

Robust dairy cows, where management and genetics meet.

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In the Netherlands, we use the following definition of a robust dairy cow: “A robust dairy cow is a cow that is able to maintain homeostasis in the commonly accepted and sustainable dairy herds of the near future.” The demand for robustness animals comes from the demands from society for higher welfare, food safety and animal health standards, and is fuelled by two interacting trends. The first trend is caused by unfavourable genetic correlations between milk yield and reproductive problems, locomotive problems and udder health problems. The magnitude of these correlations is however rather small and the direct effect is likely to be small because in most countries multitrait selection is applied. Albeit this cumulative gradual reduction in genetic levels for fertility and health coincide with the trend that management is increasingly coming under pressure. For example, due to economic pressure, herd size is increasing and therefore the amount of labour available per animal is decreasing. Also, pressure on management increase because previously simple and effective management tools, such as the use of antibiotics, are now perceived as potential risks for human health and therefore regulated much stronger. It is the combination of the small changes in genetic level and the opposite changes in management that fuel the demand for robust dairy cows.

Several genetic concepts exists that may allow selection for robustness more directly, including or not the interaction with environment. In the RobustMilk project (KP7) we focus on the development of phenotypic, statistical and genomic selection tools that allow dairy farmers and the dairy industry to refocus their selection decisions to include additional traits such as dairy cow robustness. Phenotypic tools focus on the use of MIR to predict energy balance and milk components, statistical tools are developed to estimate breeding values for macro and micro environmental sensitivity, and genomic selection tools are developed from the comprehensive database research herds that partners from the Netherlands, Belgium, Sweden, Scotland and Ireland have.