

I. PERSONAL INFORMATION

Name: Theodore F. Bay

Formal Education: M.S. - University of Wisconsin - Madison, Agricultural Economics, 1980
B.S. - University of Wisconsin - Platteville, Agricultural Economics, 1976

Extension Employment: Crops & Farm Management Agent, University of Wisconsin Extension,
Grant County, October 1991 - present
Subcontracted 20% time to Lafayette County 2006 - present

Extension Rank: Associate Professor: July 1, 1997 – Present
Assistant Professor: October 1, 1991 – June 30, 1997

Current Position Description: (Exhibit 1)

II. PROFESSIONAL CONTRIBUTIONS**The University****University Service:**

	<u>Activity</u>	<u>Year(s)</u>
UW-Extension (UWEX)		
Scholarship Action Team	Member	2011-Present
Search and Screen Committee Eastern and Southern District Director	Member	2011
UW-Extension (UWEX) Department of Ag/Agbusiness		
Non-Tenured Faculty Support	Mentor	2004-Present
Standards, Rank and Promotion Committee	Member	2005-2011
Standards, Rank and Promotion Committee	Chair	2009-2010
ANRE Program Area	Liaison	2001-2002
UWEX Agriculture and Natural Resources Extension (ANRE) Program Area		
Nutrient Management Team	Member	2001-Present
Manure Applicator Subcommittee	Member	2001-Present
Wisconsin Custom Manure Applicator Expo Committee	Chair	2001-Present
Grains Team	Member	2002-Present
Forage Team	Member	2004-Present
Farm Team	Member	2006-Present
Wisconsin Farm Technology Days Field Demonstration Comm.	Chair	1997-1999
Grant County UW-Extension Office	Co-Dept. Head	2010-Present
Grant County UW-Extension Office	Dept. Head	2009

The Profession**Organizations:**

National Association of County Agricultural Agents (NACAA)	Member	1992-Present
NACAA National Convention Registration Committee	Co-Chair	2003
Wisconsin Association of County Agricultural Agents (WACAA)	Member	1992-Present

The Community**Organizations:**

Grant County Agriculture Committee/Food & Ag Committee	Member	1992-Present
Grant County Clean Sweep Committee	Member	2000-Present
Professional Nutrient Applicators Association of Wisconsin	Advisor	2001-Present
Southwest Wisconsin Nutrient Management Workgroup	Member	2002-Present
Grant County Wisconsin Master Gardener Association	Advisor	2004-Present
Grant County LWCD Local Advisory Committee	Member	2006-Present
Southwest Wisconsin Dairy Modernization Task Force	Member	2004-2010
Farm Progress Days Nutrient Management Education Committee	Member	2002

III. MAJOR PROGRAM: Nutrient Management

Situation Statement:

Livestock and crop production in Grant and Lafayette Counties has changed over the last twenty years with a decline in dairy cows influencing a decline in hay production and increased soybean acreage. Between 1990 and 2010 dairy cow numbers declined 30% in both Grant and Lafayette County. Oat production declined 22,000 acres, alfalfa declined 107,000 acres, corn rose 17,000 acres and soybean increased 89,000 acres.

County citizen and farm needs assessments have consistently identified environmental issues as top agriculture concerns for Grant County. The 2007 assessment ranked soil conservation and manure management in the top four issues of the Crops & Farm Management program area (Exhibit 2). This reflects public concern for the environment and farm concern for land stewardship and regulations.

Manure management for many livestock producers includes hiring custom manure application services. Over 130 application firms serve Wisconsin livestock farms. Custom applicators apply 40% of the livestock waste for dairy operations making their practices an integral and significant component of success in improving nutrient management. Because of their potential influence on nutrient management an annual education program for custom applicators serving Grant County was begun in 1992. This was reported during County performance reviews and the Ag & Extension Committee Chair advised that this program should also be made available to Grant County farmers to help them keep abreast of regulation changes and meet coming program requirements. With this advice, nutrient management education expanded to farmers with additional topics and sessions to address nutrient management planning.

In 2000, custom applicators approached Extension for help in forming a state association. Meetings facilitated by Extension (Erb, Clark, Bay) resulted in formation of the Professional Nutrient Applicators Association of Wisconsin (PNAAW). The Extension team developed a three-level training and certification program adopted by Association members. With Extension advisory support the Association established an annual winter conference and a manure expo as education forums dedicated to the custom application industry. The Expo, begun as the Upper Midwest Manure Handling Expo, under PNAAW sanction has travelled to six states, MN, MI, OH, IA, PA, NB, and returns to Wisconsin in 2012, as the North American Manure Expo. I serve as Chair of the planning committee for Wisconsin Expo events. Currently 80 custom manure application firms have joined the Association.

My nutrient management program includes education meetings and a workshop training series for farmers who want to develop their own Nutrient Management Plan (NMP). Work with applicators includes regional and state training for certification and management of Wisconsin exhibitions of the North American Manure Expo. Current research focuses on sulfur deficiency in alfalfa. Program partners include Extension Agents, Extension Specialists, Department of Natural Resources (DNR), Wisconsin Department of Agriculture Trade and Consumer Protection (WDATCP), Natural Resources Conservation Service (NRCS), Land and Water Conservation Department (LWCD) agencies and crop consultants.

Objectives:

1. Producers will increase knowledge of soil, plant, and water related nutrient management issues and best management strategies.
2. Producers will increase profitability and use of soil and water protection practices through development and adoption of nutrient management plans.
3. Custom manure haulers will increase knowledge and capability of following nutrient management plans and applicable regulations.

Teaching Methods Used:**1. Group Meetings, Workshops, and Field Days (in Grant County areas unless otherwise noted)**

<u>Event</u>	<u>Subject Matter Taught</u>	<u>Date</u>
1. Professional Nutrient Applicators Assoc. of Wis. (PNAAW), Wis. Custom Operators, Inc., & Midwest Forage Assoc. (MFA), Symposium & Annual Meeting, January, Wisconsin Dells, WI	PNAAW Level 1 Certification Curriculum Alfalfa Fertilizer Study (PNAAW Level 2 Certification) Ethics & Standards (PNAAW Level 2 Cert.)	January 2012 2005 thru 2009 January 2012 2004 thru 2005
2. Nutrient Management Annual Program Series for Farmers (Grant & Lafayette County)	Soil Testing/Interpreting Soil Test Reports Manure Testing/Nutrient Crediting Principles of N, P, & K Management SNAP+ Training/Plan Completion (lab assist)	2008 thru 2011
3. Regional Pest Management Update Meeting, Belmont, WI	Alfalfa Response to Sulfur	November 2011
4. YouTube Video	Planning For Manure Application	October 2011
5. UW-Platteville Soil Fertility Class	Alfalfa Response to Sulfur	September 2011
6. Wis. Forage Teaching & Tech. Conference, West Salem, WI	Should we be paying more attention to sulfur for alfalfa?	August 2011
7. Alfalfa Field Day, Laf. Cty.	Plant Tissue Testing/Alfalfa Response to Sulfur	August 2011
8. North American Manure Expo Norfolk, Nebraska	Application of GPS Technology to Improve Manure Management	July 2011
9. UW-Platteville Soil Fertility Class	Southwest Wisconsin Alfalfa Study	April 2011
10. SW WI Regional Custom Applicator Training, Belmont, WI	PNAAW Level 1 Certification Curriculum	Mar 2010-2011
11. WAPAC Winter Conference UW-ARS Arlington, WI	Emerging Sulfur Fertility and Disease Issues in Alfalfa	March 2011
12. Regional Pest Management Update Meeting, Belmont, WI	Sulfur Deficiency In Alfalfa	November 2010
13. Fresh Market Produce Workshop	Nutrient Mgt. for Field & Hoop House Veggies.	February 2010
14. Custom Applic. Training, Cook's Trucking, North Freedom, WI	PNAAW Level 1 Certification Curriculum	March 2009
15. Custom Applicator Training	PNAAW Level 1 Certification Curriculum	2004 thru 2009
16. Dairy Summit, SW Regional Dairy Modernization Conference	Value of Dairy Manure	December 2008
17. Risk Management Assessment Program, SW Vo-Tech	Spending \$1/acre Could Save You \$20 --- Managing Fertilizer Costs	March 2008
18. Land & Water Cons. Dept. NMP Update Meeting, Darlington, WI	How to Read & Implement Your NMP	February 2008
19. Nutrient Management Plan Annual Program Series For Farmers	Soil Testing, Interpreting Test Reports N & P & K Mgt. Standards, Nutrient Crediting	2001 thru 2007
20. SW Tech Forage Mgt. Expo	Economics of Forages---Fert. Req./Alf. Credits	February 2006

III. MAJOR PROGRAM: Group Meetings, Workshops, and Field Days (continued)

<u>Event</u>	<u>Subject Matter Taught</u>	<u>Date</u>
21. Fertilizer, Aglime, and Pest Management Conf., Madison	Soil Sampling for Nutrient Management Plans	January 2006
23. UW-Platteville Soils Lab	Soil Testing & Fertilizer Recommendations	November 2005
24. Nutrient Management Planning Training Series For Farmers Richland Cty. Ext., RC, WI	Developing A Nutrient Management Plan Principles of Nutrient Management Interpreting Soil Test Reports, Soil Testing	Jan. thru March 2004
25. Custom Applicator NMP Training	Nutrient Crediting/Meeting 590 Standards	1995 thru 2003
26. PNAAW Winter Conference Wisconsin Dells, WI	Nutrient Crediting	January 2002
27. Soil & Water Conservation Society Conference, Moline, IL	Custom Manure Applicators' Active Role in Improving Nutrient Management	October 2002
28. Iowa County Extension. NMP Meeting, Dodgeville, WI	Soil Testing, Interpreting Test Results	February 2002
39. Land Conservation Dept. NMP Meeting Series, Darlington, WI	Components of a Nutrient Management Plan	Sept., Aug., June March 2001
30. Nutrient Management Annual Program Series For Farmers	Nutrient Budgeting What Is A Nutrient Management Plan?	1998 thru 2000
31. NMP Training for NRCS Techs.	What is A Nutrient Management Plan?	September 2000
32. Nutrient Management Meeting	590 Nutrient Management Standard	February 2000
33. SW Vo-Tech TV Network Video	Groundwater Model	November 1999
34. Regional Nut. Mgt. Training for NRCS & LCD Techs. RC, WI	Nutrient Budgeting	August 1998
35. Lancaster Academy Charter School Prog., Farm Env. Issues	Water Model, NMP-What is it? FARM-A-SYST Program	June 1998
36. Nutrient Budgeting Meeting	Land Requirement for Waste Management	March 1998
37. Waste Management Ordinance Multi-County Review Meeting	Where are we at on livestock waste mgt.?	March 1998
2. <u>Individual Consultations</u>		
<ul style="list-style-type: none"> • Farm calls to producers, office visits by producers, agriculture agency and industry professionals • Individual telephone and email consultations with producers, crop consultants, and Agency partners 		
3. <u>Newsletter</u>		
<ul style="list-style-type: none"> • Editor Extension Office AgPage newsletter sent to 1200 producers and ag professionals (Exhibit 3) 		
4. <u>Print Media</u>		
<ul style="list-style-type: none"> • News Releases sent to 11 local newspapers, 2 Wisconsin state farm newspapers, and 3 radio stations • Annual column in Wisconsin Agriculturist state farm periodical 		
5. <u>Radio Programming</u>		
<ul style="list-style-type: none"> • WGLR Queen B Radio, Platteville and WEKZ Big Radio, Monroe: Monthly Guest Spotlight with crop updates in season. 		
6. <u>Educational Papers</u>		
<ul style="list-style-type: none"> • "Adding Sulfur Can Boost Alfalfa Yield," Wisconsin Agriculturist, July, 2011 (Exhibit 4) • "Troubleshoot Fields Using Plant Analysis," Wisconsin Agriculturist, July, 2010 • "Aphanomyces Root Rot Dampens Alfalfa Yields," Wisconsin Agriculturist, September, 2009 		

III. MAJOR PROGRAM: Educational Papers (continued)

- “Maximize Fertilizer Returns,” Wisconsin Agriculturist, August, 2008
- “Cut Production Costs By Managing Manure,” Wisconsin Agriculturist, Sept., 2007
- “Boost Chance of CSP Eligibility,” Wisconsin Agriculturist, August, 2006
- “Dairy and Cash Grain Farmers: Considerations For Manure Agreements,” Agri-View, August, 2005
- “PNAAW Serves State’s Custom Applicators,” Agri-View, August, 2003

7. Research and Demonstrations

- Alfalfa Response to Sulfur, On-Farm Research Study (2010-present, MFA grant-2011)
- Maximum Return to Nitrogen (MRTN) Corn Study, assistance to Lancaster ARS (2006-2007)
- MRTN On-Farm Corn Study (2007)
- Aphanomyces Diseased Alfalfa Response to Nitrogen, On-Farm Study (2002)

8. Multiplier Contacts

- Extension Agents, Technical College Farm Instructors, LWCD & NRCS County Directors and Technicians, Southwest Wisconsin Agronomists, Agriculture Reporters, PNAAW Applicators

Program Awards:

- UW Colleges & UW-Extension Chancellor’s Award For Excellence - Custom Manure Applicator Subcommittee (2010)
- UW-Extension Program Innovation Award - Custom Manure Applicator Subcommittee of the Nutrient Management Team (2009)
- Friend of Conservation Educator Award - Wis. Chapter Soil And Water Cons. Society (2008) (Exhibit 5)

Results, Evaluation and Discussion:

Objective 1: Producers will increase knowledge of soil, plant, and water related nutrient management issues and best management strategies.

Since achieving tenure approximately 1250 students, producers, and agency staff attended Extension and agency meetings in Grant and Lafayette County and received information I taught on soil testing, fertilizer requirements, nutrient crediting, soil conservation and nutrient management planning. A pre- and post-test of my teaching of a UW-Platteville Soils Lab, Soil Testing & Fertilizer Recommendations, showed a 67% increase in knowledge (Exhibit 6, pg. 2). One student commented, “Best presentation of the entire year”. A performance evaluation was sent to Grant County citizens who had contacted the Extension Office by telephone for general assistance from the Crops & Farm Management Agent. The survey asked callers to indicate if information they received through my programing had been of a management or financial benefit. This survey was conducted with 50 citizens each year from 2003-2008, a total of 300. Of the 158 (53%) surveys returned, 25 or 8% of the total mailing indicated nutrient management education had benefited management or financial returns of their operation (Exhibit 7).

Objective 2: Producers will increase profitability and use of soil and water protection practices through development and adoption of nutrient management plans.

The workshop series on NMP training for farmers is a collaboration between Extension, UW-Platteville, Nutrient and Pest Management Program (NPM), and the Grant and Lafayette County LWCD Offices. My responsibility is development and teaching of nutrient management topics and assistance with SNAP+ lab sessions. From 2001-2011 163 farmers participated in the NMP workshops and 85 (52%) completed plans for their farms. A 2001 participant came to the office to show me his fertilizer savings of \$5,697.90 from nutrient crediting. This savings was the part of a prepaid fertilizer purchase he cancelled after completing his NMP. A participant from 2004 personally related “I save \$3,000 - \$3,500 per year in fertilizer costs since completing my plan and without any yield loss. I have averaged over 200 bu/a.” He also stated, “You cannot believe how good it feels to be able to call the agronomy center and tell them what fertilizer I need rather than asking, what should I put on?” A producer enrolled in the 2006 Conservation Security Program qualified for a payment of \$12,847 with annual payments for the next ten years. This producer related that the training he received, the procedures he learned, and the plan he completed in the NMP training were the key components of his high level of qualification for CSP. He said “I owe you a lot!” Evaluation for this program is the goal that producers will receive and use nutrient management information to develop a nutrient management plan for their farm. A telephone survey of 60 producers who had participated in NMP meetings or training workshops over the span of 1999-2011 indicated that 54 (90%) had

III. MAJOR PROGRAM: Results, Evaluation and Discussion, Objective 2 (continued)

received information on one or more nutrient management practices or strategies from my teaching and 47 (78%) had adopted one or more of these practices or strategies (Exhibit 8). Forty five (75%) completed a NMP and 44 are still following their plan. Twenty eight (47%) have saved money following strategies, 29 have reduced fertilizer inputs and 13 have increased yields. Comments indicate the NMP workshop is valued. One farmer commented the workshop was “best thing I ever did”.

Objective 3: Custom manure haulers will increase knowledge and capability of following nutrient management plans and applicable regulations.

The Custom Applicator subgroup of the Statewide Nutrient Management Team developed a 3 tier certification program for PNAAW members. My responsibility is to assist with curriculum development of Level 1 training materials and to serve as a teaching member of the team during PNAAW Level 1 training. Level 1 addresses application practices, spill response, regulations, liability, and safety (Exhibit 9). Level 2 is advanced training for managers and level 3 is an Environmental Management System company certification. Level 1 training modules are updated annually. Level 1 training taught by me in Grant County has had 8-15 participants per year. In 2010 I expanded county training to Southwest (SW) Wisconsin regional training held in Belmont with 48 in attendance in 2010 and 52 in 2011. A test is administered at the end of training with the test reviewed and scored by all in the class, reviewing topics of questions with incorrect answers. After level 1 training company owners have typically asked for additional management guides such as the NPM FastFacts to use as client recruiting tools or the Level 1 Resource Guide to explain spreading constraints to clients. After having completed 2010 level 1 training that included winter spreading restrictions, an applicator came to the office in January 2011 asking for help with a potentially hazardous application situation in which a client had a full storage pit with no acceptable winter application sites. Consultation with the Grant County LWCD office helped locate spreading sites that would not draw a citation avoiding a storage spill or potential manure runoff situation. After the 2010 training, a new custom applicator approached asking how to join the Association. He said, “I need to get a handle on this liability stuff”. He saw the Association as a source of help. Approximately 8 application companies have joined the Association as a result of attending Grant County or SW regional training I taught. Increased certification levels bring reduced environmental liability insurance premiums. Level 1 and level 2 training opportunities are provided annually at the PNAAW winter conference with 80-110 in recent attendance at Level 1. I have presented two Level 2 sessions at the conference. DNR officials have reported applicators more willing to report manure spills with greater skill in spill containment and cleanup following training. DNR now calls on PNAAW application firms for assistance in manure spill cleanup because of the knowledge and skill exhibited. As Chair of the PNAAW North American Manure Expo Wisconsin Planning Committee I provide assistance to the PNAAW Board of Directors in development of this industry exposition held in Wisconsin in 2001, 2003, 2007, and in planning for 2012. The show draws attendance from Midwestern and additional states with applicators and manufacturers attending from Canada. I also served as advisor to the PNAAW Board appointed Ethics and Standards Development Committee with proposed standards adopted by a unanimous membership vote.

Implications:

Nutrient management programming addresses a range of issues helping producers meet environmental regulations, minimize operational costs, optimize production, and gain management confidence and expertise. This work aids agency efficiency and supports conservation efforts. Work with applicators assists a vital livestock industry with potential to improve nutrient management and reduce environmental impact. Opportunities to assist applicators and producers continue with issues such as changing regulations, public relations, and safety. Program evaluation indicates potential for improving teaching performance that I look at as a professional improvement suggestion to pursue.

IV. MAJOR TEACHING EVENT – Grant County NMP Farmer Training Workshop for 2010

A. Program and Clientele:

A workshop series of training modules covering conservation, soil maps, regulations, soil testing, nutrient crediting, pH, N, P & K management, manure management, procedures for developing a nutrient management plan, and SNAP+ training were developed with the team of UWEX, NPM Specialist, Dr. Chris Baxter, UW-Platteville, and the Grant and Lafayette County LWCD Offices. This workshop series allows farmers from Grant and Lafayette County to develop a nutrient management plan for their farms.

IV. MAJOR TEACHING EVENT – Grant County NMP Farmer Training Workshop for 2010 (continued)

B. Objective:

Participants will increase profitability and use of soil and water protection practices through development and adoption of nutrient management plans.

C. Methods and Materials Used

For these annual Workshop sessions I created PowerPoint presentations to teach soil testing for a nutrient management plan (Exhibit 10), interpreting soil test reports, UW fertilizer recommendations, nutrient crediting, principles of N Management, principles of pH & P, & K management, steps to a nutrient management plan, and I assist with SNAP+ computer labs. Some presentations are entirely my own while others incorporate components of the State NM Team curriculum. The topics I teach for a workshop depends on availability of team members. For the 2010 Grant County Workshop series I taught Soil Sampling, In Field Soil Sampling Demonstration, How to Fill Out Soil Submission Sheet, and Principles of pH, Phosphorus & Potassium Management.

D. Evaluation:

- Number of farmers receiving information or training on nutrient management practices and strategies.
- Number of farmers receiving information or training on nutrient management rules and regulations.
- Number of farmers that implemented a nutrient management plan.
- Number of farmers that update or revise a nutrient management plan.
- Economic impact - money saved or profitability increased by farmers implementing NM strategies.
- Number of producers reducing inputs by implementing improved nutrient management strategies.
- Number of producers increasing crop yield &/or quality by implementing improved NM strategies.

Between 2007 and 2010 71 farmers participated in the NMP workshop program with 48 completed plans. Review of the 2010 NMP workshop shows this teaching event achieved evaluation goals. The pre- and post- survey of the 2010 class shows these producers raised overall performance scores from an average of 2.18 to 5.0 (129% increase) out of a potential maximum score of 11 (Exhibit 11, pages 19 & 20). Evaluation results that begin on page 11 of Exhibit 11 shows improved understanding of manure phosphorus availability, soil phosphorus buffering capacity (small increase), the value of soil testing, plant nutrient use and manure nutrient content. One hundred per cent of the participants indicated that by participating in the NMP education program they learned something to improve fertility management and manure management (Exhibit 11, page 16). A majority indicated they understood soil testing, nutrient value of manure, manure nutrient crediting, spreading restrictions, nutrient value of legumes and legume nutrient crediting very well (Exhibit 11, page 17). One hundred percent said they would recommend this workshop to others (Exhibit 11, page 18). Eight participants completed a nutrient management plan (Exhibit 11, page 15). A class participant wrote a letter to the Grant County LWCD Director who serves as training coordinator expressing the value of the NMP training program to his operation (Exhibit 12).

V. MAJOR RESEARCH EFFORT – Alfalfa Sulfur Fertilizer Study

A. Research Question:

Can sulfur alleviate symptoms and increase production of stunted yellowing alfalfa? Disease symptoms similar to Aphanomyces of alfalfa with stunted yellowing plants became widespread in fields in Southwestern Wisconsin, Northwestern Illinois, and Northeastern Iowa during the 2009 growing season and increased in 2010. A hypothesis is that there may be an aphanomyces interaction with sulfur exacerbating plant sulfur deficiency which has become deficient in soils with reductions in atmospheric deposition. An on-farm replicated research study of sulfur fertilizer treatments was initiated to evaluate alfalfa response to sulfur.

C. Methods and Materials

As lead investigator of the research team of Gary Brandt, Quality Crop Care Consulting, Darlington Wisconsin, UW-Extension Specialists Chris Baxter, Paul Esker, Carrie Laboski, Dan Undersander, and Doug Rouse, Professor: Plant Pathology, University of Wisconsin-Madison, I submitted an MFA grant application to fund a 2010 alfalfa sulfur fertilizer study. The application failed so a limited study of fertilizer treatments was undertaken in 2010. This study showed significant alfalfa response to sulfur prompting reapplication for a 2011 MFA grant which was funded. The research study consisted of 4 fertilizer treatments with 3 replications in abnormal alfalfa and 3 replications in normal looking alfalfa in a field of a Lafayette County cooperator. Four treatments with one replication in these two types of field areas was established on two additional farms in Lafayette County and demonstration plots were established on three farms in Grant county.

IV. MAJOR RESEARCH EFFORT – Alfalfa Sulfur Fertilizer Study (continued)

D. Results and Discussion:

This study showed that sulfur can significantly increase yields when symptoms of stunted yellowing alfalfa are present in a field (Exhibit 13). At harvest, tissue samples with corresponding soil samples were taken to determine fertility conditions in the treatment areas. This provided soil and tissue test results for all areas under study. In 2010 tissue sulfur levels in normal looking alfalfa were .24% or higher with an average level of .16% in the abnormal alfalfa. For 2011 sulfur tissue tests were .40% or higher in the normal alfalfa and again averaged .16% in the abnormal alfalfa.

In 2010 sulfur applications were applied after first cutting and increased yields 0%-8% in normal looking alfalfa with an average yield increase of 88% in the abnormal areas. In these abnormal areas yields doubled on some individual treatments. In 2011 fertilizer treatments were applied at spring green-up on field #1 with these applications increasing first cutting yields by 1 ton in the abnormal areas of this field. Fertilizer treatments on the remaining fields were applied after first cutting. The 2010 24 lb. sulfur treatments applied after 1st cutting showed carryover yield response in first cutting of 2011. In 2011 grower fields that received 24 lbs./acre of S at spring green-up were again showing the stunted yellowing symptoms by late October raising the question of what sulfur rate will meet crop need through the entire growing season. Dr. Rouse is conducting a greenhouse study of possible disease/sulfur interaction.

Growers can assess sulfur levels in their stands prior to any cutting by sampling the top six inches of growth at bud or early flower and sending the samples to a soil testing lab. In this study, fields that tested below .25% tissue sulfur levels benefited significantly from early season sulfur applications.

E. Publications and Follow-Up:

This study has been presented at regional pesticide and agronomy update meetings, the 2011 WAPAC Winter Conference, the 2011 Extension Forage Teaching and Technology Conference, in Extension newsletter articles, in newspaper press releases, and is scheduled to be presented at the 2012 MFA Conference. Further study possibilities will be determined following completion of 2011 field and greenhouse data analysis.

VI. PROFESSIONAL IMPROVEMENT

<u>A. Event</u>	<u>Sponsor</u>	<u>Date Attended</u>
PNAAW Conference	PNAAW, WCOI, MFA	Annually
Soil and Water Meeting	Extension	Annually
Agronomy/Soils Field Day	Extension	Annually
North American Manure Expo	NB, IA, WI, MI Extension	2011, 09, 07, 06
Crop Management Conference	Extension	2000-2009
SNAP+ Training	NPM	October 2008
Conducting On-Farm Research Workshop	UW-Extension	December 2006
Nutrient Management Planning Training	DNR	January 2001

B. Five Year Professional Improvement Plan

My five year professional improvement plan will include continued attendance at Extension and industry field days and conferences. My plan includes gaining greater operational familiarity with SNAP+ upgrades through WDATCP training, improving the use of spreadsheet analysis for machinery and other investment analysis through assistance of Bill Lazarus, Minnesota Extension Machinery Investment Specialist, and improving teaching effectiveness through Extension workshops or personal study. I plan to support efforts to gain a national administrative base for the PNAAW North American Manure Expo.

VII. PLANS AND REPORTS

- A. **Educator Annual Reviews for 2010, 2009, 2008** (separate file)
- B. **Four Year Plan of Work** (Exhibit 14)
- C. **Recent Tenured Faculty Review, Impact Report(s) and Success Story(s)** (Exhibit 15)