



Evaluation of the role for virtual fencing in an Irish pasture-based dairy production system

Walsh Scholars Reference: 2017781
University: University College Dublin
Funding: VistaMilk

Research Institution: Teagasc
Location: Moorepark, Fermoy, Co. Cork
Proposed Start Date: October 2026

Project Summary

Virtual fencing is an emerging livestock management technology that uses GPS-enabled collars and digital mapping systems to create invisible boundaries, allowing control of grazing without the need for physical fences. While the technology offers potential advantages such as improved precision in grass allocation, reduced labour requirements, and enhanced management of sensitive or conservation areas, its application in dairy systems remains underexplored. In particular, limited research has been conducted on lactating dairy cows, with existing studies largely confined to non-dairy animals or specific geographic contexts such as Tasmania.

A key challenge lies in understanding how virtual fencing performs within pasture-based dairy systems, particularly in relation to animal behaviour, welfare, and production outcomes. As the technology interacts directly with animals, there is also a critical learning period during which cows must adapt to the system, raising important questions around training, welfare, and effectiveness. There is currently insufficient evidence on how virtual fencing influences grazing patterns, herbage utilisation, and overall system performance under commercial conditions.

This PhD project will evaluate the impact of virtual fencing on grassland performance, herbage utilisation, and animal production, including milk yield and composition, within grazing dairy systems. The study will assess cow behaviour and welfare, while monitoring spatial movement patterns to better understand grazing dynamics. An economic appraisal of the technology will also be conducted. The study will combine research farm experiments with on-farm evaluation to assess performance under practical conditions.

The project will provide the student with experience in experimental design, data collection and management, and statistical analysis, alongside exposure to multidisciplinary research spanning grassland science, animal behaviour, welfare, and farm systems. The research will contribute to improving understanding of virtual fencing in dairy systems and inform its potential role in future grazing management.

Supervision

The project will be jointly supervised by Dr Bernadette O'Brien at Teagasc and Professor Brendan Murphy at University College Dublin.

Dr O'Brien has extensive experience in dairy production systems, with a particular focus on animal performance, farm efficiency, and data-driven decision-making within pasture-based systems. Professor Murphy brings significant expertise in agricultural science and research leadership, with a strong track record in supervising postgraduate research and advancing innovation in the agri-food sector.

The supervisory team combines complementary strengths in applied dairy systems research and academic leadership, providing a strong and well-aligned framework to support successful delivery of the project and the student's research development.

Research Environment

The student will be registered at University College Dublin and based at Teagasc Moorepark.



Teagasc Moorepark is Ireland's leading dairy research centre, with national responsibility for research across all aspects of dairy production. These include grassland and grazing management, dairy cow breeding and reproduction, animal health and welfare, milk composition, nutrition, milking technology, dairy production systems, and economic analysis.

The research programme is delivered by a multidisciplinary team of scientific and technical staff, supported by administrative and operational personnel. Moorepark operates seven dairy research farms, comprising approximately 500 hectares and over 1,000 dairy cows. Facilities include modern conventional and automatic milking parlours, laboratories, and advanced computing infrastructure.

This environment provides strong support for the successful delivery of the project and the student's research development.

Career and Training Opportunities

The Teagasc Walsh Scholars Programme provides a structured four-year training and development framework designed to support both academic excellence and long-term career readiness. Scholars develop advanced scientific and analytical expertise alongside transferable skills in communication, project management, and stakeholder engagement through expert-led training, workshops, and tailored professional development.

Opportunities are provided to present research at national and international conferences, supporting professional networking and active engagement with the wider research community. Dedicated final-year career supports focus on preparing scholars for impactful roles across research, industry, advisory services, and policy, in Ireland and internationally.

Through the Teagasc International Training Awards, scholars may undertake an international research placement of up to 12 weeks aligned with their PhD project. Outstanding achievement may also be recognised through the Walsh Scholars of the Year and Gold Medal Awards.

Candidate Profile and Eligibility

Applicants should ideally:

- Be self-motivated with strong problem-solving and data analysis skills.
- Have a primary degree (first or upper second-class honours) in a relevant discipline (e.g., animal science, veterinary medicine, agricultural science) is essential.
- A Master's degree and experience with statistical analysis tools are highly desirable. Have knowledge of the Irish dairy industry, ability to work with animals, or interest in agricultural technology would be desirable.
- Hold a full driver's licence (required)
- Meet University College Dublin postgraduate entry and English language requirements: [UCD English Language Requirements](#).

Funding Details

Fully funded 4-year PhD, funded by VistaMilk, including:

- €25,000 annual stipend
- University fees covered up to €6,000 per annum

How to Apply

Applicants should complete the [online application](#) form by **5:00pm on Friday 29th May**. Applications must include a curriculum vitae and a 1–2 page statement of motivation submitted as part of the online application.



Interviews: Early June. Online interviews can be facilitated

Further Information

Informal queries can be directed to: Dr Bernadette O'Brien, Bernadette.obrien@teagasc.ie; Professor Brendan Murphy, Brendan.Murphy@ucd.ie

Learn more about the Walsh Scholars Programme at: <https://teagasc.ie/about/research-innovation/the-walsh-scholars-programme/about-the-programme/>