
Microplastic pollution of organic waste products used for soil amendment

Delphine Cirederf Boulant^{*†}, Stéphane Bruzard¹, Isabelle Deportes, and Mikael Kedzierski^{‡2}

¹Stéphane Bruzard – IRDL, Université de Bretagne Sud (UBS) – IRDL, UBS, Rue de St Maudé 56100, Lorient, France

²Institut de Recherche Dupuy de Lôme (IRDL) – Université de Bretagne Sud, CNRS : UMR6027 – Centre de Recherche Rue de Saint Maudé BP92116, 56321 Lorient Cedex, France

Abstract

The latest literature suggests that organic fertilizers are one of the first sources of contamination of agricultural soils. Indeed, organic materials for intended soil amendments (e.g. composts, green waste, manure, sewage sludge) are the result of various processes and can be contaminated by microplastics (MP), such as packaging residues. In order to improve our knowledge on the level of contamination, as well as on the nature of MP in organic amendments, the PRO project (2021-2023) has been set up by Ademe (French Agency for Ecological Transition). This project has several challenges: to identify the matrices acting as sources of MP, to study the diversity and origins of these MP, and to estimate the potential flows to agricultural land. Within this framework, the IRDL (Institut de Recherche Dupuy de Lôme) is responsible for setting up and testing the method for extracting and analysing MP contaminating these matrices. Our mission is to validate a digestion protocol applicable to 21 complex solid matrices rich in organic matter while, at the same time, ensuring the integrity of extracted polymers (especially biodegradable ones). 83 samples are planned for this project, and half have already been analysed. Preliminary recommendations following these tests and unpublished results will be presented.

Keywords: microplastics, organic fertilizers, soil, extraction protocol, chemical digestion

^{*}Speaker

[†]Corresponding author: delphine.cirederf@univ-ubs.fr

[‡]Corresponding author: mikael.kedzierski@univ-ubs.fr