

Session 10: Brian Wickham Young Persons Exchange Program (BWYPEX) "Beef on Dairy, Sensors in Welfare Monitoring; ExtraMir, Sustainability Traits"

S10.O-04

## **CONNECTING INDUSTRY, RESEARCH AND FARMERS TO TACKLE SUSTAINABILITY: FEED EFFICIENCY AND METHANE IN THE SPOTLIGHT**

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The Brian Wickham Young Persons Exchange Program was initiated to create opportunities for young scientists to interact with host organizations internationally. The aim of the program is to answer questions of strategic and technical interest within the International Committee of Animal Recording (ICAR) member network. Of proposed topics, improving sustainability of cattle was promoted by the ICAR Feed and Gas Working Group as a strong area of global interest. Feed efficiency and traits related to environmental impact, e.g., methane emission, are key traits in animal production to increase sustainability on animal, herd and system level. Dairy farmers are challenged to improve efficiency to decrease production costs and to respond to societal demands for more environmentally friendly and sustainable production. Sustainability of animal production is difficult to measure with a single trait. Therefore, trait groups need to be defined and possibilities for routine recording and monitoring services need to be evaluated. Topics investigated within the scope of this program included identification and definitions of efficiency and environmental traits related to sustainability, recording techniques for those traits needed, available proxies for feed efficiency and environmental impact traits, and possible tools in recording services to increase sustainability. Interviews were conducted in person and virtually over a 6-month period. In-person host countries and organizations included The Netherlands (WUR), Canada (Lactanet), New Zealand (AbacusBio), Spain (INIA), and Denmark (Aarhus University). Additional interviews were completed virtually with Australia (Agriculture Victoria), Ireland (ICBF), and Belgium (Walloon Agriculture Research Centre). During the collaboration, we visited industry partners, academic institutions, and commercial farms to gain a multilevel understanding of factors that impact sustainability and potential wide-spread mitigation strategies. A variety of production systems were explored which differ in feeding system (total mixed ration vs pasture), housing management (indoors vs outdoors), milk payment scheme (quota vs non-quota), and genetic selection indexes (availability of methane and feed efficiency breeding values). Through the international collaboration, an overview and evaluation of traits and proxies relevant for sustainable dairy production was completed. Traits were evaluated in terms of importance and practicality of recording, and recommendations for possibilities for routine service implementations for farmers (e.g., development of an environmental or sustainability index) were provided. Overall, key areas of focus to improve sustainability in dairy cattle were identified and a prioritization system was suggested for implementing such traits in various dairy systems.