

Faculty of Engineering

Summer Research Program 2023-2024

Project Title: Microplastic contamination in agricultural soils

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Objective

This project aims to estimate the current extent of microplastic contamination in global agricultural soils. The project findings will ultimately contribute towards informing policy decisions for promoting sustainable farming that minimizes the introduction of microplastics into agricultural soils.

Project Details

The continuous growth of plastic usage has resulted in its accumulation in the environment owing to its low degradability. Microplastics are plastics smaller than 5mm in diameter, originated mostly from the fragmentation and weathering of larger plastic items such as bottles and packaging. Microplastics can also be derived from the shredding of synthetic textiles (e.g., laundry water) and microbeads contained in personal care products. In agriculture, microplastics can be emitted into soils through the application of contaminated compost, sewage sludge and irrigation water as well as the fragmentation of larger plastic products such as mulching films and pest-control nets. The accumulation of microplastics in agricultural soils can cause detrimental impacts on soil health, putting crop production at risk. For example, microplastics can negatively impact the growth of earthworms and disrupt soil nutrient cycling processes. However, our understanding of how much microplastics have been introduced into agricultural soils remains limited. In this project, the successful applicant will make use of various modelling approaches including machine learning to estimate the spatial distribution of microplastic contamination in agricultural soils worldwide.

Prerequisites

Students with coding skills is preferred.

Additional Information

N/A