Investigation into the migration of microplastics through soil

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Project Overview

• Funded by the Environmental Protection Agency of Ireland

• Led by Galway-Mayo Institute of Technology, involving University College Dublin and Wageningen University, The Netherlands

• Aims to investigate the sources, pathways and environmental fate of microplastics from land-based sources to rivers
Project Overview

Hurley & Nizzetto (2018)
Terrestrial Sources of Microplastic

Approx. 80% of sewage sludge spread on land in Ireland
Soils as Sinks?
Soil Column Experiments
Experimental Material
Rainfall Rate Simulation

- Rainfall simulator tested for a range of intensities

![Graph showing the relationship between Water Head in Tank (cm) and Rate of Simulated Rainfall. The graph includes a trend line with an R² value of 0.9958.](Image)
Experimental Method

Silica sand 1.2 – 1.6 mm

Silica sand 1.6 – 2 mm

Silica sand 2 – 4 mm

Glass beads 3 mm

Ceramic beads 8 mm

Glass marbles 10 mm
Preliminary Results

Adherence observed of MP to surface of all porous media
Addition of Surfactant

Without surfactant

With surfactant

Experiment picture
Field Core Extraction

[Map of Ireland with fields and a field image]
Field Core Extraction

Percussion drilling

Core extraction
Slicing Cores
Sample Analysis
Additional Analysis

Itrax Scanner

Fe

Inc

1 cm
Projected Outcomes

• To further understand processes governing MP movement in soil
• Further understand concentrations of MP in agricultural land in Ireland
• Contribute to growing body of research in this area
• Inform policy makers on risk of terrestrial based MP to groundwater
Thank you for listening!

To follow progress on this project, check out [https://freshwatermicroplastics.com/](https://freshwatermicroplastics.com/)