

2024 Masters in Agricultural Innovation Support

Project Summary

1. Project Title and Associated Programme

Project title	Enhancing Water Quality Management in Agricultural Landscapes: Utilizing Teagasc online Nutrient Management Plans Pollution Impact Potential Maps
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2. Project background

Agricultural activities play a significant role in influencing water quality, with pollutants from farms contributing to poor outcomes. This research will investigate practical applications of Pollution Impact Potential (PIP) maps, readily accessible through the online Nutrient Management Planning (NMP) platform, in fostering improved water quality management practices among farmers. Through the amalgamation of Geographic Information System (GIS) technology, environmental science insights, and stakeholder engagement strategies, this study will help to provide a comprehensive understanding of how PIP maps can be used effectively by farmers and Knowledge Transfer specialists. By empowering stakeholders with the knowledge and tools to interpret and act upon the information provided by PIP maps, this research aims to facilitate a fundamental change towards sustainable agricultural practices that minimize pollution impacts on water bodies. Through targeted outreach initiatives and collaborative partnerships with agricultural extension services, the findings of this study aim to foster a bottom up approach within farming communities, where farmers can take the initiative for improving water quality in their own catchment thus fostering resilience and sustainability in the face of evolving environmental challenges.

3. Project aims and objectives

1. To assess the applicability and effectiveness of online NMP Pollution Impact Potential (PIP) maps in identifying pollution sources and hotspots within ACP landscapes.
2. To investigate farmers' perceptions, knowledge, and attitudes towards water quality management and pollution mitigation measures.
3. To develop tailored strategies to help farmers interpret and utilize online NMP PIP maps for improving water quality on their farms.
4. To provide recommendations and guidelines for integrating online NMP PIP mapping into agricultural extension service and farm management practices.
5. To run a campaign on using the PIP maps to assist farmers and agricultural extension services in bring about change in on farm practice for water quality benefits

4. Suggestions for methodology

1. **Literature Review:** Conduct a comprehensive review of literature on water quality management in agricultural landscapes, GIS-based pollution mapping techniques, farmer behaviour and decision-making and sustainable agriculture practices. Identify relevant theories, methodologies, and case studies for informing the research.
2. **Stakeholder Engagement:** Engage with farmers, agricultural advisors, extension agents, and other stakeholders through surveys, interviews, and focus group discussions. Feedback from farmers and other stakeholders will be analysed to identify key opportunities and bottlenecks in relation to the potential use and application of PIP maps, and suggestions given on how best to promote their integration into farming norms.
3. **Support Material:** Based on stakeholder engagement, develop an educational document, perhaps in the form of an easy to use laminated card to help farmers interpret and utilize online NMP PIP maps for making informed decisions about farm management practices.
4. **Workshops:** Provide training workshops and outreach programs to discriminate the research findings, introduce the easy to use card and discuss mitigation strategies.

5. Expected impact of the project

As water quality improvement and protection comes into sharper focus research and knowledge transfer specialists need to explore current innovative approaches to emerging technologies and tools to advance sustainable agricultural practices. Approaches to water quality improvements are context specific and are never the same for any two farms, therefore one size fits all approaches are no longer relevant. However, the 80-20 rule applies in that 80% of the difficulties occur in 20% of the land area; therefore, any method that can help identify these critical source areas has the potential to contribute significantly to water quality improvements. In terms of utilizing these new technologies, the MAIS student has the potential to support the Teagasc KT Programme through the dissemination of their research findings, sharing of best practices, and raising awareness regarding the significance of pollution impact mapping for water quality management among farmers, policymakers, and industry stakeholders. This research will also feed into the Teagasc Water Quality campaign

6. Other relevant information

The ACP offers a broad range of expertise and knowledge in relation to water quality improvement and protection, combining the skills across advisory and research that allow for a holistic approach to this most difficult problem.