



Microbial Interactions in Casing Replacements On Mushroom Farms - Studying Health, Infestation, and Fungal Threats (MICRO-SHIFT)

Walsh Scholars Reference Number: 2026004

University: Maynooth University

Funding: Teagasc

Research Institution: Teagasc

Location: Teagasc Ashtown, Dublin 15

Proposed Start Date: September 2026

Project Summary

Mushroom production is Ireland's largest horticultural sector, supporting approximately 3,500 jobs and generating €158 million in farm-gate value in 2024. Mushrooms are traditionally grown using a peat-based casing layer, which is critical for supporting crop development and yield. However, increasing environmental concerns and regulatory pressures on peat use are driving a transition towards non-peat casing (NPC) materials. While essential for long-term sustainability, this shift presents new challenges for the sector.

Changing casing materials can alter the complex interactions between microbes, pests, fungi, and the mushroom crop. Some growers adopting NPC have already reported reduced yields, highlighting uncertainty around how these materials influence the growing environment and crop performance. The MICRO-SHIFT project will investigate how NPC affects the mushroom production system under commercial conditions. This will include DNA-based analysis of microbial communities in peat-based and non-peat casing materials, alongside assessment of fungal disease and fly pest establishment. Monitoring disease and pest trends on commercial farms will help identify emerging risks and inform future management strategies. The project aims to support growers through the transition to peat-free systems and contribute to the sustainable development of mushroom production in Ireland.

Supervision

The successful candidate will be supervised by Dr Joy Clarke, who leads the mushroom research programme at Teagasc, with co-supervision provided by Professor David Fitzpatrick, an expert in microbial genomics at Maynooth University. Together, the supervisory team brings complementary expertise in applied mushroom production, microbial ecology, and genomic analysis.

Research Environment

You will be registered at Maynooth University and based at the Teagasc Ashtown Research Centre, a national centre of excellence for food, horticulture, and applied biological research, for the duration of your studies.

A key strength of the research environment is access to dedicated mushroom production units and glasshouse facilities at Teagasc Ashtown, where crop trials are conducted under commercially representative growing conditions. This provides a unique opportunity to undertake applied research that integrates laboratory-based microbial analysis with on-farm production systems.

The project is embedded within a vibrant interdisciplinary research community and benefits from strong national and international collaborations supporting translational research and industry impact.

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:

- Hold a First or Second Class Honours degree (2.1 or equivalent) or a Master's degree in biology, entomology, microbiology, environmental science, or a related discipline
- Demonstrate experience in field- and/or laboratory-based research, with strong data handling and analytical skills
- Possess excellent written and verbal communication skills and the ability to work effectively as part of a research team
- Be willing to travel for fieldwork and engage with mushroom growers and industry stakeholders
- Hold a full, clean driving licence valid in Ireland (desirable)
- Meet Maynooth University 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 **5:00pm 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 Joy Clarke – joy.clarke@teagasc.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/>