Science Societies

Catchment-wide conservation practices reduce phosphorus, sediment losses

October 25, 2020


AK Steel

Timothy Neher collects a water quality sample from a wetland located in the Black Hawk Lake watershed. Photo by Ji Yeow Law.

Phosphorus use benefits crop yield, but unintended phosphorus losses trigger eutrophication that can put human and animal health at risk. Agricultural best management practices (BMPs) are effective at reducing nutrient and sediment export in plot-scale studies. However, inconsistent observations have been reported when these BMPs are implemented in large agricultural watersheds due to the influence of known and unknown confounding factors.

The *Journal of Environmental Quality* recently published results from a three-year study from two adjacent catchments with similar land use, hydrology, and soil properties but with a different areal extent of BMP implementation. In one watershed, the BMPs were stacked, covering 88% of the watershed area while in the second watershed, BMPs accounted for 36% of the land area. This unique experimental design allowed the researchers to distinguish the impact of BMPs on phosphorus and sediment export.

Phosphorus loading to surface waters was 40% lower in the catchment with stacked BMPs. Because these BMPs are designed to reduce erosion, the same catchment showed 87% lower sediment loading. These findings suggest that stacked practices are effective at reducing phosphorus and sediment losses from row crop acreage and provide vital information to encourage BMP implementation at a larger scale.

Dig deeper

Law, J.W., Brendel, C., Long, L.A., Helmers, M., Kaleita, A., & Soupir, M. (2020). Impact of stacked conservation practices on phosphorus and sediment export at the catchment scale. *Journal of Environmental Quality*, *49*.

https://doi.org/10.1002/jeq2.20140

More science

Back to issue

Back to home

Text © . The authors. CC BY-NC-ND 4.0. Except where otherwise noted, images are subject to copyright. Any reuse without express permission from the copyright owner is prohibited.