Session 4.1: Climate Change Mitigation Strategies.

S04.O-02

THE SUSTAINABILITY INDEX: A NEW TOOL TO BREED FOR REDUCED GREENHOUSE GAS EMISSIONS INTENSITY IN AUSTRALIAN DAIRY CATTLE

Thuy Nguyen[1], Caeli Richardson[2], Madeline Post[3], Peter Amer[3], Gert Nieuwhof[1], Peter Thurn[1], Matthew Shaffer[1].

[1]DataGene, Bundoora, Australia; [2]AbacusBio, Edinburgh, United Kingdom; [3]AbacusBio, Dunedin, New Zealand.

The Australian dairy industry has a target to reduce greenhouse gas (GHG) emissions intensity by 30% by 2030 compared to the 2015 level. At the animal level, apart from nutritional modifications and other management practices, selecting animals which emit less GHG can be a cost-effective and long-term strategy. Given the world's demand for protein is increasing, selecting for animals with lower GHG emissions per unit of production (aka emissions intensity) is a realistic approach that addresses the key issue of emissions reduction while maintaining farm productivity. In August 2022, DataGene released the Sustainability Index which can be used by dairy farmers to select animals with lower environmental footprints. Compared to the currently used profit index, the Balanced Performance Index, the weightings for protein, fat, survival, mastitis resistance and feed efficiency are increased by 2.6, 1.4, 2.8, 1.3 and 3.8-fold; respectively. It is expected that with the use of the Sustainability Index, emissions intensity will be reduced by 7.64%, 8.96% and 5.52% in Holstein, Jersey and Red breeds by 2050 compared to the 2015 level; respectively. The corresponding values when selecting for BPI were 6.34%, 7.91% and 5.23%; respectively. However, the trade-off in BPI when using the Sustainability Index will be AUD 0.79, AUD 0.83, AUD 0.22 per cow per year for Holstein, Jersey and Red breeds; respectively.