

## Ohio News Watch

## Web tool helps farmers manage P

## Key Points

- Research focuses on measuring phosphorus movement.
- Existing P Risk Index recognizes benefits of only a few best management practices.
- Developing an online tool will help farmers compare more practices.

By GAIL C. KECK

**F**ARMERS and conservationists have some general assumptions about which farming practices are likely to send phosphorus running into surface waters and which practices help keep it in the fields. But if farmers are going to adjust their practices to reduce P movement, they need more than general assumptions — they need science-based data.

To gather that data and organize it so farmers can easily use it, soil scientist Libby Dayton is coordinating research on Ohio's USDA-Natural Resources Conservation Service Phosphorus Index Assessment Procedure, commonly called the Phosphorus Risk Index.

"We want to make the P index more functional," she explains.

Whether they know it or not, farmers currently use the existing P Risk Index as part of their nutrient management plans, but the index has some limitations, says Dayton, a research scientist with Ohio State University's School of Environment and Natural Resources. For one thing, it factors in P-holding benefits for a few best management practices while ignoring other practices that may also be helping keep P out of surface water. The index isn't particularly user-friendly either, and it doesn't give farmers an easy way to compare the potential for P transfer with various farming practices.

In Ohio, problems with algae blooms in Lake Erie and Grand Lake St. Marys have stimulated interest in re-evaluating the state's P Risk Index, adds Dayton.

"Because the water quality is not improving, we have to wonder if the Phosphorus Risk Index is being used, and if it's functioning," she explains.

The water quality situation is frustrating for farmers because they don't have the data they need to compare different production practices. "My experience is that farmers want to be good stewards and they're anxious to be part of the solution, but they want the solution to be science-based," Dayton says.

The three-year research project will monitor surface runoff and tile drainage water collected at the edges of 25 fields with various production practices. Dayton and her research team looked for fields that were representative of the state's field crop production land in terms of soils, topography and management practices. By looking at a range of practices, they'll be able to see how typical practices currently used by farmers compare.

"The farmers have been really helpful and willing to share information about their management practices," she says.

Using the edge-of-field data, researchers will evaluate the accuracy of the current P Risk Index and make any changes needed to make it more accurate. Additional data will also allow them to include more man-



**P INDEX PROGRESS:** Libby Dayton, a research scientist with Ohio State University's School of Environment and Natural Resources, will be speaking on nutrient management and Phosphorus Risk Index research March 6 during the Conservation Tillage and Technology Conference in Ada. Information about the conference is available online at [fabe.osu.edu/CTCon](http://fabe.osu.edu/CTCon).

agement options in the index. Dayton is hoping the additional data will make it possible to identify and rank practices that are most effective in reducing P loss from fields. The data will also help farmers choose practices that make the best use of their time and resources.

To make the index more useful for farmers, the researchers will develop an interactive, Web-based tool that lets farmers calculate their own P risk scores. Farmers will be able to include geographic information system, or GIS, data from their own fields and then compare the P risk of various production practices for specific fields, explains Dayton. She visualizes farmers sitting down in the evening and comparing different options to find the best fits for their farms.

The interactive tool will also help farmers identify alternatives when they run into management problems, Dayton adds. For instance, if a farmer ordinarily relies on cover crops to hold nutrients in fields, but rain makes planting them impossible, the farmer could compare the effectiveness of alternatives using the tool.

#### Team approach

Ohio is not the only state in the process of updating its P Risk Index, but studying phosphorus management has taken on greater urgency here because the land is so closely connected to surface water. The scale of the state's watersheds and the number of variables involved in P movement are daunting, Dayton says. Completing the project will take a broad-based team.

Dayton is the principal investigator in

charge of coordinating the project. The USDA-Agricultural Research Service, under the direction of Kevin King, ARS agronomist and hydrologist, will handle the edge-of-field runoff and drainage water collection. Other research partners include OSU's Statistical Consulting Service, OSU Extension, the School of Environment and Natural Resources, the Ohio Department of Agriculture's Livestock Environmental Permitting Program and USDA-NRCS.

The project is being funded by a \$1 million Conservation Innovation Grant from

USDA, plus another \$1 million in funding from Ohio farm organizations, agribusinesses and individual farms. Dayton is also hoping to find additional funding to extend the research beyond the first three years.

The participation of such a broad range of agencies, organizations and individuals is important for developing a better P Risk Index and using it to help improve water quality, says Dayton.

"If we're all moving together, we'll come up with something we can utilize."

*Keck writes from Raymond.*

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