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Soil health under reduced irrigation in Texas

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Lead author Krishna Bhandari in a Texas cotton field that was part of the study. Photo by Veroni

Lead author Krishna Bhandari in a Texas cotton field that was part of the study. Photo by Veronica Acosta-Martinez, USDA-ARS.

Some growers in the Texas High Plains are converting their center-pivot irrigated croplands to subsurface drip-irrigated and dryland production to stretch the water supply from the Ogallala Aquifer. Less irrigation leads to drier soil and lower plant production and threatens soil health.

In *Agricultural & Environmental Letters*, researchers reported on how transitioning to reduced irrigation and dryland management on commercial farms affected chemical and biological indicators of soil health.

They found that soil water content was reduced and that soil organic carbon and nitrogen declined relative to center-pivot irrigation. Soil fungi and activities of soil enzymes involved in carbon, nitrogen, phosphorus, and sulfur cycling were reduced in a

severe drought year.

Given these findings, the authors plan to continue to monitor changes in soil health on the producers' fields to determine the management practices that maintain soil organic matter and microbial communities, promote water conservation, and increase resilience to drought in these fragile soils.

Dig deeper

Bhandari, K.B., Acosta-Martínez, V., Pérez-Guzmán, L., & West, C.P. (2022). Soil health within transitions from irrigation to limited irrigation and dryland management. *Agricultural & Environmental Letters*, *7*, e20077. https://doi.org/10.1002/ael2.20077

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