The benefits of genotyping at farm level and the impact across the wider dairy herd in Ireland

K. Downing[1], *A. Cromie[1], J. F. Kearney[1]*

[1] Irish Cattle Breeding Federation, Highfield House, Bandon, Co Cork kdowning@icbf.com

Abstract

Genomics was launched in Ireland in 2009, following research carried out by the Irish Cattle Breeding Federation (ICBF), and Teagasc, in collaboration with wider industry partners. This made Ireland the second country in the world, after the USA, to implement this technology in a national dairy cattle breeding programme. Genomic selection has resulted in a significant acceleration in genetic gain within the Irish dairy cow population.

This paper will demonstrate the impact that genomics is having at an individual farm level but also across the wider national dairy herd since its inception.

At farm level, the Economic Breeding Index (EBI) is now the tool of choice used when selecting breeding bulls or buying in replacements. The EBI has delivered total benefits of €631m to the Irish dairy industry, which when annualised, equates to €35.6m per year. Genomics is accelerating this gain with the current annual trend in the EBI now at €11.96/year. The usage of genomic bulls has increased from 48% of recorded dairy births in 2012 to 70% in 2015.

An analysis of one of the ICBF project herds, which has been genotyping all females since 2011, has shown that gap between the within herd average and the national average increasing from €24 in 2011 to €91 in 2016. This represents an increase in herd genetic gain of over 100% above the national trend and has pushed this herd into the top 10 herds on EBI in the country.

With the cost of genotyping having dropped rapidly over the last five years (€50 down to €22 per animal), genomics for females is now becoming an attractive option for dairy farmers who wish to capitalise on the benefits of using this technology. In Ireland's case these benefits currently include genomic evaluations, parentage and breed verification. ICBF is currently researching major gene/disease defects and a tailored sire advice service which is expected to be available in 2017.

At national level, Ireland has gone from a country that imported most of its genetics to a country which is now self-sufficient. In addition, Irish owned AI companies are now marketing semen internationally. Ireland has also seen a major improvement in fertility levels as a direct result of genomics with calving interval improving from 403 days in 2011 to 392 in 2015. This had made a positive impact on farm profitability.

Keywords: ICBF, breeding, genomics, EBI