Sediment Phosphorus Release is Important at Lake Tenkiller

Watershed management across the U.S. needs to evaluate the importance of both external and internal sources of phosphorus, especially where external sources are being reduced.

In an article recently published in Agricultural and Environmental Letters, researchers evaluate the importance of internal phosphorus sources at Lake Tenkiller in Oklahoma where a total maximum daily load (TMDL) was being developed based on a watershed model providing inputs to a lake model.

The study found that sediment phosphorus release measured in sediment–water cores from Lake Tenkiller was four to five times greater than that net release from sediments predicted in the lake model, and it was much greater than that coming from the lake’s watershed (on a unit area basis) or measured in several regional reservoirs used to guide model calibration.

Given these observations, the lake model needs to be updated to reflect phosphorus release rates closer to that measured. If internal sources are not considered in the lake and watershed management strategies, water quality might not improve even if external sources are further reduced.

Adapted from Lasater, A.L., and B.E. Haggard. 2017. Sediment phosphorus flux at Lake Tenkiller, Oklahoma: How important are internal sources? Agric. Environ. Lett. 2:170017. View the open access article online at http://dx.doi.org/10.2134/ael2017.06.0017

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An Open-Source Soils Laboratory Manual

The high cost of textbooks has become a financial burden for many students, leading many to forgo purchasing them. Open textbooks and laboratory manuals present a viable long-term solution.

In an article recently published in Natural Sciences Education, the authors present the Soils Laboratory Manual, an open-source laboratory manual for undergraduate, introductory soil science courses. In addition, they surveyed students in an introductory soil science class at Kansas State University to gauge impacts of high textbook costs, views towards open textbooks and textbook format, and use of the Soils Laboratory Manual.

The Soils Laboratory Manual, included as supplementary material to the article, is available for adoption and adaptation in other courses. Instructor copies and supporting materials are available online (https://sites.google.com/ncsu.edu/open-soil-science). The survey highlighted negative financial and academic impacts from high textbook costs. This laboratory manual saved students a cumulative $12,410 per semester for a class of 120 students, relative to the cost of the commercial laboratory manual used prior to the adoption of the Soils Laboratory Manual.

The Soils Laboratory Manual serves as an open educational resource for instructors, helps reduce costs of textbooks for students, and serves as a model for developing open-source laboratory manuals in other lab-based courses.
