Soil Aggregate Development, Microbial Activity, and Carbon Sequestration. (S03-gibson124752-Poster)

Authors:

- J.R.Gibson* - *The Pennsylvania State University*
- M.A.Bruns - *The Pennsylvania State University*

Abstract:

Soil aggregate hierarchy theory indicates that macroaggregates (> ~250 microns) behave differently from microaggregates (< ~250 microns). Specifically, macroaggregates both benefit from and support fungal growth, which produce organics fundamental to soil structure. On the other hand, evidence suggests that microaggregates are the ultimate destination of recalcitrant organic carbon, and that this occurs within macroaggregates. Because macroaggregate stability directly enhances such carbon sequestration, it is important to assess what factors control aggregate development and stability. In this study, microcosms of agricultural soils with different crop rotation and fertilization histories were incubated for 2+ weeks at 25 deg. C to compare aggregate development under different conditions. Microcosms were incubated with or without sand and particulate organic matter (POM), which serve as nucleating agents, as well as with or without bactericide and fungicide. Additionally, several moisture contents were examined. At the incubation's conclusion, samples were wet sieved in a custom-made shaker at 25 rpm for 2 min. each, yielding aggregate size and stability distributions.

Corresponding Author Information:

Jody Gibson
The Pennsylvania State University
207 ASI Building
University Park, PA 16802

phone: 814-863-7608
e-mail: jrg205@psu.edu

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