



Quantifying Management Factors Influencing Clover Production and Biological Nitrogen Fixation in Grass–Clover Grazing Systems (CLOVERFIX)

Walsh Scholars Reference Number: 2026035

University: University College Cork (UCC)

Funding: Teagasc

Research Institution: Teagasc

Location: Teagasc Moorepark, Co. Cork, Ireland

Proposed Start Date: September 2026

Project Summary

The EU Green Deal and Farm to Fork Strategy place strong emphasis on reducing chemical fertiliser use. In Ireland, recent improvements in water quality have been associated with national reductions in nitrogen (N) fertiliser use, which declined to approximately 282,000 and 310,000 tonnes in 2023 and 2024, respectively, from 350,000 tonnes in 2018. However, this reduction has coincided with a decrease in grass production of approximately 1.2 t DM/ha when comparing 2019–2021 grass production with that of 2022–2024.

Well-managed grass–white clover swards have the potential to offset reduced N fertiliser application by maintaining herbage yields through provision of N for plant growth via biological nitrogen fixation (BNF). However, maintaining consistent sward clover contents above 20% remains a key challenge, with substantial variation observed in agronomic performance within and between farms and soil types. As a result, there is a requirement for improved understanding of management practices that influence clover persistence and BNF under grazing conditions.

The aim of this PhD project is to optimise grassland management strategies to improve productivity, persistence, and long-term stability of grass–white clover swards. The research will evaluate and refine BNF measurement techniques and assess spring and mid-season N fertiliser application strategies, quantifying effects on clover growth and BNF. The project will also identify key seasonal, climatic, and soil factors influencing BNF, supporting resilient and sustainable grass-based livestock systems.

Supervision

The project will be supervised by Dr Michael Egan, Teagasc, whose research expertise focuses on grassland management in pasture-based livestock systems, with particular emphasis on perennial ryegrass, legumes, and grazing management strategies to optimise animal performance and nitrogen use efficiency. Co-supervision will be provided by Dr Deirdre Hennessy and Dr William Burchill, UCC School of Biological, Earth and Environmental Science, contributing complementary university-based expertise in grassland-based production systems and nutrient management. Together, the supervisory team integrates applied grassland science with academic expertise in animal production, providing a strong and coherent supervisory framework for the project.

Research Environment

You will be registered at University College Cork and based at Teagasc Moorepark, a centre of excellence for grassland science, dairy production, and sustainable farming systems, for the duration of your studies. The project offers access to state-of-the-art experimental facilities, long-term grassland trials, and a strong interdisciplinary research community.

As a Walsh Scholar, you will benefit from engagement with national and international research networks, regular seminars, and opportunities to collaborate with researchers across grassland management, soil fertility, and nutrient cycling.

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. University College Cork provides a range of postgraduate training modules to support the development of relevant research and transferrable skills.

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, and UCC School of Biological, Earth and Environmental Sciences Publication of the Year.

Candidate Profile and Eligibility

Applicants should ideally:

- Hold a First or 2.1 Honours degree (or Master's) in agricultural science, environmental science, or a related discipline
- Demonstrate strong problem-solving skills and an aptitude for data analysis
- Show an interest in grassland systems, clover agronomy, and nutrient cycling
- Possess good written and verbal communication skills and the ability to work effectively as part of a research team
- Hold a full, clean driving licence valid in Ireland, or be willing to obtain one
- Meet UCC postgraduate entry requirements, including English language requirements where applicable

Funding Details

This is a fully funded four-year PhD, funded by Teagasc, 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 **4:00pm on Wednesday, 18 March 2026**. Applications must include a curriculum vitae and a 1–2 page statement of motivation submitted as part of the online application.

Interviews

Shortlisted candidates will be invited to interview in **early to mid-April 2026**. Online interviews can be accommodated.

Further Information

Informal enquiries are welcome and may be directed to: Dr Michael Egan – Michael.Egan@teagasc.ie; Dr Deirdre Hennessy – DeirdreHennessy@ucc.ie



Further information on the Walsh Scholars Programme is available at:

<https://www.teagasc.ie/about/research-innovation/the-walsh-scholars-programme/about-the-programme/>