Animal and Bioscience Department

Title

Genetic selection for improved milk and meat product quality in dairy, beef and sheep

Abstract

Despite its fundamental importance for adding value to the Irish food industry, product quality is a suite of traits missing from the Irish national dairy, beef and sheep breeding objectives. International research shows that genetic variation in product quality exists; however the inclusion of product quality in Irish breeding objectives is hampered by a lack of the required tools. The objective here is to provide all the necessary tools to commence breeding for product quality in dairy cows, beef cattle, and sheep in Ireland. These tools include 1) identification of the quality traits with greatest potential to add value, 2) methods to routinely acquire phenotypic information at a low cost, 3) estimates of the genetic parameters necessary to identify genetically elite animals, 4) identification of genomic regions putatively associated with product quality for improving the accuracy of selection in the long term, 5) derivation of the relative importance of traits necessary for optimally including product quality in the national breeding goals, and 6) product differentiation based on the rapid phenotypic measurements. We will achieve these objectives through collaboration between animal production scientists, geneticists, and milk and meat processing scientists. The substantial budget requested will ensure that this study is sufficiently statistically powered. Results are "close-to-implementation" but also contribute substantially to the knowledge-based-bioeconomy. The outcomes from this study are all the required tools and information to facilitate the inclusion of product quality in national breeding objectives for dairy, beef and sheep thereby increasing profitability in the Irish Agri-Food sector.

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