Science Societies

No-till and cover crops decrease tile nitrate losses

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Emily Waring collecting water samples at the field site near Gilmore City, IA. Photo courtesy of E

Emily Waring collecting water samples at the field site near Gilmore City, IA. Photo courtesy of Emily Rose Waring.

Tile drainage is a network of underground pipes that drain the fields in Iowa and most of the Upper Midwest. It is common and necessary for crop production in these areas, but it can act as a conduit for water-soluble nitrate movement to downstream waterbodies. There is a need for solutions that address these environmental issues while still promoting agricultural production.

Recent research published in the *Journal of Environmental Quality* investigated the impact of no-till and cover crops on tile-drained plots in north-central Iowa, an area with extensive tile drainage and a short growing season. Nitrate concentrations were reduced by more than 30%, even with low rye cover crop biomass. The conservation practice of no-till decreased nitrate concentration by more than 29% in its first five

years of establishment.

These findings indicate that most corn–soybean farmers, even in cold areas with a short growing season, could reduce their environmental impact by using winter cereal rye as a cover crop. Cover crops are part of the toolbox for a more sustainable and productive landscape in Iowa.

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Waring, E.R., Lagzdins, A., Pederson, C., & Helmers, MJ. (2020). Influence of no-till and a winter rye cover crop on nitrate losses from tile-drained row-crop agriculture in Iowa. *Journal of Environmental Quality*, *49*, 292–303. **https://doi.org/10.1002/jeq2.20056**

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