Science Societies

President's pick: SSSA Research September 2026

By Aaron Lee M. Daigh

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Exciting new research is shared every day among the scientific community in our journals. SSSA is the sole publisher of the *Soil Science Society of America Journal* and *Vadose Zone Journal* and co-publisher of the *Journal of Environmental Quality* and *Agricultural & Environmental Letters* with CSSA and ASA.

Each month, I will pick one or two articles among our journals that represent some of the most exciting, creative, and innovative research in our field of soil science. This month, I have chosen the following article from the *Soil Science Society of America Journal*. Congratulations to the authors and thank you for sharing your excellent work!

Frequent drying–wetting cycles enhance the microbial degradation of recalcitrant dissolved organic matter in lake wetland soils

Soils along lake shorelines flood and dry out repeatedly, and climate change is making those swings more frequent. Dissolved organic matter is the most mobile part of soil carbon, and its ring-structured aromatic compounds are usually treated as the fraction that resists microbial breakdown. Across a 48-day incubation of riparian soil from Dongting Lake in China, the authors compared one, two, and four drying and wetting cycles, fingerprinting the carbon with high-resolution mass spectrometry and sequencing the genes of the microbial community. Cycling frequency shaped the outcome. Wet periods pushed microbes toward energy conservation, cutting back on movement and cell membrane upkeep and slowing their breakdown of the easily degraded compounds. Soil under frequent cycling, but not soil held wet, carried an enrichment of genes for degrading aromatic compounds. Within that fraction, the most highly condensed structures were preferentially consumed while moderately unsaturated molecules such as lignin accumulated, yielding a more chemically varied and more usable carbon pool. The authors propose that repeated wetting and drying

breaks soil aggregates apart and exposes carbon that physical structure had been protecting.

Journal: *Soil Science Society of America Journal*

Authors: S. Huang, W. Cao, X. Nie, P. Jiao, Y. Guo, S. Wang, B. Li, Z. Li

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Soil Science Society of America Journal

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