



**Title:** Quantifying Phosphorus Losses in Agricultural Fields

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**Organization:** University of Wisconsin

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**Theme:** Pollution Assessment and Prevention

**Situation:** Phosphorus (P) is an essential nutrient for crop growth, but when too much phosphorus accumulates in the soil, losses to the environment can have disastrous consequences by promoting harmful algal blooms in lakes and streams. Concerns about increasing soil-test P levels are causing many states to consider water quality regulations that will affect agriculture.

**Objectives:** The objective of this study is to quantify the loss of P from farm fields using a Precision Agricultural-Landscape Modeling System (PALMS), validate the predictions with measurements on the fields of cooperating farmers, test a simple P-Index approach for use by regulators and extension agents, and implement a new outreach strategy for combining the expertise of researchers, extension agents, and agricultural consultants to implement best management practices using PALMS as a vehicle.

**Methods:** We have added sediment loss and P chemistry components to the existing PALMS. Detailed measurements of topography and soils have been made at primary farm and instruments to measure runoff, sediment loss, P losses and weather have been installed. Research and regulatory audience reached by presentation at Univ. of Wisc. Phosphorus Roundtable (May 2003). Farm audience reached at Buffalo County Dairy Breakfast attended by 1100 people. Additional dissemination through Wisconsin Discovery Farms.

**Partnerships:** We work closely with Wisconsin Discovery Farms ([www.discoveryfarms.org](http://www.discoveryfarms.org)) to locate participating farms and disseminate results. We currently are working closely with one farmer and an agricultural consultant as well at the USGS for monitoring.

**Research:** Integration is accomplished by using farm fields for research and then disseminating the results of this research to the farm community through cooperation of the participating farmer and Discovery Farms.

**Resources:** Discovery Farms and USGS have invested over \$150,000 in the primary site we are working on and the new Wisconsin Buffer Initiative recently invested an additional \$160,000 in P-loss studies on Discovery Farms so that our efforts can be expanded.

**Results:** The PALMS product development is proceeding but not yet completed. We have worked with state regulators through 3 meetings and are coordinating with developers of the Wisc. P-Index. We made presentations to 1100 at the farm site and worked with 3 other Discovery Farms so many farmers in at least 5 counties in Wisc. are aware of our work.



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