Stopping Phosphorus Fertilizer Decreases Soil Inorganic Phosphorus Concentrations

If long-term phosphorus (P) fertilization increases soil P to concentrations exceeding plant requirements, water quality problems can result from P loss in runoff. Stopping P fertilization should decrease soil P; however, understanding changes in soil P forms and concentrations is necessary to manage P without reducing crop yields.


At the highest P fertilizer rates, soil P concentrations were increased in 2005 but decreased to 2000 levels by 2010 after fertilization stopped. Plots that received no P fertilizer from 2000 onward had soil P concentrations drop back to 1994 levels.

Concentrations of soil organic P forms were essentially unchanged over the study period; only inorganic P changed.

This study shows that excess fertilizer P is stored in soil and can be reduced when fertilization stops. However, it may take many years to see decreased soil P concentrations, depending on the rate of P application.


Worth 1,000 Words

Each month, we highlight a photo that demonstrates great techniques to illustrate research. This month, we thank Jennifer Weidhaas for this photo, taken by Raymond Thompson, showing water sample collection. This photo includes: the researchers in the photo, providing human interest; river and city in the background, setting the scene; researchers’ work on-site; and blurred focus in foreground and background, drawing attention to the action.

Read the web story about the research here: www.soils.org/discover-soils/story/when-mysterious-chemical-leaks. More about the value of good photos in science communication can be found here: http://bit.ly/2mph5TX. You can also attend the “Photo 101” training offered at the next Annual Meeting (http://bit.ly/2pAOVqd) and enter your best photos in the Annual Photo Contest (www.acsmeetings.org/program/photo-contest). Don’t let those photo opp moments pass you by! Keep your camera or cell phone ready to capture the exciting visuals of your science!


West Virginia Water Research Institute’s Jason Fillhart and Ben Mack collect a sample of Elk and Coal River sediment to test for MCHM in the days immediately following the Charleston leak in January 2014. Photo courtesy of Raymond Thompson, WVU.

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