

General Comments:

This paper entitled "Polyester Microplastic Fibers affect Soil Physical Properties and Erosion as a Function of Soil Type" by Ingrassia et al. reports how the presence of plastic microfibers in soil affect erosion and aggregate formation and stability. Three soil types a Vertisol (clay texture), an Entisol (loam texture), and Alfisol (loam texture) were investigated. Two experiments were performed, the first explored the formation and stability of soil aggregates in the presence of plastic microfibers. The second experiment investigated how the presence of plastic microfibers influence soil erosion processes. Two notable findings were plastic microfibers increased water stable aggregates and reduced soil erosion in soils most susceptible to erosion.

While many researchers have speculated what effects plastic microfibers may have on soil erosion, this study brings evidence to this ongoing discussion. This is an important study, and if the findings are valid, will contribute to our understanding of microplastic effects on soil properties and erosion processes. I have a few comments and suggestions for minor revisions.

Authors (ACs): We wish to thank Dr. Emilee Severe for showing appreciation for and sharing comments on our study

Specific Comments:

Abstract

Line 11- Implying all agricultural soils are plastic "hotspots" might be an assumption. As plastic input (biosolids, plastic mulching, etc) varies with management practices between farmers, regions and countries.

ACs: The sentence was modified and "...hotspot..." was changed to "...very likely to receive..."

Methods

Line 174- What was the distance between the nozzle and the soil box? The text implies that the height at which the nozzle was above the soil box changed throughout the experiment which would affect the kinetic energy of the raindrop.

ACs: The information on L.174 was misleading. In fact, the rainfall simulations were conducted with a fixed nozzle height of 1.70 m. The sentence was modified from "*the nozzle at a height ranging from 180 to 320 cm above the ground surface.*" to "*The nozzle was placed at a mean height of 1.70 m (measured from the middle of each plot).*"

Line 182- Again was the nozzle placed at different heights during the experiment why would you need to average the distance when calculating rainfall intensity?

ACs: See our reply to the comment above

Results

I agree with Reviewer #2 an additional table exploring the influence of other measured soil properties would be a welcomed addition. Many times, in the article the authors argue that texture alone does not explain the effects of plastic in their soils as they saw different results in both experiments between the Entisol and Alfisol soil, each having a loamy texture. Yet they only vaguely describe differences in organic matter content and mineralogy when expounding on other soil properties.

ACs: Information on soils mineralogy was given and discussed in the new version of the manuscript.

Discussion

I would like to see more discussion about what characteristics of each soil caused differences in aggregation and erosion. In the abstract you put forth mineralogy and organic carbon content as properties which need to be explored but in the discussion, you only discuss organic matter and texture.

ACs: We agree with the suggestion. The discussion was thoroughly revised in an attempt to better link the results of the structural stability with the erosion experiments. Moreover, we broadened the discussion by linking, as far as possible, our results with the soils characteristic

Technical Comments:

Line 334- References (Wischmeier and Smith, 1978) and (Chaney and Swift, 1984) were not found in listed references.

ACs: Missing references were added.