

Environmental and animal welfare impacts of different dairy production systems: a holistic approach.

Supervisory team:

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Host institution: University of Bristol

CASE partner: Pasture-Fed Livestock Association (PFLA)

Project description:

Conventional UK dairy production, where cattle have on average 6 months grazing and spend the winter months housed has been shown to have high environmental impacts on greenhouse gas emissions, biodiversity, soil health and water pollution. The research and farming communities have identified two potentially more sustainable approaches: regenerative grazing systems, which integrate conservation and food production on the same land (“land sharing”); and sustainably intensified systems, which separate high-yield food production farms from protected habitats for conservation (“land sparing”). Since these dairy systems differ in the management practices they use, they result in different environmental, economic, and animal welfare outcomes. Moreover, it is likely that the rising societal awareness of dairy production environmental concerns has affected public attitudes regarding dairy production systems and the milk they produce.

Assessing animal welfare at the farm level is time consuming and thus, the use of artificial intelligence (AI) surveillance tools (aided by video cameras) has been proposed to identify key animal welfare traits in housed systems but has not been extended under grazing conditions yet. This project aims to evaluate the environmental, economic and animal welfare aspects of conventional, regenerative and sustainably intensified dairy systems, including through novel vision-based machine learning technologies, as well as societal perceptions towards them.

The successful candidate will have the opportunity to participate of a multidisciplinary group where academics experts in sustainable animal production, economic and environmental footprint assessment, animal behaviour and welfare, data science machine vision and artificial intelligence and public perception evaluation have joined together to undertake a comprehensive evaluation of the dairy production systems. The student will benefit from having access to the University of Bristol and Rothamsted Research facilities and will receive training and obtain the skills needed to undertake an in deep evaluation of the different aspects of the animal production systems. Moreover, the student will have the opportunity to directly engage with farmers, researchers and advisors from our partner, Pasture-Fed Livestock Association (PFLA).