

No-till farming improves soil stability

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A joint Agricultural Research Service (ARS)-multi-university study across the central Great Plains on the effects of more than 19 years of various tillage practices shows that no-till makes soil much more stable than plowed soil.

The study was led by Humberto Blanco-Canqui at Kansas State University at Hays, Kan., and Maysoon Mikha at the ARS Central [Great Plains](#) Research Station in Akron, Colo. ARS researchers Joe Benjamin and Merle Vigil at Akron were part of the research team that studied four sites across the Great Plains: Akron; Hays and Tribune, Kan., and the University of Nebraska at Sidney.

No-till stores more [soil carbon](#), which helps bind or glue [soil](#) particles together, making the first inch of topsoil two to seven times less vulnerable to the destructive force of raindrops than plowed soil.

The structure of these aggregates in the first inch of topsoil is the first line of defense against [soil erosion](#) by water or wind. Understanding the resistance of these aggregates to the erosive forces of wind and rain is critical to evaluating soil erodibility. This is especially important in semiarid regions such as the Great Plains, where low precipitation, high evaporation, and yield variability can interact with intensive tillage to alter aggregate properties and soil organic matter content.

Tillage makes soil less resistant to being broken apart by raindrops because the clumping is disrupted and soil organic matter is lost through oxidation when soil particles are exposed to air.

A paper on this research was published in a recent issue of the [Soil Science Society of America Journal](#).

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