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!