

KT Masters in Agricultural Innovation Support (MAIS) Project Summary 2025

1. Project Title

Enhancing KT Support for Better Distribution of Organic Manures – Pig and Poultry Origin

2. Project Background

Pig and poultry production is a major sector of the agricultural economy of Ireland, with expected volume increases of 8% and 2% respectively in 2025 (CSO, 2024). However, pig and poultry farming in Ireland generates large volumes of animal manure on small areas of land. Organic manures contain high concentrations of nitrogen (N) and phosphorus (P) which are carefully regulated by the Nitrates Directive and implemented by the Nitrogen Action Programme (NAP). However, long-term application of inorganic fertilizer or animal manure has been shown to result in elevated levels of P in many cropland areas adjacent to livestock facilities, with application rates to arable land creating nutrient hotspots in both soils and surface waters in Ireland. Furthermore, poultry manure application is currently based on farming at 170kg and 250kg N/ha/year, which does not take into account the high, and often variable, concentrations of soluble/plant-available-P in manures applied to high P fields. In the Dunleer catchment, pig and poultry manure has been applied in excess to high P soils, saturating the soil with P and increasing P loading in surface waters throughout the catchment. Therefore, we need to advance our understanding of the nutrient concentrations of these organic manures and tailor our advisory support for the farmers receiving these manures, and those exporting the manure.

3. Project Aims and Objectives

Overall project aim; To assess the environmental fate of phosphorus from pig and poultry manure in the Northeast regions of Ireland, and to explore the potential of redistributing organic manures to low P soils to limit nutrient runoff potential through enhanced advisory support.

Specific Research Objectives:

- Explore nutrient concentrations of P and N in organic manures from pig and poultry farms in the Northeast of Ireland
- Establish the concentration range and variation of N and P between different organic manure sources
- Integrate on-site farm testing of plant available P and nitrate in organic manures

- Establish and document how advisors link farms locally to facilitate coordinated actions of manure movement across farms
- Provide recommendations on KT methods that can be brought forward into current advisory which highlight the risks to water quality from over application of organic manures.

4. Suggestions for Methodology

A mixed methods approach will be used in this study to achieve the stated objectives:

1. The student will complete an initial immersion period in January 2026 in the designated advisory office and attend relevant KT initiatives
2. Key informative interviews will be conducted with advisors, KT specialists, DAFM, local authorities and co-ops
3. Focus group with local advisors on current practises and movement of organic manures in the region
4. Establish the concentration range and variation of N and P between different organic manure sources using total concentrations (ICP-OES), water soluble extractions (Headley's sequential fractionation), and on farm P/N test strips
5. Devise a targeted KT campaign in collaboration with the Teagasc Water Quality Campaign on manure from pig and poultry origin for implementation in 2026
6. Focus group with local advisors to assess the effectiveness of the KT campaign
7. Provide recommendations for KT directorate.