USING RUNOFF MONITORING DATA TO REFINE THE WISCONSIN PHOSPHORUS INDEX

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The Wisconsin Phosphorus (P) Index is a nutrient management planning tool for assessing the risk of P contamination of surface water through runoff from individual agricultural fields. In the current draft NRCS Nutrient Management Standard 590, the P Index is one of two options for planning applications of animal manure P. If the P Index is used for planning, manure applications can be made as long as the assessed risk of P delivery to nearby surface water over the crop rotation remains within an acceptable range. The other option uses soil test P as the sole indicator of the pollution potential of a field, and it restricts manure P applications at high soil test P levels. Planning with the P Index gives producers with high soil test P fields the ability to choose management options appropriate to their operations to maintain each field's P loss risk at an acceptable level.

The P Index is designed to be a better indicator of the potential for P contamination from a field than soil test P. This is because it takes into account both the P sources in a field (soil P, fertilizer, manure applications) and the likelihood that runoff from the field will carry that P to a nearby stream or lake. It uses readily available crop, soil, P application rate, and site information to estimate potential annual P delivery from field to stream. The purpose of this P Index delivery estimate is to guide P management decisions by correctly assessing the relative effects of different management practices on P contamination. It is not intended to be a tool for actually predicting P loading to surface water. Information on how the P Index is calculated and a link to computer software that includes the P Index can be found at http://wpindex.soils.wisc.edu/.

Year-round runoff P monitoring sites on agricultural fields on Discovery Farms throughout Wisconsin were established in 2003. As the calculations in the P Index that estimate runoff volumes and sediment loss for a particular site are based on averages of long- term weather conditions, it is not appropriate to attempt to compare P Index values with monitored data for these components in any given year. The monitoring data can, however, be used to give an indication of the P Index's ability to predict the relative effects of different management and site conditions on P losses. Preliminary data from these monitoring sites indicate that the P Index risk assessment for 2003-2004 was well correlated with annual P loads measured in the field. In contrast, total annual P loads were not related to soil test P.

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