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Refining sample guidelines for soil health assessment

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Stratified soil samples being collected in a long-term no-tillage rice-soybean rotation trial established in 2007 at the Rice Research and Extension Center, near Stuttgart, AR. Photo courtesy of Gerson Drescher, Assistant Professor of Soil Fertility at the University of

Arkansas.

Although soils are known to be spatially and temporally dynamic, the effects of sampling time and depth on soil health assessment are poorly understood, and soil testing protocols for soil health monitoring remain limited.

A team of scientists from Arkansas investigated how soil sampling time (spring, summer, fall, and winter) and sampling depth (0–5, 5–10, and 10–15 cm) affect various soil health indicators and scores across ten long-term field trials with contrasting tillage, cover crops, and nutrient management practices under diverse cropping systems. Biological soil health indicators and integrated scores were determined for two well established frameworks: Haney Soil Health Test (HSHT) and Cornell's Assessment of Soil Health (CASH).



Cotton established following a winter cereal rye cover crop in a conservation trial. Photo courtesy of Dr. Gerson Drescher, Assistant

*Professor of Soil Fertility at the
University of Arkansas.*

Findings indicate that soil sampling approach influences not only measured soil health values but also the ability to detect crop- and soil-management-induced differences. Soil health indicator values and scores were highest in surface soils and declined with depth, while higher values were observed in summer and winter, especially for soil respiration, β-glucosidase activity, and HSHT soil health score.

The results revealed that soil health results vary widely due to sampling time and depth, and consistent sampling protocols are essential for reliable monitoring of soil health.

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French, K. S., Drescher, G. L., Agarwal, P., Roberts, T. L., Brye, K. R., Smartt, A. D., Mengez, G. A., R. do Prado, M. P., & Sarfaraz, Q. (2026). *Soil sample timing and depth effect on soil health assessment in Mid-South US row-crop production systems. Soil Science Society of America Journal*, 90, e70282. <https://doi.org/10.1002/saj2.70282>

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