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The Phosphorus Index

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The Phosphorus Index

Iowa NRCS Fact Sheet



Natural Resources Conservation Service
Des Moines, Iowa

July 2004



What is the Phosphorus Index (PI)?

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 Phosphorus 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.

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 Phosphorus Index?

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

Where can I find more information on the Phosphorus Index?

NRCS Technical Notice # 25 *Phosphorus Index* is available on the Natural Resources Conservation Service website at www.ia.nrcs.usda.gov. In addition, a support document titled *Background and Basic Concepts of the Phosphorus Index* and the Iowa Phosphorus Index Calculator (Excel Spreadsheet) are available on the web. A hard copy of NRCS Technical Notice # 25 is also available from Iowa NRCS field offices.

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