

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Nutrient Management

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	50%			
133	Pollution Prevention and Mitigation	15%			
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	15%			
601	Economics of Agricultural Production and Farm Management	20%			
	Total	100%			

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2010	Extension		Research	
	1862	1890	1862	1890
Plan	11.6	0.0	0.0	0.0
Actual	14.0	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
443051	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
816077	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

The Nutrient Management Team leads the Nutrient Management Farmer Education (NMFE) program which in 2010 delivered workshops to 500 producers (mostly dairy) and secured funding for 200 of those most at risk. The team also led the initiative to refine nutrient management tools, including the Wisconsin Phosphorus Index (WPI), a runoff phosphorus assessment tool used for cropland management planning. In addition, the team also fosters professional practices among custom manure applicators by providing training for for-hire manure applicators and making them major partners in assuring regulatory compliance.

2. Brief description of the target audience

Across the initiatives designed to address the state's nutrient management needs, Cooperative Extension reached 19,525 adults through direct teaching methods in 2010, 96.1 percent were white, 0.3 percent Asian American, 0.2 percent African American, 0.1 percent American Indian, and 3.3 percent of other identity; 79.7 percent were male and 20.3 percent female; 3.1 percent were identified as Latino. Community partners and 70 volunteers trained made additional teaching contacts.

V(E). Planned Program (Outputs)

1. Standard output measures

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	20000	0	0	0
Actual	19525	4032916	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2010
 Plan: 0
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2010	Extension	Research	Total
Plan	0	0	
Actual	15	15	30

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- {No Data Entered}

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Farmers will implement nutrient management strategies to reduce nutrient over application.
2	Acres of cropland and grazing land will be covered under a nutrient management plan based on UW-Extension training and recommendations.
3	Nutrient management strategy implementation will result in increased/enhanced farm profitability
4	Wisconsin agricultural professionals will develop skills and build professional credibility.
5	Applied research projects and on-farm demonstrations of nutrient management strategies will be used to improve UW-Extension nutrient management recommendations and educational programs.

Outcome #1

1. Outcome Measures

Farmers will implement nutrient management strategies to reduce nutrient over application.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	2000	2560

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Local conservationists are identifying farmers who could benefit by learning nutrient crediting and basic requirements of the USDA Natural Resources Conservation Service 590 Nutrient Management Standard. Cooperative Extension, in partnership with the Wisconsin Department of Natural Resources, provides nutrient management education which meets the certification requirement for farm nutrient management plans.

What has been done

Interagency collaborations have been formed to deliver the Nutrient Management Farmer Education program locally and to secure funding for those most in need of nutrient management planning assistance. The program integrates educational programming and local conservation efforts. Local projects were led by teams that included Cooperative Extension county educators and nutrient management specialists, county NRCS and land conservation staff, and Wisconsin Technical Colleges staff. In 2010, NMFE provided \$100,000 in grants for 11 projects that delivered nutrient management training to 200 at-risk producers who farm more than 56,000 acres in 12 counties. Another \$250,861 of in-kind support was provided by counties and Technical Colleges.

Results

As a result of local NMFE workshops, more than 500 farmers in 28 counties increased their knowledge of research-based best management practices in 2010, a 93 percent increase over the 2004-2008 five-year annual average of producers who increased their knowledge. An estimated 86 percent of these farmers developed or helped develop a qualified nutrient management plan for their operation. Since 2000, an estimated 80 percent of the total 3,200 farmers trained in the program have developed, helped develop or updated a formal nutrient management plan that meets all local, state and federal regulations. Grant-funded NMFE reached many of those most at risk, including 46 Amish and Mennonite producers whose beliefs prohibited

computer use for Snap-Plus training, yet whose 8,400 crop acres are now covered by qualified nutrient management plans because hand-written training was provided to them.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
133	Pollution Prevention and Mitigation
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants

Outcome #2

1. Outcome Measures

Acres of cropland and grazing land will be covered under a nutrient management plan based on UW-Extension training and recommendations.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	550000	782000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Wisconsin farmers face increasing regulatory pressures due to agricultural nutrient non-point source pollution of water resources. Government agricultural programs, zoning, large farm licenses, state animal feeding operation permits and new farmland preservation tax credits as of 2010 all require farms to have nutrient management plans. Regulations aside, improving nutrient management practices can improve farm profitability while reducing harmful effects of nitrogen and phosphorus on water quality.

What has been done

The Nutrient Management Team researches and updates guidelines and software to help farmers credit nitrogen from legumes and manure to save fertilizer cost through maximum economic return on nitrogen fertilizer, and to prevent loss of nitrogen and phosphorus from fertilizers and manure to groundwater, lakes, streams and the atmosphere. Their revised (2010) Nutrient Management Farmer Education (NMFE) curriculum combines classroom instruction, individual consultation, and on-farm field trials to engage farmers in designing nutrient management plans they can understand and follow. One key revision, updated nitrogen rate guidelines for corn, was based on a vigorous protocol developed by extension specialist Carrie Laboski for assessing corn

yield response to nitrogen fertilizer.

Results

Since 2000, an estimated 80% of the total 977,500 acres farmed by the 3,200 producers trained by Wisconsin Cooperative Extension Nutrient management Farmer Education are now covered by a qualified nutrient management plan that meets all local, state and federal regulations. This indicates that as of 2010, at least 782,000 acres of cropland and grazing land are covered under a nutrient management plan based on Wisconsin Cooperative Extension training and recommendations. Nutrient management (NM) plan cost is about \$7 per acre for farmer time and effort. Thus, with 782,000 acres under NM plans as of 2010 due to Wisconsin Cooperative Extension, the farmer benefit values at least \$5.47 million. This value could easily be higher, depending on how much nutrient use decreases relative to current fertilizer prices, and does not include benefits due to improved water quality.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
133	Pollution Prevention and Mitigation
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants

Outcome #3

1. Outcome Measures

Nutrient management strategy implementation will result in increased/enhanced farm profitability

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

Wisconsin agricultural professionals will develop skills and build professional credibility.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	0	437

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

In 2003, the Nutrient Management Team Custom Manure Applicators Subcommittee partnered with professional applicators, and with Illinois and Michigan extension colleagues, to create a multistate, multilevel manure applicator training and certification program. When an insurance company began requiring safety training of all contractors working on insured farms, this program met their requirements.

What has been done

Since it was formed in 2000, the Custom Manure Applicator Subcommittee has worked with agencies, stakeholders and professional applicators in Wisconsin and the Great Lakes region to foster professional practices by establishing and advising the statewide Professional Nutrient Applicators Association of Wisconsin (PNAAW) and partnering with the insurance industry to create market-based incentives (10 percent to 50 percent premium reductions) for professional applicators taking part in the training and certification. When training requests rose from an average of three per year to one per day in early 2010, the PNAAW board asked Cooperative Extension to offer additional Level 1 and 2 trainings. Team members responded by offering eight Level 1 sessions around the state, partnering with existing applicators and Fox Valley Technical College staff to reach new applicator firms.

Results

In 2010, 437 applicators completed at least one level of certification training. Wisconsin Cooperative Extension offered Level 2 training in Calumet County for more than 30 crew supervisors and business owners. Twice as many certified applicators were certified in 2010 as in 2009. Trained employees have been tested on the basics of spill response, safe application and Wisconsin regulations. This extension effort has produced significant benefits for both the industry and the environment. A fully trained employee understands the regulations farmers are under, and is better able to help the farmer meet the regulations. DATCP, DNR and local Land Conservation Districts report that farmers' manure management plans are more fully implemented because of the training program. The two primary insurance agencies working with the industry report that only two manure spill claims were filed in 2010. This low number indicates that while spills do occur, cleanup and restoration costs are low because spills are dealt with quickly before they become large and costly. Insurance companies report a trained applicator knows what steps to take and equipment to use to quickly contain and clean up a spill, spending \$4,000 to \$5,000. An untrained applicator creates a much larger spill that may contaminate a nearby stream, and spends \$10,000 cleaning up a spill, twice as much.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
133	Pollution Prevention and Mitigation
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants

Outcome #5

1. Outcome Measures

Applied research projects and on-farm demonstrations of nutrient management strategies will be used to improve UW-Extension nutrient management recommendations and educational programs.

Not Reporting on this Outcome Measure

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Competing Public priorities
- Other (Newer colleagues)

Brief Explanation

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- After Only (post program)
- Before-After (before and after program)
- Time series (multiple points before and after program)
- Other (Direct observation)

Evaluation Results

Issue

Wisconsin farmers face increasing regulatory pressures due to agricultural nutrient non-point source pollution of water resources. Government agricultural programs, zoning, large farm licenses, state animal feeding operation permits and new farmland preservation tax credits as of 2010 all require farms to have nutrient management plans. Regulations aside, improving nutrient management practices can improve farm profitability while reducing harmful effects of nitrogen and phosphorus on water quality.

Response

The Nutrient Management Farmer Education (NMFE) curriculum is produced, evaluated and updated jointly by interdisciplinary Wisconsin Cooperative Extension Discovery Farms and Nutrient and Pest Management Program staff. The NMFE curriculum makes use of classroom instruction, individual consultation, and on-farm field trials to educate farmers on methods for improving nutrient management practices from both an

economic and environmental perspective. The next step is to involve farmers in the design of their own nutrient management plans. To measure results, NMFE curriculum coordinators complete an annual survey.

Results

Survey results show continued increases in the number of Wisconsin NMFE-trained farmers compared to the 2004-2008 five-year annual average. During 2010, around 132,750 additional acres of Wisconsin cropland were planned-up 69 percent-by 3,200 NMFE-trained producers whose major agricultural enterprise was dairy. Data from 2000 to 2010 show that as a result of local delivery of NMFE workshops, more than 3,200 producers who farm around 977,500 acres in 51 counties have received education on nutrient management training based on Wisconsin Cooperative Extension field-tested recommendations.

Key Items of Evaluation