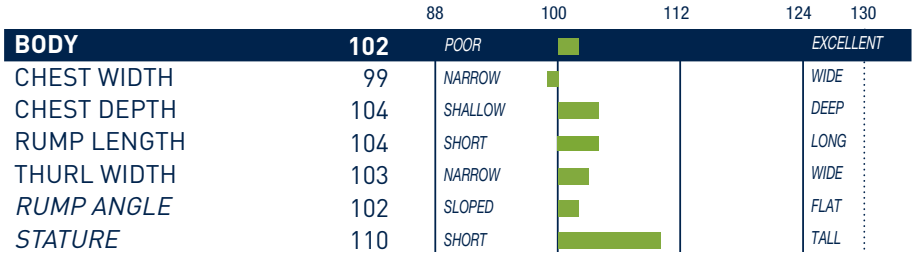
The emphasis placed on various conformation traits has changed.

A noticeable change is the new category of **BODY** which combines Body & Rump. Also, the new trait, «rear teat placement", has been added to the udder category.

## > BODY

Body category combines the former Body & Rump category.

**Body = 30%** CHEST WIDTH **+ 20%** CHEST DEPTH **+ 25%** THURL WIDTH + **25%** RUMP LENGTH



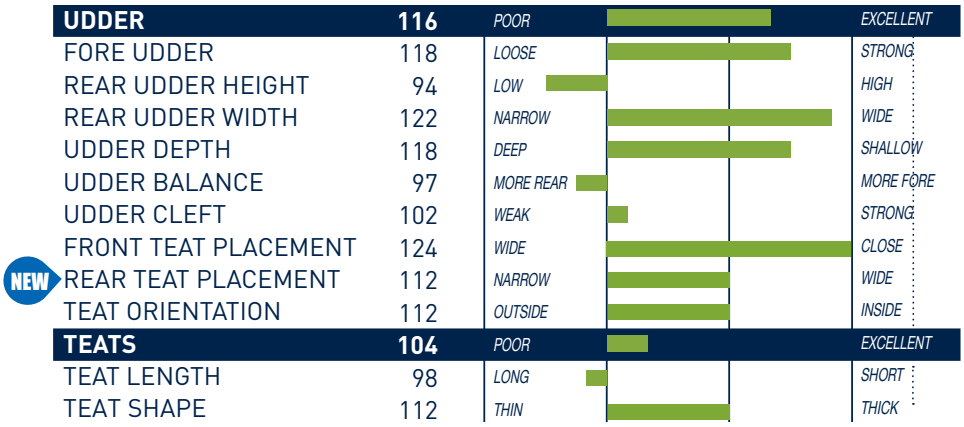

The traits **BODY DEPTH** & **RUMP WIDTH** are no longer evaluated because they are strongly related to **CHEST DEPTH** & **THURL WIDTH**.

The traits **STATURE** & **RUMP ANGLE** are still evaluated but are not included in the Body category.

## > FEET & LEGS

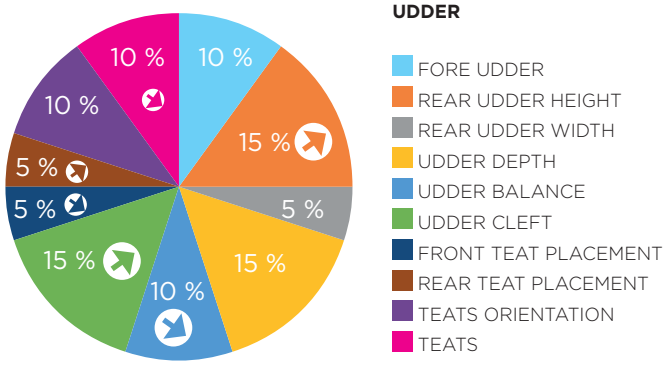
**HOCK THICKNESS** is no longer evaluated.

## > UDDER




A new trait **REAR TEAT PLACEMENT** now has a 5% emphasis in the UDDER category. Values higher than 100 indicate wider spacing of the rear teats. On the contrary, values less than 100 indicate closer spacing.

**REAR UDDER HEIGHT** and **UDDER CLEFT** are given more weight in the **UDDER** category. The traits of **UDDER BALANCE** and **FRONT TEAT PLACEMENT** and the **TEATS** category are reduced in weight.



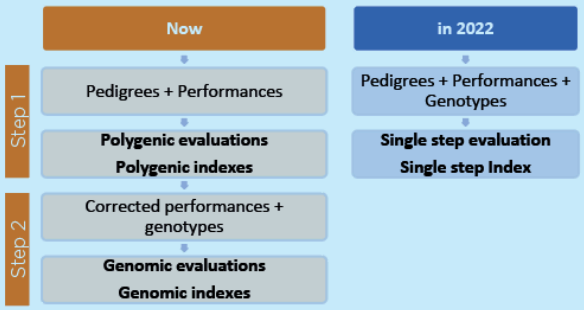
# New genetic calculation method: the SINGLE STEP

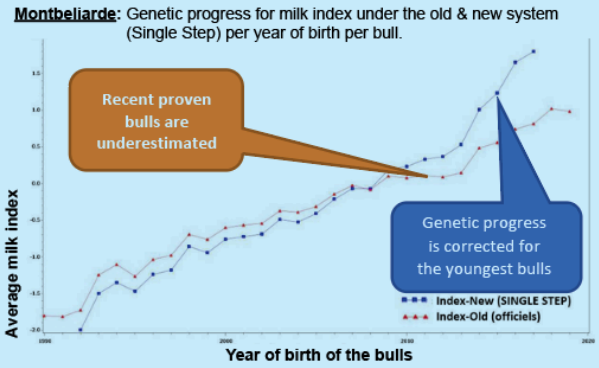
Starting with the April 2022 proofs, a new calculation method called SINGLE STEP is used. It has been implemented broadly by all our partners: IDELE, GENEVAL, ALLICE and INRAE within the UNIGENO project and is used in the genetic estimation of all French breeds using genomic information. This method is also used internationally.

## Why a new indexing method?

For several years, the percentage of genotyped animals have increased. Thanks to this tool, animals with poor performance predictions are culled before they go into production, both males and females. Thus, only the best animals are given an opportunity to contribute performance data, which leads to an **overestimation of the reference population** (those animals with genomic testing + performance information) and an **underestimation of the indexed animals** (the whole population): this concept is called **pre-selection bias**.

The objective of the single step method is to correct this pre-selection bias by considering all the information available for all animals simultaneously, whether they enter production or not. With the single step, noticeable information increases, particularly in the evaluations of young animals, now corrected for the pre-selection bias.




## SINGLE STEP, what are the main evolutions?

> Change from two steps to one: single step means all pedigree, performance, and genotype data are evaluated simultaneously
> All genotypes are considered in the reference population
> A method that now fairly compares genotyped and non-genotyped animals
> Correction of the pre-selection bias

## What are the benchmarks with these new scales in the indexes of your females?

> **New reference points will define the top percentiles of animals.**

> Comparison of female indexes by evaluation methods - Umotest data

| | ISU | | P% | | MILK | | TYPE | | UDDER HEALTH | |
|---|---|---|---|---|---|---|---|---|---|---|
| | BEFORE | NOW | BEFORE | NOW | BEFORE | NOW | BEFORE | NOW | BEFORE | NOW |
| TOP 1% | 145 | 167 | +0.24 | +0.36 | +906 | +1974 | 122 | 129 | +1.6 | +2.1 |
| TOP 5% | 136 | 156 | + 0.17 | + 0.26 | +690 | +1180 | 117 | 122 | + 1.1 | + 1.6 |
| TOP 10% | 131 | 150 | + 0.14 | + 0.21 | +574 | +1018 | 114 | 119 | + 0.9 | +1.3 |
| TOP 25% | 122 | 139 | + 0.08 | + 0.13 | +378 | +739 | 110 | 113 | + 0.5 | + 0.8 |
| TOP 50% | 111 | 124 | + 0.02 | + 0.04 | +157 | +409 | 104 | 107 | + 0.1 | + 0.3 |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