

The Phosphorus Index

Iowa NRCS Fact Sheet



What is the Phosphorus Index (P-Index)?

The Phosphorus Index is a tool used to assess the potential for phosphorus (P) to move from agricultural fields to surface water. It uses an integrated approach that considers soil and landscape features as well as soil conservation and P management practices in individual fields. These characteristics include source factors such as soil test P; total soil P; rate, method, and timing of P application from commercial fertilizer, manure, and other organic sources; and erosion. Transport factors include sediment delivery, relative field location in the watershed, soil conservation practices, precipitation, runoff, and tile flow/subsurface drainage. Erosion, runoff and drainage factors for a site or field are used in a mathematical equation to determine whether the phosphorus movement risk is very low, low, medium, high or very high.

Why was the P-Index developed?

Phosphorus is an essential element for plant and animal growth. But when phosphorus is lost from fields it can increase algae growth in surface waters. This results in eutrophication, or excessive algae growth. Eutrophication is a main cause of impaired surface water quality. Since most phosphorus adheres to soil particles, factors that affect soil erosion are critical to phosphorus movement. If soil erosion is controlled, loss of phosphorus is less severe. The index accounts for that. NRCS began the effort to develop the index to be used as part of its revised nutrient management standard (590).

Who is it for?

The Phosphorus Index helps agricultural producers, conservation planners and others to evaluate the current risk of P reaching surface waters from site-specific fields. It helps determine factors which dominate the risk. The bottom line is, it helps land managers make management decisions to reduce P loss to water bodies and improve nutrient use efficiency and crop profitability.

Who Developed the P-Index?

The Phosphorus Index was developed by Iowa State University, the National Soil Tilth Lab and USDA's Natural Resources Conservation Service. The Index is based on soil and water quality research in Iowa and other Midwest states.

Updates to the P-Index

The P-Index is updated to reflect current soils information and rainfall data.

More Information about the P-Index

Additional information, including Guidance Document Phosphorus Index TN25 (formally named Technical Note No. 25, Iowa Phosphorus Index), the P-Index Calculator, and *Background and Basic Concepts of the Phosphorus Index* are available at www.nrcs.usda.gov/resources/guides-and-instructions/nutrient-management.

Or visit the Iowa Field Office Technical Guide (FOTG), Section 4, Conservation Practice Standards & Supporting Documents, [Nutrient Management \(590\)](#), for more information.

