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

1. Project Title	
	Enhancing KT Support for Better Distribution of Organic Manures from Anaerobic Digestors

2. Project Background

Global reserves of Phosphorus (P) are finite and as such there is growing interest in the reuse of P from agriculturally derived waste streams. Anaerobic digestion (AD) of organic waste offers a processing route for pig manure and the opportunity to recover (i) biogas as a renewable energy source, (ii) reduction of pathogen load, and (iii) high nutrient content of nitrogen (N) and P for fertiliser use. Despite the potential of waste recovered manures, their reported chemical amount/compositions are not always consistent. For example, Total-P in digestate can range from 2% to 18%, and the water soluble (plant available) fraction may have even more seasonal variation of up to 50-90%. As a result, when applied to land as fertiliser, the soluble P present in soils may transfer to dissolved-reactive P in surface runoff, negatively effecting water quality. Therefore, integrating digestate into nutrient management plans is dependent on the P content and P solubility of the digestate. In order to understand the seasonal variation of total and available P, archived data from an AD plant in the Timoleague catchment in Co. Cork can be analysed to understand the variation of P chemistry, alongside monitoring data of soil P balances and nutrient loads to surface water. This will therefore, advance our understanding of the nutrient concentrations of digestate and allow us to tailor our advisory support for the farmers receiving and exporting digestate.

3. Project Aims and Objectives

Overall project aim; To assess the fate of phosphorus from pig manure digestate in the Timoleague catchment and to provide an understanding of P bioavailability of digestate as a nutrient source to advance our advisory support for farmers.

Specific Research Objectives;

1. Explore nutrient concentrations of P and N in digestate to establish seasonal concentration variations of plant available P
2. Establish and document how advisors link farms locally to facilitate coordinated actions of manure movement across farms

3. 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. 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
4. Devise a targeted KT campaign in collaboration with the Teagasc Water Quality Campaign on digestate for implementation in 2026
5. Focus group with local advisors to assess the effectiveness of the KT campaign
6. Provide recommendations for KT directorate.