Science Societies

Pipeline Installations Degrade Soils and Reduce Yields

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Theresa Brehm, a graduate researcher at Ohio State University and first author of the study, stands in a corn field in a pipeline area. The corn, at full maturity, shows stunted growth. Inset: These soil cores taken from a pipeline area in northern Ohio show evidence of soil horizon mixing. Photos by Steve Culman.

Underground oil and natural gas pipelines have been installed for decades around the world and are essential to our current energy infrastructure. However, the impacts of the installations on soils and crop yields have not been widely studied, particularly with best management practices the industry has adopted over the past decade.

In a study across northern Ohio published in the Soil Science Society of America Journal, researchers evaluated how effective pipeline remediation practices were five years after installation with three independently operated pipelines in 29 fields. They

found widespread soil degradation and yield declines in areas under all three pipelines. Soil penetration resistance increased by 15.3% in pipeline areas while wet aggregate stability decreased 13.6% compared with unaffected areas of the same field. Soil degradation led to pipeline areas yielding 23.8 and 19.5% less corn and 7.4 and 12.6% less soybean grain relative to adjacent areas in the first and second years, respectively. Results of this study demonstrate that despite industry claims, many fields with pipelines installed are not fully remediated after five years and that crop losses will likely persist beyond stated timelines. Crop loss monitoring and compensation plans should be revisited to reflect the true costs of pipeline installations on landowners and farmers.

Adapted from Brehm, T., & Culman, S. (2022). Soil degradation and crop yield declines persist five years after pipeline installations. Soil Science Society of America Journal. https://doi.org/10.1002/saj2.20506 (in press)
