

Quantification of Macroplastic Litter in Greenhouse Farmlands: Case Study in Southeastern Hungary

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Greenhouse farming has become widespread worldwide because of its contributions to various agricultural products. Extensive greenhouse farming generates plastic waste in large quantities and pollutes farmlands. Contrary to microplastics, few studies have quantified macroplastic contamination in agricultural farmlands despite its contribution in the production of microplastics because fragmentation. Thus, there is a paucity of knowledge on the level and characteristics of macroplastics in the greenhouse environment. This study quantified and examined the macroplastic litter contaminations on the soil surface under greenhouse farmlands. Systematic random sampling was used to select the sampling points. The collected macroplastics were cleaned using tap water. Subsequently, the macroplastics were separated, counted, and measured based on polymer composition, size, shape, and color. The polymer compositions were confirmed using the Raman spectroscopic analysis. The overall mean abundance was 431 pieces/ ha in terms of number and 6kg/ha in weight. However, the result showed that agricultural litter comprised 90% of the total contamination, while non-agricultural litter comprised of 10% of the total litter in the entire area. Polyethylene and polyvinyl chloride were the dominant plastic structures, and the dominant sizes were 1–5 and 0.5–1.0 cm, respectively. Film and fragment were the major structures found. Given that macroplastics were found in the greenhouse farmlands, we recommend the followings: Careful cleaning and disposal of plastics on greenhouse farmland; prevention of greenhouse farmlands from external and non-agricultural contaminants; and further research to shed light on the level of macroplastic fragmentation in the greenhouse farmlands.

The Effect of Molasses Application on Soil Biological Activity and Plant Growth of Different Tillage Soil: A Pot Experiment

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Soil enzyme activity and labile carbon (LC) have long been used as soil health indicators. Soil health can be improved by molasses addition resulting in better plant growth and productivity. The effect of molasses on soil biological activity and plant growth under different tillage soil has not been widely discussed in many studies in