



Decades-Long Impact of Topsoil Removal

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Clockwise from top: A mini disk infiltrometer measures infiltration of water into soil in the disturbed area, Texas A&M University graduate student Parker Murphree collects soil

Clockwise from top: A mini disk infiltrometer measures infiltration of water into soil in the disturbed area, Texas A&M University graduate student Parker Murphree collects soil samples to determine soil texture, and Texas A&M University graduate student Stephanie DeVilleneuve measures soil erosion in an area where a large amount of soil was previously removed. Photos by Briana Wyatt.

Sediment is a major pollutant of surface water resources globally. Most sediment erosion results from land management practices that disturb the soil or remove protective vegetation from the landscape. While the impacts of large-scale practices such as urbanization and agricultural production on erosion have been thoroughly researched, the effects of localized, small-scale disturbance events often go unstudied.

In a paper published in *Agrosystems, Geosciences & Environment*, researchers investigated effects of historical soil disturbance at a site in central Texas where clay

topsoil was removed in the 1960s and relocated for construction of a nearby airport runway. The study determined the present impacts on soil properties, erosion, and vegetation community by comparing soil texture and moisture, plant species abundance, and erosion levels within the disturbed area to those in adjacent undisturbed areas.

The results showed that this decades-old disturbance continues to have significant localized impacts. Erosion and deposition at the disturbed site shifted soil texture and led to decreased soil moisture, non-native grass species dominate, and ongoing erosion contributes sediment to a major surface waterway. These results highlight both the potentially significant consequences of relatively small-scale soil disturbances and the need for research to quantify these impacts.

Adapted from DeVilleneuve, S., Kelly, A., Miyanaka, N., Shanmuhasundaram, T., Murphree, P., & Wyatt, B. M. (2023). Impacts of vegetation and topsoil removal on soil erosion, soil moisture, and infiltration. *Agrosystems, Geosciences & Environment* , 6, e20402. <https://doi.org/10.1002/agg2.20402>

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