Wisconsin’s Nutrient and Pest Management (NPM) Program works with a wide range of partners to promote agricultural practices for protecting streams, lakes, and groundwater resources while maintaining profitable farms.

Protecting Water Quality and Farm Profits
The University of Wisconsin Nutrient and Pest Management (NPM) Program serves Wisconsin farmers and the agricultural professionals who assist them in making management decisions. The program links farmers and researchers to exchange knowledge on the profitability, practicality and environmental impact of crop production practices and cropping systems. This report contains a brief summary of accomplishments in 2009.

The NPM Program operates as a unit within both the University of Wisconsin-Madison's College of Agricultural and Life Sciences (CALS) and UW Cooperative Extension (UWEX). Founded in 1989 with state and fertilizer tax funding, NPM continues to develop and deliver essential outreach programs that address agriculture’s impact on natural resources.

2009 Projects

Nutrient Management Outreach

Nutrient Management Farmer Education Workshops:
The NPM Program is part of a team that delivers nutrient management education programs to Wisconsin farmers. Partners include UW-Discovery Farms, UW-Environmental Resources Center, the Wis. Dept. of Agriculture, Trade & Consumer Protection (WDATCP), county-based UWEX, Land Conservation Departments (LCD), Wisconsin Technical Colleges, and USDA-Natural Resources Conservation Service (NRCS), along with private sector agri-businesses. Collectively in 2009, nutrient management farmer education workshops were delivered in 35 counties to approximately 810 producers farming over 238,000 acres (see Table 1 on following page). Cumulative accomplishments numbers from 2000 to 2009 show that as a result of local delivery of these nutrient management farmer education workshops, over 2,900 producers farming approximately 889,000 acres in 53 counties have received in-depth education on nutrient management planning.

The guiding tool for these accomplishments is the Nutrient Management Farmer Education Curriculum developed by NPM, Discovery Farms, and the UWEX Nutrient Management Team. This curriculum, which was originally developed in 1999 and revised numerous times since, is a combination of classroom instruction, individual consultation, and on-farm field trials. The overall goal of this process is to involve farmers in the design of their own NM plans. The curriculum is endorsed by the WDATCP as the only mechanism for certifying farmers to write their own nutrient management plans.
Nutrient Management Farmer Education—Evaluation:
The survey tool used to evaluate accomplishments associated with the Nutrient Management Farmer Education workshops was extensively revised in 2009. The new survey more directly addresses nutrient management farm management practices (such as manure spreader calibration and spreading rates) and also has the ability to accurately quantify changes in fertilizer use. Along with changes in the survey itself, a process was established that gets results back to the participating instructor in a timely manner (typically within 45 days). This project was done in conjunction with the UW-Discovery Farms, UW-Environmental Resources Center, and the UW-River Falls Survey Research Center.

Training for Nutrient Management Planners (TNMP) Workshops:
A biennial series of two-day workshops that provides in-depth training on the preparation of quality nutrient management plans were conducted in 2009. The program was designed primarily for production agronomists and county-based conservation staff. Two workshops were conducted (Madison and Wausau) with a total of 61 participants. Partners include: UW-Discovery Farms, UW-Madison Dept. of Soil Science, WDATCP, Wis. Dept. Natural Resources, USDA-NRCS, and the Wis. Certified Crop Advisor (CCA) Board.

Nutrient Management Farmer Education Program “Train the Trainer” Workshops:
One-day workshops conducted for educators implementing the Nutrient Management Farmer Education Curriculum. The workshops concentrate on the curriculum materials and the mechanics of running a successful workshop. Two sessions were conducted in partnership with UW-Discovery Farms.

Watershed Water Quality Monitoring:
NPM staff were part of a team involved in monitoring stream water quality from a pair of watersheds in Dane, Green, and Iowa Counties (Pleasant Valley and Ridgeway Branch). The goal of the project is to evaluate the effects of land management in the watersheds on water quality in order to create a framework for selectively targeting effective remedial actions. Team members include UW-Madison Soil Science, the Nelson Institute, U.S. Geological Survey, WDATCP, WDNR, The Nature Conservancy, Green and Dane County LCD.

SNAP-Plus Assistance:
NPM continues to be involved in the refinement and educational delivery of the SNAP-Plus nutrient management planning software program. Working with the Snap-Plus team (UW-Soil Science and WDATCP), we assist in developing educational tutorials, updating the on-line help system and refining output reports to meet the needs of end users.

Table 1. Comparison of nutrient management farmer education workshop accomplishments from 2009 to 2008 and to the five-year annual average in terms of participating Wisconsin counties, producers, and farmed acres.

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<tbody>
<tr>
<td>Counties</td>
<td>35</td>
<td>19</td>
<td>84%</td>
<td>18</td>
<td>94%</td>
</tr>
<tr>
<td>Producers</td>
<td>810</td>
<td>209</td>
<td>288%</td>
<td>259</td>
<td>213%</td>
</tr>
<tr>
<td>Acres</td>
<td>238,023</td>
<td>81,000</td>
<td>194%</td>
<td>78,641</td>
<td>203%</td>
</tr>
</tbody>
</table>

The numbers of farmers participating in nutrient management planning workshops increased significantly in 2009.
Profitable Pest Management

Continuing Custom Applicator Program:
NPM, in conjunction with the Wisconsin Crop Production Association and various CALS faculty and staff, developed and delivered the Continuing Custom Applicator Program (C-CAP) in 2009. This educational program increases the professionalism of custom pesticide applicators by broadening their knowledge of the products they use, available new technologies, and customer service. Participant response was extremely positive and the program will be offered again in 2010.

Soybean Weed Management:
The focus of this project was to improve weed management in soybeans to increase profit and reduce the potential for weeds to develop herbicide resistance. NPM coordinated on-farm research, data collection, and outreach at 14 locations across the state of Wisconsin. Partners include faculty and a graduate student from UW-Madison Dept. of Agronomy and County UWEX agents.

Cut/Bale/Scout In-Field Workshops:
The Cut-Bale-Scout workshops are practical, hands-on, in-the-field, educational activities where farmers learn about potato leafhopper identification, field scouting techniques, treatment thresholds, and associated management techniques in alfalfa. This popular program started in 2006 and has continued every year since. In 2009, ten field days were held across Wisconsin. Partners include the UW Integrated Pest Management (IPM) Program and County UWEX agents.

Mid-management Practices for Conservation Reserve Program (CRP) Acres:
A project in cooperation with UW-Madison Weed Scientist Mark Renz and the USDA-NRCS to evaluate methods for the suppression of undesirable vegetation (including invasive species) on CRP land in order to enhance habitat for upland birds and other wildlife. Tillage, mowing, and herbicide control techniques were evaluated. This work was conducted at the Horicon National Wildlife Refuge.

Wisconsin Crop Manager:
The NPM and IPM Program website that continues to deliver the popular Wisconsin Crop Manager newsletter featuring contributions from faculty and staff across UW departments including Agronomy, Entomology, Soil Science, Plant Pathology, and Horticulture.
Sustainable Farming Systems

Healthy Grown Potatoes:
The Healthy Grown program is a national model of sustainable production systems, exemplifying integrated pest management and reduced pesticide systems for potato production. There is also an innovative ecosystem conservation component to restore privately owned landscapes in Wisconsin. The Healthy Grown program involves over 10% of the Wisconsin fresh market potato industry. NPM staff are responsible for the overall coordination and management of this program and are involved in all aspects of the system from production through marketing. During 2009, eight growers certified over 5,270 acres of fresh market potatoes via Wisconsin’s Healthy Grown ecological labeling program. To date, over 400 acres of privately owned lands have been restored to natural areas that protect and conserve rare plant or animal species.

![Graph showing decrease in toxicity and increase in IPM score over years]

Growers have reduced pesticide toxicity by 30%, while increasing their IPM score by 52%.

Vegetable BioIPM:
NPM, in conjunction with UW faculty specialists, is developing cole crop and vine crop seasonal biologically based integrated pest management (IPM) workbooks. These tools explain IPM practices for use throughout the growing season and are utilized by growers to assess their current IPM system. Also included is information on how and why to improve IPM practice adoption in the future. The NPM program has facilitated the writing, editing, and designing of the workbooks and has worked with UWEX specialists to gather information and edit materials. These books are used by the specialists to engage new emerging growers who are in need of IPM training.

Local and National Sustainable Certification:
National agricultural sustainability standards and programs are becoming commonplace. NPM staff are analyzing local, regional, and national sustainability certification programs with the goal of assisting Wisconsin growers in meeting the sustainability demands of processors, retailers, and consumers. This work is done in conjunction with UW-CALS faculty/staff and growers who are interested in local, regional, and national sustainability.

Organic Farming Systems Education & Outreach:
NPM is part of a UW team from UW-Entomology, Horticulture, and Agronomy conducting multi-year field research and associated educational outreach on the influence of soil fertility management on pest and beneficial insect activity in organic field crop rotations. In addition, NPM staff, along with UW faculty, represent UWEX on the Wisconsin Organic Advisory Council.
(WOAC). WOAC was convened by the Secretary of WDATCP and is composed of leaders in Wisconsin’s organic industry. WOAC promotes and identifies research, education, and policy needs of organic farmers, processors, marketers, retailers and consumers.

Additional NPM activities on organic farming include: 1) Assisting the Midwest Organic and Sustainable Education Services (MOSES) with development and delivery of the annual Organic Farming Conference; and 2) Development and instruction of “Introduction to Organic” professional development training programs for USDA-NRCS employees associated with that agency’s 2009 Organic Initiative Program.

Drinking Water Quality Education:
An educational effort focused on drinking water testing and educational programming in six southwestern Grant County Wisconsin townships. The spring 2009 program facilitated private drinking well water testing. Partners included Grant County LCD, Grant County UWEX, UWEX Basin Educator, Grant County Health Department and Grant County Economic Development Corporation.

Soil Quality:
NPM Program was a partner in a southwest Wisconsin regional field day held as part of the educational efforts of the UWEX Soil Quality Team. The focus was on maintaining and enhancing soil quality for long-term profitability and productivity of Wisconsin agriculture. Morning speakers were followed by an afternoon field session illustrating on the ground features with respect to the soil quality characteristics discussed in the classroom. UW-Soil Science, UWEX County and Regional Specialists, and Rock County NRCS and LCD staff collaborated on this field day.

2009 Publications
The NPM Program writes, designs, and produces useful information for framers in various formats. The program works with CALS researchers and UWEX specialists from numerous departments to create NPM publications. A listing of 2009 titles follows:

- Fungicide Resistance Management in Corn, Soybean and Wheat in Wisconsin (UWEX No. A3878)*
- Weeds of the Cranberry Marsh
- Cut, Bale and Scout for Potato Leafhopper *
- Pest Management Fast Facts (revision) *
- Nutrient Management Fast Facts (revision)*
- Soil Testing Basics (revision)*
- Know How Much You Haul (reprint)*
- UW Nitrogen Guidelines for Corn (revision)*
- Wisconsin’s Pre-sidedress Soil Nitrate Test (revision)*
- Planting Winter Rye after Corn Silage: Managing for Forage *
- Frost Seeding Red Clover in Winter Wheat *
- Characterization of Turkey Manure (UWEX No. GWQ 050-A)**
- Potential Runoff from Stacked Poultry Manure (UWEX No. GWQ 050-B)**
- Effect of Headland Stacking of Poultry Manure on Groundwater (UWEX No. pending)**
- Stockpiling Manure & Soluble Salts: Site Remediation for Crop Production (UWEX No. GWQ 050-C)**

* Publications available for download at the NPM Program’s website (http://ipcm.wisc.edu) or contact the NPM Program office.
** Publications produced by the UW-Discovery Farms Program and available for download at the Discovery Farm’s Program’s website (http://www.uwdiscoveryfarms.org/)
2009 YouTube Videos
In 2009, the NPM and the Integrated Pest Management (IPM) Programs ventured into a new method for educational outreach—YouTube videos. The staff from NPM, IPM, and UW-CALS developed 15 short videos on agricultural pest management topics and techniques. Videos produced in 2009 are listed below.

- Tomato Late Blight in Wisconsin
- White Mold in Soybeans
- Field Corn, Early Growth Stages Defined
- Field Corn, Mature Growth Stages Defined
- Scouting Alfalfa for Potato Leafhopper
- Soybean Yellowing at V2 Growth Stage
- Soybean Early Season Injury Questions
- Anthesis (Flowering) in Wheat
- Wheat Stand Assessment and Nitrogen Timing
- Identifying the Hollow Stem and Jointing Growth Stages in Wheat
- Winter Wheat Diseases
- Soybean Sudden Death Syndrome Scouting Reminder
- Alfalfa Stand Assessment: Is this Stand Good Enough to Keep?
- Western Bean Cutworm - A Pest of Field and Sweet Corn
- Soybean Insect Pest Management - Japanese Beetle and Soybean Aphid

View them at YouTube.com on the UWEX channel, under the farming heading.

2009 Grants

- **Nutrient Management Programming: 2009 UWEX & UW-Madison-CALS Budget Request**
  - **Sponsor:** Wis. Dept. of Agriculture, Trade & Consumer Protection
  - **Funding:** $459,000 ($116,697 = NPM portion)
  - **Collaborators:** UW-Soil Science, UW-Discovery Farms, UW-Environmental Resources Center
  - **Objectives:** Deliver educational programming to increase the adoption of agricultural management practices for maximizing the economic efficiency of supplemental crop nutrients while protecting the quality of Wisconsin’s water resources. This work is part of a WDATCP initiative to advance the state’s nutrient management planning efforts. The UW partners assist this initiative by providing the research, outreach, training, and tools for greater development and implementation of nutrient management plans.

- **Vegetable Risk Reduction**
  - **Sponsor:** USDA-CSREES Special Extension Project
  - **Funding:** $315,840 ($162,267 = NPM portion)
  - **Collaborators:** UW-Horticulture, UW-Entomology, UW-Plant Pathology, UW-Soil Science
  - **Objectives:** Biointensive IPM education through the development of workbooks and hands-on tools

- **Potato Pest Management**
  - **Sponsor:** USDA-CSREES Special Extension Project
  - **Funding:** $265,920 ($136,519 = NPM portion)
  - **Collaborators:** UW-Horticulture, UW-Entomology, UW-Plant Pathology, Wis. Potato & Vegetable Growers Assn., World Wildlife Fund, International Crane Foundation
  - **Objectives:** Biointensive IPM education, ecosystem restoration and standards, support for potato eco-labeling (Healthy Grown) initiative
Crop Plant Nutrition and Insect Response in Organic Field Crop Production: Linking Farmer Observation to University Research and Extension
Sponsor: USDA CSREES Integrated Organic Program
Funding: $374,478 over 4 years ($12,190 = NPM portion ($45,387 over 4 years))
Collaborators: UW-Entomology, UW-Marathon County, Arlington Agricultural Research Station
Objectives: Field research and educational outreach project examining the influence of soil fertility management on pest and beneficial insect activity in organic crop rotations.

Soybean Weed Management
Sponsor: UW-Agronomy
Funding: $5,000
Collaborators: UW-Agronomy, UWEX county agents, cooperating farmers
Objectives: Improve soybean weed management and reduce potential for herbicide resistance.

Continuing Custom Applicator Program
Sponsor: WPCA
Funding: $1,716
Collaborators: UW-Agronomy, UW-Plant Path, UW-Entomology, Wisconsin agribusinesses
Objective: To increase the professionalism of custom pesticide applicators by broadening their knowledge of the products they use, available new technologies, and customer service.

TAC Mission and Membership:
The NPM Program shares a joint advisory committee with the Integrated Pest Management (IPM) and Pesticide Applicator Training (PAT) programs. Meeting twice a year, the following advisors from farms, organizations, government agencies, and UW provide vital oversight and perspective to NPM and its allied programs.

- Lori Bowman - WDATCP
- Tom Bramschreiber - Farmer - Bangor, WI
- Denny Canef - River Alliance of WI
- Duane Maatz - WI Potato and Vegetable Growers Assn.
- Margaret Krome - Michael Fields Agricultural Inst.
- Mike Cerny - WI Soybean Marketing Board
- Herman Miller - Farmer - Lodi, WI
- Pat Murphy - USDA-NRCS
- Jeff Polenske (Co-Chair) - WI Assn. of Ag Consultants & Polenske Agronomic Consulting Inc.
- Gordon Stevenson - WI DNR
- Rob Poehnelt - WI Crop Production Assn.
- Jim VandenBrook - WDATCP
- Wayne Wells - Hartung Brothers
- Ken Williams - UWEX Waushara County
- Jim Zimmerman – WI Corn Growers Assn.
- A.J. Bussan - UW Horticulture
- Jed Colquhoun - UW Horticulture
- Shawn Conley - UW Agronomy
- Eileen Cullen - UW Entomology
- Paul Esker - UW Plant Pathology
- Dan Heider (Co-Chair) - UW Horticulture
- Laura Ward Good - UW Soil Science
- Russ Groves - UW Entomology
- Carrie Laboski - UW Soil Science
- Birl Lowery - UW Soil Science
- J. Mark Powell - UW Dairy Forage Research Center
- Mark Renz - UW Agronomy
- Matt Ruark - UW Soil Science
- John Stier - UW Horticulture
- John Shutske - CALS & UWEX
Welcome John and Amber

In October of 2009, John Stier agreed to become a faculty Co-Director of the NPM Program. John is a professor of Horticulture specializing in turfgrass. John is also Chair of the UW-Madison Department of Horticulture. John is the sixth faculty Director in the 20 year history of the NPM Program. John replaces Chris Boerboom who left the UW in 2009 for an administrative position at North Dakota State University.

In 2009, the NPM Program also welcomed Amber Weisenberger-Radatz to the staff. Amber is a shared employee of both NPM and the UW-Discovery Farms Program. Amber specializes in farmer nutrient management education within the southwest region of Wisconsin.