MEKONNEN HAILE-MARIAM

Agriculture Victoria Senior Research Scientist and Senior Research Fellow of School of Applied Systems Biology at La Trobe University, Dr. Mekonnen Haile-Mariam has made significant contributions to the field of animal breeding and genetics over the past three decades. Mekonnen has been at the forefront of improving the fertility, health and animal welfare of Australian dairy cattle through genetic improvement. He specialises in developing and updating Australian Breeding Values (ABVs) which are used by dairy farmers to increase productivity through genetic gain.

Mekonnen grew up around animals in Ethiopia, where there are more than 11 million dairy cows, compared to just 1.5 million in Australia. He completed his BSc in Animal Science from Addis Ababa University in Ethiopia in 1982 and went on to do an MSc in Animal Production at Alemaya University of Agriculture. In the early 1990s he swapped warmth for snow and headed to Uppsala in Sweden. He earned his PhD in Animal Breeding and Genetics from the Swedish University of Agricultural Sciences in 1994 and has since focused on the genetic improvement of dairy cattle. During his MSc and PhD studies and after completing his PhD Mekonnen has taught animal breeding at Alemaya University.

A post-doctoral opportunity prompted a move to Australia to join Professor Michael Goddard's research team at Agriculture Victoria in 1999. His early work involved genetically evaluating the somatic cell count as an indicator of udder health (mastitis) to develop and provide a ranking of bulls to dairy farmers, the first research of its kind in Australia. A similar genetic evaluation was developed for fertility, at the time there were limited records to identify the most fertile cows. Mekonnen continued his research focusing on dairy cattle fitness, type, fertility, heat tolerance and methane emission traits and their genetic relationships with milk production traits.

In 2016, Mekonnen was involved in the development of a new gestation length ABV which was released for industry use in 2020 through DataGene. This breeding value allows dairy farmers to select cows that calve within a specific time, as longer gestational length can increase calving difficulty and disrupt the seasonal calving season. Mekonnen also played a key role on updating the calving ease ABV, which has helped to improve animal welfare and reduce veterinary costs, as the calving difficulties can cause cow and calf deaths. His research emphasises profitability, sustainability, and animal welfare, with a particular interest in functional traits such as reproduction and health.

Over the last 20 years, Dr. Haile-Mariam has actively participated in various dairy genetics projects, including "Improved Genetic Evaluation System for the Dairy Industry" and "Validating and Increasing Profit from Dairy Bull Selection in Australia". He has extensively contributed to the DFCRC Fertility Project and the development of the DairyBio Animals' Program (2016-current). These projects aimed to improve and expand breeding values for dairy cattle in Australia.

Dr. Haile-Mariam has extensive experience working with key stakeholders such as Holstein Australia, Jersey Australia, and Dairy Australia. While in his native Ethiopia, he secured funding for the genetic improvement of indigenous livestock in Ethiopia through collaborations with the Swedish University of Agricultural Sciences, funded by the Swedish International Development

Cooperation Agency (SIDA). Mekonnen's research interest and focus while in Ethiopia was genetic improvement of indigenous and crossbred cattle in production environments where genetic antagonistic between adaptation and production is important.

In Oceania and abroad, Dr. Haile-Mariam has been at the forefront of major dairy genetics innovations and insights over the past 25 years. It is fair to say that he had a hand in all the main genetic innovations implemented by ADHIS and now DataGene over the past decade, significantly contributing to the doubling of the genetic gain in the Australian national herds.

Mekonnen is one of the leading experts in using ASReml and is a go to person for statistical analysis in the Computational Biology group of Agriculture Victoria Research. He is a well-liked colleague and an admired supervisor of his PhD students. He is always happy to invest time in showing students how to prepare the input data for ASReml as well as trouble-shooting models. Always done in a kind way with plenty of empathy and understanding.

His work has not only advanced the genetic improvement of livestock in Australia but also demonstrated the importance of genetic and genomic selection globally. He has published more than 100 journal articles and numerous conference papers, which have been cited more than 3,000 times. Dr. Haile-Mariam's dedication to integrating phenomics and other 'omics data into livestock improvement illustrates his innovative approach and commitment to the field. For his extensive contribution to animal breeding and genetics and impactful research in dairy genetic improvement the Association for the Advancement of Animal Breeding and Genetics is pleased to elect Mekonnen Haile-Mariam as a Fellow of the Association.