Effects of Earthworm Activity on Soil Aggregation and Aggregate-associated Carbon Pools. (S03-bossuyt102419-Oral)

Authors:

- H.Bossuyt University of Georgia
- J.Six University of California Davis
- P.F.Hendrix University of Georgia

Abstract:

Earthworms are known to play a role in aggregate formation and soil organic matter protection. However, it is still unclear at what level earthworms protect soil organic matter and how exactly they might incorporate fresh residue into aggregates. The objective was to investigate the effects of Aporrectodea caliginosa on aggregation and aggregate-associated C pools using 13C-labeled residue. Two incubations were set up. The first incubation existed of soil samples with or without earthworms. After 20 days, aggregate size distribution, total C and 13C in each aggregate fraction were measured. A second incubation was conducted to determine mineralizable total C and 13C from 21-day laboratory incubations of intact and crushed macro- and microaggregates. In the presence of earthworms, a higher proportion of large macroaggregates was found and these aggregates contained more C and 13C compared to bulk soil. Most of the C incorporated by earthworms is found in microaggregates within large macroaggregates. The results indicate that earthworms might be important in stabilizing organic matter at a microaggregate level.

Corresponding Author Information:

Heleen Bossuyt University of Georgia Institute of Ecology Athens, GA 30602 phone: 706-542-9319 fax: 706-542-6040 e-mail: hbossuyt@arches.uga.edu

Presentation Information:

Presentation Date: Wednesday, November 13, 2002 Presentation Time: 3:15 pm

Keywords:

soil aggregation, soil organic matter, earthworms, soil carbon