

Beef Genomics Developments.

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The need to balance the competing requirements of producing more food in a more climate efficient way in the future has generated significant interest in the potential of genomics as one component of a new “animal smart agriculture”. Within this discussion is the role of the beef cow, an essential part of the agriculture eco-system and rural infra-structure in almost every country. As a consequence many countries are now looking at making substantial investments into beef genomic programs, one example of which is in Ireland, where through a co-funded program with the European Union, some €300m of funding will be invested in an ambitious genomics program over the next 6 years. It is likely that many more countries will make similar investments over the next 5-10 years, as they look to fast-track their beef genomic efforts in the future.

This will create significant challenges for beef cattle breeding systems, which generally can be characterised by being poorly connected (in terms of genetic linkages), with low levels of performance recording (especially for maternal traits) and where the majority of data is collected in pedigree herds, of limited herd size.

That said, the opportunities for rapid progress are also significant as, due to the lack of commercial business model in beef, organisations such as ICAR/Interbeef, ABRI/Breedplan and the North American consortiums have been more prepared to share both phenotypes and genotypes, than their dairy counterparts. As a consequence, it is likely that the technical challenges associated with developing large scale genomic services in the future are likely to be first met in beef cattle, where evaluations systems will have to consider multiple breeds (including cross-breeds), multiple traits and multiple countries/environments. This is already the case in Ireland, where the genomic evaluation system is based on some 20 million animals, almost 1 million of which have been genotyped, across 12 different breeds (including cross-breeds) and for 16 different goal traits.