CASE STUDY

ICBF ENTERIC GHG EMISSIONS

GENETICS

- The Gene Ireland progeny test involves about 2000 beef cows and heifers and 1300 dairy cows each year
- Ruminant animals release methane as a bi-product of microbial fermentation of food in the rumen and large intestine.
- Agriculture accounts for the majority of methane emissions in Ireland (85%)

The Irish Cattle Breeding Federation (ICBF), exists to benefit farmers in the Irish dairy and beef industry. A non-profit organisation, it provides breeding information services, and supports the application of science and technology to increase livestock value and profit. ABP Food group are responsible for processing beef and dairy cattle carcasses, they are key players in beef production systems with interests in economic, animal welfare and environmental impact.

AbacusBio worked with the ICBF, and ABP food group to understand the level of variation in enteric CH_4 emissions in beef cattle. Of particular interest was the difference in emissions from progeny of the best vs worst performing bulls. AbacusBio took an approach that involved modelling individual animal growth profiles, thus calculating daily energy requirements, ultimately estimating enteric methane emissions per animal.

The data for this project came from the GeneIreland progeny test and from ABP test farms. The dairy/beef animal was also of interest in this study and so data was available on beef and dairy/beef slaughter progeny across 3 years. Raw data included growth, feed intake and carcass quality, across farms, test centres and slaughter and processing facilities.

This was the first step in developing a national inventory system and GHG auditing point in the ICBF database. The initial ABP/ICBF project calculation was able to be expanded and integrated into the ICBF database. Individual animal GHG emissions were calculated based on animal growth and energy sink profiles and carcass weight breeding values. Analysis showed that taken together, improving animal management (to shorten finishing time) and increasing rates of genetic gain can significantly reduce the total GHG emissions per kg of carcass weight from the Irish beef industry.