Comparison of Matrix and Pathway Versions of the Phosphorus Site Index. (S11-mulla122247-Oral)

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Abstract:

Since the introduction of a Phosphorus Site Index in the early 1990's, there has been a proliferation of modifications to estimate risks of phosphorus (P) loss. Two basic types of Phosphorus Index have emerged - the original matrix version and the pathway version. The matrix version uses qualitative weighting factors for source and transport factors and loss potentials based on expert opinion and research results. The pathway version uses empirical expressions for losses of P in eroded sediment and runoff to quantitatively estimate P losses. This paper compares both versions of the P Index using data from field experiments involving P losses by erosion, rainfall runoff, and snowmelt runoff in Minnesota. We also evaluate relative performance of each version using a wide range of scenarios for agricultural management involving variations in erosion, runoff, soil test P levels, and rate, timing, and method of fertilizer and manure application.

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