



## **Basalt application for carbon sequestration reduces nitrous oxide fluxes from cropland**

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The application of metamorphose basalt to Illinois cropland to reduce atmospheric CO<sub>2</sub> through enhanced weathering, the process of supplying cations to sequester CO<sub>2</sub> as bicarbonate, resulted in reduced N<sub>2</sub>O production from soil in annual and perennial crops. Agricultural lands in the American Midwest are a major source of nitrogen to the atmosphere and ground water. Pulverized basalt (5 kg m<sup>-2</sup>) was tilled into conventionally-managed maize fields and surface-applied to perennial miscanthus. Basalt application reduced annual N<sub>2</sub>O production by 19% in maize and 46% in miscanthus. While enhanced weathering with basalt has great potential to mitigate greenhouse gases by sequestering CO<sub>2</sub>, the effect on soil pH and N<sub>2</sub>O release from cultivated soils, which can account for up to 40-60% of annual N<sub>2</sub>O lost to the atmosphere globally, may be more critical in the short term, as N<sub>2</sub>O is a more potent greenhouse gas than CO<sub>2</sub>.