

International issues in dairy cattle genetics

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International trade of dairy cattle germplasm has been growing steadily for several decades. Semen is marketed on the basis of predictions of genetic merit which must be both accurate and unbiased. National evaluations of a large number of relevant traits have been developed. Since the nineties, Interbull has contributed to the international recognition of national predictions. Performing meta-analyses of national results, Interbull routinely provides international bull rankings on the national scale of each participating country. The fast development of genomic prediction and genomic selection is transforming this context substantially. A pessimistic perception of its impact would argue that the genomic revolution: (1) favors the largest (groups of) countries able to jointly assemble large reference populations; (2) favors the already world dominant breed – the Holstein; (3) essentially promotes a unique national scale (the American (G) TPI); (4) leads to the illusion that exhaustive data recording or improvement of genetic evaluations are no longer crucial; (5) considerably enlarges the gap between two groups of countries: those that have genomic and genetic evaluations versus those that do not; (6) seriously undermines both the future quality of regular genetic evaluations and the role of Interbull; (7) opens a new era for new players (e.g. pharmaceutical companies) and for patented genetic tests. On the contrary, genomic innovation can be viewed as a unique opportunity to make genetic and genomic evaluations more robust, to share genotypes and new phenotypes internationally in a win-win context, to generate a more balanced genetic gain and to maintain genetic diversity within and across breeds. It represents the necessary tool to provide accurate predictions adapted to local conditions, properly accounting for genotype \times environment interactions, especially in developing countries. In other words, genomic selection may – or may not – become the decisive path towards more sustainable dairy cattle breeding.