

President's pick: SSSA research May 2026

By Aaron Lee M. Daigh

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Imaging of
microplastic
distribution–
related
unsaturated
water flow
in sand



Hydroxyapatite
dissolution
kinetics:
The effects
of molecular
configurations
of six carboxylic
acids

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 two articles from *Vadose Zone Journal* and the *Soil Science Society of America Journal*. Congratulations to the authors and thank you for sharing your excellent work!

Imaging of microplastic distribution–related unsaturated water flow in sand

Soils accumulate more microplastic than any other terrestrial reservoir, yet we know surprisingly little about how microplastic affects water movement through soil. The authors use neutron and X-ray imaging to track both microplastic distribution and water infiltration in sand columns. Because microplastic is generally water repellent, areas with high microplastic content initially slowed infiltration, but water eventually bypassed those zones, triggering rapid preferential flow and reducing water saturation above the wetting front. This two-stage pattern intensified with increasing microplastic content, offering direct visual evidence that microplastics can reshape water flow paths with implications for groundwater vulnerability.

Authors: A. Cramer, P. Benard, A. Kaestner, M. Zarebanadkouki, P. Lehmann, and A. Carminati

Journal: *Vadose Zone Journal*

Article link: <https://doi.org/10.1002/vzj2.70092>

Hydroxyapatite dissolution kinetics: The effects of molecular configurations of six carboxylic acids

Crop production depends on phosphorus availability, but in alkaline soils, phosphorus often becomes locked in calcium phosphate minerals like hydroxyapatite. Organic acids produced by soil microorganisms and amendments are known to help dissolve these minerals and free up phosphorus, but the role of their molecular structure in that process has remained poorly understood. The authors tested six carboxylic acids and found that the arrangement and composition of functional groups, not simply their concentration, governed how effectively each acid dissolved hydroxyapatite. Acids whose structure allowed formation of smaller, more stable chelate rings with surface calcium consistently outperformed those limited to larger or weaker bonding arrangements, refining our understanding of how organic acids mobilize phosphorus in calcareous soils.

Authors: Yaniv Freilberg and Yuji Arai

Journal: *Soil Science Society of America Journal*

Article link: <https://doi.org/10.1002/saj2.70212>

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