ORAL

Technical Session 11
Milk Recording Supporting Sustainability Initiatives

Farm sustainability index using dairy cattle recording data: the case of Slovenia

Logar Betka*[1], Pečnik Žan[1], Jeretina Janez[1], Verbič Jože[1]

[1] Agricultural Institute of Slovenia

Modern livestock farming faces numerous challenges, including rising input costs, climate change adaptation, environmental pollution mitigation, animal welfare concerns, and society's misunderstanding of the sector. These factors increase the need for optimisation and improved efficiency in milk production. Over the past 30 years, we have developed many tools to support various aspects of dairy cow health, production, reproduction, and nutrition to assist farmers. However, tools that directly incorporate sustainability are lacking. Such tools and decision support systems could provide farmers with additional information for decision-making.

We have developed a novel tool to monitor farm-level sustainability, based on data obtained during regular milk recording. All Slovenian farms in milk recording (~2,500 farms with an average of 29 cows per herd) were included in the project. We identified key areas of sustainability and selected appropriate indicators, which indicate: 1) risk of rumen acidosis; 2) risk of negative energy balance; 3) adequacy of nitrogen balance in the rumen; 4) milk production efficiency; 5) protein utilisation efficiency; 6) reproduction efficiency; 7) udder health; 8) percentage of cows culled due to reproductive disorders; 9) dairy cow longevity; 10) intensity of replacement heifer rearing; and 11) calf mortality. A sustainability index (12) combines information from all other indicators. In the next step, we performed a percentile ranking of farms within each indicator (1–11) and then within the sustainability index (12), encompassing all areas. A farm with the best sustainability index, for example, has a low somatic cell count index indicating good udder health condition, a long-lived herd with good fertility, low calf mortality, and a high percentage of protein utilisation efficiency, which indicates optimal herd management practices.

The developed tool supports comprehensive assessment of herd efficiency, enables comparisons between herds, identifies opportunities for improvement, and provides recommendations that adapt to farm results. This approach complements existing information already available to farmers, offers a tool for optimising production in line with sustainable farming practices, and can be applied to other populations under milk recording.