I. PERSONAL INFORMATION

Name:	Kevin D. Jarek
Formal Education:	M.S. - University of Wisconsin-River Falls, Agricultural Education, 2000 B.S. – University of Wisconsin-River Falls, Agricultural Education, 1995
Extension Employment:	Crops, Soils, & Horticulture Agent, University of Wisconsin Extension, Outagamie County, September 1999 – present
Extension Rank:	Associate Professor: July 1, 2009 – present Assistant Professor: September 1, 2000 – June 30, 2009 Associate Lecturer: September 1, 1999 – August 31, 2000
Current Position Description:	**(Exhibit 1)**

II. PROFESSIONAL CONTRIBUTIONS

The University

University Service:	**Activity**	**Year(s)**
UW-Extension (UWEX)		
Joint Council of Extension Professionals (JCEP)	President	2011
Joint Council of Extension Professionals (JCEP)	Conf. Chair	2011
UWEX Department of Agriculture and Life Sciences (DALS)		
Faculty Senate	Alt. Senator	2013-14
UWEX Agriculture and Natural Resources Education (ANRE) Program Area		
Team Forage	Member	2000-present
Economics Workgroup	Co-chair	2004-2012
Grains Team	Member	2000-present
Agronomy Workgroup	Member	2003-present
Nutrient Management Team	Member	2000-present
Research and Demonstration Workgroup	Member	2009-present
Horticulture Team	Member	2000-present
Wisconsin Farm Technology Days 2012	Exec. Secretary	2009-2012

The Profession

Organizations:		
National Association of County Agricultural Agents (NACAA)	Member	2000-present
Wisconsin Association of County Agricultural Agents (WACAA)	Member	2000-present
American Soybean Association (ASA)	Member	2004-present
Midwest Forage Association (MFA)	Member	2004-present
National Corn Growers Association (NCGA)	Member	2004-present
Wisconsin Association of Professional Agricultural Consultants (WAPAC)	Member	2005-present
WAPAC	Exec. Council	2011-present
WAPAC	President	2013-present
WAPAC	Vice Pres.	2012-2013

The Community

Organizations:		
Farm Service Agency County Emergency Board	Member	1999-present
Fox Valley Technical College Farm Business Program Advisory Comm.	Member	1999-present
Outagamie County Forage Council	Advisor/Secretary	1999-present
Outagamie County Master Gardener Association	Advisor	1999-present
Natural Resources Conservation Service (NRCS) Local Workgroup	Member	2000-present
Outagamie Soil Conservation Improvement Association	Member	2000-present
AgSource Cooperative Resources International World Forage Super Bowl	Judge	2000-2011

III. MAJOR PROGRAM: Protecting and Preserving Surface and Groundwater Quality

Situation Statement:

Outagamie County is one of the fastest growing counties by population in the state of Wisconsin. Outagamie County grew by 2,422 residents or 1.4% from the period between 2010 and 2013. As a result, we have had many subdivisions grow at substantial rates, developing cropland that was once farmed and placing housing units on it. Two townships in particular, Greenville and Buchanon have grown at rates of 4.5% and 2.4% during this same period creating water runoff issues in these areas due the reduced amount of infiltration area available to rainwater and runoff. This has been a topic of concern identified by our local Land Conservation Department and Extension Education Committee. As a result, there is a constant struggle between meeting the need of our growing urban population while still supporting the agricultural needs of the county.

In 2007, the Outagamie UWEX conducted a county-wide needs assessment covering all program areas. There were seven areas that were identified as priorities for future programming by 458 respondents. In the UWEX agriculture program area, ***surface and groundwater quality*** ranked second among all topics surveyed (**Exhibit 2**). This suggests that the public continues to be highly concerned about the availability and quality of our surface and groundwater supplies. ***Drinking water quality and quantity*** ranked #1 in the Community Development area.

Surface and Groundwater quality are important to Outagamie County residents for a number of reasons. The Fox River has been susceptible to contamination from numerous sources. While agriculture has often been the easy entity to blame, homeowners do not always fully understand the role they have in protecting and preserving our water quality. Much of the recent growth in the Fox Cities area has resulted in first-time or new homeowners who are now managing properties that have a greater percentage of hard surfaces than years ago. When homeowner activities like fertilizer and pesticide applications are done in an irresponsible manner, they can lead to the degradation of water quality.

From an agricultural standpoint, approximately 90,000 acres of corn are planted in Outagamie County each year. Outagamie County's dairy cow population has remained steady at about 38,000 annually. As a result, a higher percentage of our acres are harvested for corn silage (38.1%) than the rest of the state (22.5%). As we continue to lose farmland due to development, there are fewer acres to support the feed needs of our dairy industry. Producers are looking for ways to increase yields on existing acreage. One of the ways producers have attempted to increase corn yields has been by increasing nutrient applications. Nitrogen, in particular, has often been applied above established UWEX recommended rates in pursuit of higher yields. This may be one of the contributing factors why four percent of the county's private drinking did not meet the health-based drinking water limit for nitrate-nitrogen (USGS, 2006). In an effort to address this concern, I administered two Multi-Agency Land & Water Education Grants (MALWEG) totaling $25,000 from 2003-2007. The outreach from those programs helped 40 farm producers write and implement their own nutrient management plans. Due to fewer acres available to produce forage, the twin-row corn study was designed to explore potential ways to increase forage yields by adjusting our row spacing (RS) or plant density (PD) while at the same time maintaining the integrity of those nutrient management plans by not increasing nutrient inputs, particularly nitrogen, which has already been documented as a source of water quality issues in Outagamie County.

There are two primary nutrient concerns for water quality in Outagamie County. The single most significant nutrient contaminant in our groundwater is nitrate-nitrogen (NO3). When wells exceed the recommended safety standards of 10 parts per million (ppm) a number of health issues can be of concern, especially to infants and children. Phosphorus is the nutrient contaminant in most abundance and concern in our surface waters. Nutrient applications made to farmland, golf courses, and home properties which have the potential to run-off during heavy rains are often blamed. Increased concentrations of phosphorus in the presence of sunlight in surface waters often leads to undesirable algae blooms. Not only unsightly, algae blooms present a myriad of other problems once present, including a degradation of water quality for certain species of fish, a reduction in the value of waterfront property, and an unpleasant odor once the algae begins to die late in the season.

III. MAJOR PROGRAM: Protecting and Preserving Surface and Groundwater Quality (continued)

When surface and groundwater quality continued to show up as a highly rated concern among the citizens of Outagamie County in 2007, the next logical step was to shift a greater amount of my attention and focus to the rapidly expanding homeowner population. More than a quarter million people call the Fox Cities home, so, dedicating time and resources to this effort was significant. However, at the same time there exists an equal need for water quality programming in the agricultural community. In addition to exploring ways to increase forage yields and quality without increasing nutrient inputs, Outagamie County has also directly participated in research like the **M**aximum **R**eturn **T**o **N**itrogen (**MRTN**) studies and addressed cover crops topics like tillage radishes with agricultural producers.

My current position is 70% Crops and Soils, and 30% Horticulture **(Exhibit 1)**. As a result, the following objectives were developed to help address the programmatic needs of both agricultural and horticultural audiences in Outagamie County and the surrounding Fox Cities area.

Objectives:

1. Individuals will increase their knowledge of how horticultural and agricultural practices can impact surface and groundwater quality.
2. Individuals will increase their knowledge of horticultural and agricultural practices that can preserve and protect surface and groundwater quality.
3. Individuals will implement horticultural and agricultural practices that preserve and protect surface and groundwater quality.
4. Conduct agricultural/horticultural research or demonstration activities on production techniques that have the potential to increase crop yields/quality without increasing nutrient inputs.

Teaching Methods Used:

1. Workshops, Seminars, Classes, and Field Days (in Outagamie County areas unless otherwise noted)

Event	Subject Matter Taught	Date
1. Fox Valley Technical College (FVTC)/ UWEX Tillage Field Day – Bovina	Impact of Tillage Study (Wolkowski, Jarek)	October 2013
2. Master Gardener Basic Training - Appleton	Saving for a Rainy Day/Groundwater – Wisconsin's Buried Treasure (UWEX & Wisconsin Dept. of Natural Resources -DNR)	July 2013
3. Master Gardener Basic Training – Appleton	Environmentally Sound Lawn Care (UWEX)	May 2013
4. Master Gardener Basic Training – Appleton	Understanding Soils and Nutrients (UWEX)	March 2013
5. Regional Garden Expectations Conference -Kimberly	Cleaning Up Stormwater Runoff (UWEX/DNR) – Panel discussion	March 2013
6. Central Wisconsin Forage Council (CWFC) Annual Meeting – Withee, WI	Evaluating Twin-Row Corn Production (Midwest Forage Association Research)	February 2013
7. Chippewa Valley Forage Council (CVFC) Annual Meeting – Cadott, WI	Evaluating Twin-Row Corn Production (Midwest Forage Association Research)	February 2013
8. FVTC/UWEX Regional Fall Tillage Field Day – Shiocton	Groundwater Cycle (DNR) and potential nutrient/pesticide carryover from drought	November 2012
9. UWEX State ANRE Conference -Wisconsin Dells	Evaluating Twin-Row Corn Production (Midwest Forage Association Research)	October 2012

III. MAJOR PROGRAM: Protecting and Preserving Surface and Groundwater Quality (continued)

Event	Subject Matter Taught	Date
10. Garden Expectations Conference – Kimberly	Panel Discussion on Horticultural Practices to Protect Water Quality (DNR/UWEX)	March 2012
11. UWEX Regional Corn Conference – Seymour	Evaluating Twin-Row Corn Production (Midwest Forage Association Research)	February 2012
12. Midwest Forage Association (MFA) Symposium and Annual Meeting – WI Dells	Evaluating Twin-Row Corn Production (Midwest Forage Association Research)	January 2012
13. Outagamie County Forage Council Fall Tillage Field Day - Appleton	Diagnosing Compaction (Wolkowski), Tillage Radishes and Soil Penetrometer Use Demonstration	October 2011
14. Master Gardener Basic Training	Environmentally Sound Lawn Care	April 2011
15. Outagamie County Forage Council Regional Spring Field Day - Freedom	Maximum Return to Nitrogen (MRTN) - Laboski & Manure Runoff Risk Advisory Forecast System (WI Dept. of Agriculture, Trade and Consumer Protection)	April 2011
16. Master Gardener Basic Training – Appleton	Saving for a Rainy Day/ Groundwater WI's Buried Treasure (WI Dept of Natural Resources)	January 2011
17. Master Gardener Basic Training – Appleton	Understanding Soils and Nutrients (UWEX)	January 2011
18. Fox Valley Technical College (FVTC) Horticulture Program Course – Appleton	Soils, Nutrients, and Water Quality (UWEX and DNR)	October 2010
19. Outagamie County Master Gardener Annual Meeting – Gardens of the Fox Cities	How Modern Agricultural Practices Protect Soil and Water Quality	September 2010
20. Rain Barrel Workshop – Appleton	Rain Barrel Construction Techniques	July 2010
21. Horticulture Workshops for the public at Master Gardener Annual Plant Sale -Appleton	Rain Gardens – A How-To Manual for Homeowners (DNR) and Environmentally Sound Lawn Care (UWEX)	June 2010
22. Rain Garden Installation Workshop-Greenville	Rain Garden Educators Kit (UWEX)	May 2010
23. Fox Valley Technical College (FVTC) Horticulture Program Course – Appleton	Soils, Nutrients and Water Quality (UWEX and DNR)	March 2010
24. Regional Garden Expectations Conference - Appleton East High School	Less can be More when it comes to Lawn Care – (UWEX, DNR)	March 2010
25. Fox Valley Technical College (FVTC) Horticulture Program Course - Appleton	Soils, Nutrients and Water Quality (UWEX)	October 2009
26. Master Gardener Annual Meeting – Gardens of the Fox Cities –Appleton	Shhh… Don't Disturb The Soil - No-Till Gardening	September 2009

III. MAJOR PROGRAM: Protecting and Preserving Surface and Groundwater Quality (continued)

1. **Individual Consultations**
   - Calls, emails, office, and site visits by producers, agency personnel, industry professionals, master gardeners, residents, and clientele from surrounding counties

2. **Newsletters**
   - Co-editor -Farm Business Management Newsletter sent to 600 producers and ag professionals (**Exhibit 3**)
   - Outagamie County Master Gardener Association Newsletter (contributor)

3. **Print Media**
   - Releases and submissions to 5 area newspapers including Appleton Post Crescent
   - Releases and submissions to 3 state agricultural newspapers including the Wisconsin State Farmer

4. **Radio Programming**
   - Regular updates on WTAQ Radio in Green Bay
   - Occasional updates on WHBY Radio in Appleton and WOSH Radio in Oshkosh during the growing season

5. **Television Programming**
   - Regular appearances -WFRV-TV 5 local CBS affiliate with Mike Austin, Agricultural Reporter (**Exhibit 4**)
   - Occasional appearances on WBAY TV 2 local ABC affiliate and WLUK TV 11 local FOX affiliate

6. **Educational Articles, Papers, and Published Stories**
   - **"**Evaluating Twin-Row Corn Silage Production" –Kevin Jarek, Progressive Dairyman, Canada Jan. 2014
   - "Outagamie County's Conservation Land Changing Shape" – contributor, Appl. Post Crescent Dec. 2013
   - "Evaluating Twin-Row Corn Silage Production"-Kevin Jarek, Progressive Forage Grower, April 2013
   - "Decisions that make Sense and Cents" – Kevin Jarek, Wisconsin Agriculturist March 2013
   - "Evaluate Your Twin-Row Corn Silage Milk Value" – American Agriculturist April 2012 **(Exhibit 5)**
   - "Pursuing Higher Silage-Corn Profit"-contributor, Hay and Forage Grower, March 2012
   - "Evaluating Twin-Row Corn Silage Production"– Jarek/Lauer, MFA Research Paper Jan. 2012 **(Exhibit 6)**
   - "How Much N should I apply to $6.50 Corn"– Ag Business Newsletter, Feb./Mar. 2011 **(Exhibit 3)**
   - "Soil Compaction – Using a Penetrometer" –Kevin Jarek, Outagamie Fall Tillage Field Day October 2010
   - "Tillage Radishes as a Tool" – Midwest Forage Association Clippings electronic newsletter Sept. 2011
   - "Rain Garden Plants" – Rain Garden Installation Handout, contributor, March 2010

7. **Research and Demonstrations**
   - MRTN on-farm studies - Seymour & Oneida, UWEX partner with Polenske Agronomic Consulting 2013
   - Impacts of Tillage Research Project-partner with Fox Valley Technical College and Francisco Arriaga 2013
   - Fungicide Applications to Alfalfa Demonstration Project – Outagamie County Forage Council 2012-2013
   - Evaluating Twin-Row Corn Silage Production-Multi-County, partner with Joe Lauer and MFA 2010-2013
   - Multi-State Regional Soybean Aphid Monitoring Network – partner with Eileen Cullen 2009-2013
   - Soybean Seeding Rate Project – local, multi-year demonstration project – multiple farms 2009-2011
   - Wisconsin Alfalfa Yield and Persistence Project (WAYP) – Contributor, UWEX Team Forage 2007-2013
   - Rain Gardens and Teaching Gardens installed on the UWEX office grounds - multiple 2004-2013
   - UWEX State Soybean Maturity Research Plots – Partner, Shawn Conley 2004-2013
   - DNR Urban Forestry Grant-soil/fertilizer demonstrations, and tree species plantings at UWEX office 2012

8. **Multiplier Contacts**
   - Extension Agents, Technical College Instructors, Master Gardeners, Crop Consultants**,** Ag Broadcasters

Program Awards:

A. Convention of the Year Award (Farm Technology Days) Fox Cities Convention and Visitors Bureau (2013)
B. Appreciation Award – Farm Technology Days Heritage Tractor Committee (2012)
C. Achievement Award – National Association of County Agricultural Agents (2010)

III. MAJOR PROGRAM: Protecting and Preserving Surface and Groundwater Quality (continued)

Results, Evaluation, Discussion:

Objective 1: Individuals will increase their knowledge of how horticultural and agricultural practices can impact surface and groundwater quality.

Approximately 1,800 clientele have participated in UWEX meetings, demonstrations, and workshops emphasizing how horticultural and agricultural practices can impact surface and groundwater quality over the past five years. Agricultural producers continue to receive programming through the Outagamie County Forage Council meetings. In spring 2011, **(Exhibit 7, question 7)** producers increased knowledge by **77% (n=41)** of how over-applications of nitrogen can impact water quality. Conveying information about surface and groundwater quality to horticultural audiences has been accomplished through the use of a powerpoint titled "Saving for a Rainy Day" (**Exhibit 8)**. This powerpoint has been modified and adjusted depending on the audience, setting, and amount of time available. **58-95% (n=43)** of Master Gardeners identified increased knowledge of how agricultural and horticultural practices can impact surface and groundwater quality as a result of my presentations over the past five years **(Exhibit 9, question 5, page 6).**

Objective 2: Individuals will increase their knowledge of horticultural and agricultural practices that can preserve and protect surface and groundwater quality.

This objective was achieved for producers during a discussion of the **M**aximum **R**eturn **T**o **N**itrogen (**MRTN**) where they identified a **132% (n=41) increase** in their knowledge and understanding of the MRTN concept (**Exhibit 7, question 9)**. The UWEX Farm Business newsletter article on **MRTN** reached another 600 readers **(Exhibit 3)**. Producers also demonstrated a **33% (n=41)** increase in knowledge of current UWEX fertilizer recommendations for corn as well as a **63%** increase in knowledge of how to accurately calculate legume credits **(question 2, 6)**. There is a multiplier effect when Mike Austin, WFRV-TV 5 reporter covers my Forage Council events **(Exhibit 4)**. Not only do attendees benefit, but, another 27,000 viewers on average receive UWEX info over television broadcasts and another 20,000 listeners by radio. Master Gardeners also identified that as a result of trainings, they increased their knowledge of practices that can protect surface and groundwater quality **(Exhibit 9, questions 7-18, pages 8-18)**.

Objective 3: Individuals will implement agricultural and horticultural practices that preserve and protect surface and groundwater quality.

When surveyed **(Exhibit 7, question 3)** about whether they planned to apply additional nitrogen (N) due to the higher corn prices in 2011, **59% (n=41)** of respondents indicated they were planning to do so before the Forage Council Spring Field Day. After the event only **7% (n=41)** indicated they were still planning to do so. This was a **52% (n=41) reduction** in the number of farmers who would otherwise be over-applying N according to UWEX recommendations. Master Gardeners were asked to adopt practices that protect surface and groundwater quality **(Exhibit 9, question 19, page 19).** Adoption rates of **26-88% (n=43)** are identified for nine different practices aimed at protecting water quality. In addition, members also identified practices beyond the nine that they have implemented as a result of programs and trainings related to surface and groundwater quality through UWEX outreach efforts **(questions 20-22, pages 20-25)**.

Objective 4: Conduct agricultural/horticultural research or demonstration activities on new production techniques that have the potential to increase crop yields/quality without increasing nutrient inputs.

The need to examine ways to increase yields without increasing nutrient inputs lead me to co-develop (with Joe Lauer) the protocol for which Twin-Row Corn Silage would be tested. Since 2010, we have evaluated row spacing (RS), twin versus single, and plant density (PD). PD's of 30, 35, and 40 thousand plants per acre were used in an attempt to determine if we could increase yield or quality without increasing nutrient inputs. This objective has been met through published research which has been a part of a Midwest Forage Association (MFA) research grant **(Exhibit 6)**. It is ongoing. The results will be further discussed in the "Research Project" portion of this professional brief.

Implications:

Protecting and preserving surface and groundwater quality has to be everyone's business, regardless of their discipline or chosen profession. As an agricultural/horticultural agent, people rely on me to give them straightforward advice that takes into account both the environmental and economic realities that we face. I feel confident that based on the results of the surveys returned, my programming has resulted in not only an increase in knowledge, but, more importantly, producers and homeowners implementing practices that will help protect the surface and groundwater supplies in Outagamie County in the future. The challenge will be to continue to seek out and research practices that truly have the potential to help our agricultural/horticultural producers increase crop yields or quality without additional nutrient inputs.

IV. MAJOR TEACHING EVENT: Saving for a Rainy Day – Rain Garden and Rain Barrel Workshops

A. Program and Clientele

This whole effort was aimed at the average homeowner in the Fox Cities area. Master Gardener volunteers and I set out and developed a series of workshops over the past five years that were designed to build awareness of what people were doing that could negatively impact surface and groundwater quality. Next, we identified and demonstrated practices, techniques, or activities that individuals would use to protect water quality, like rain gardens and rain barrels. The final piece in this effort was to get individuals to adopt and implement these practices.

B. Objectives

1. Participants will increase their knowledge of surface and groundwater quality and quantity concepts.
2. Participants will increase their knowledge of practices that can protect surface and groundwater quality.
3. Participants will implement practices that can preserve and protect surface and groundwater quality.

C. Methods and Materials Used

Saving for a Rainy Day **(Exhibit 8)** was used as locations allowed (powerpoint indoors, flipchart outdoors). The best way for us to encourage adoption of techniques to protect surface and groundwater quality is to show the clientele we are teaching that they can implement some of these strategies on their own without having to hire a professional. Two Master Gardner volunteers in particular, Kathy Baum and Rod Sternhagen, were instrumental in the hosting and administration of these workshops. Each of them supplied tools and equipment necessary for the rain garden and rain barrel construction events. In an effort to promote this program, we contacted WFRV-TV 5 to do a promotional piece for our June 4, 2010 workshop (**Exhibit 10)**. This promotion resulted in 81 individuals participating in this single event alone. Pre and post-tests were completed by most participants at most workshops.

D. Evaluation

Pre and post test results over the course of these workshops showed an average improvement of **54% (n=154)** increase **(pre-test 37%, post test 91%)** in general knowledge **(Exhibit 11)** related to rain gardens and water use/supply. An evaluation aimed at both the knowledge and implementation aspects of these workshops was also distributed. While all questions relating to surface and groundwater quality are important, the question that saw the highest improvement, **119% (n=237)** was related to over-applications of nitrogen and phosphorus fertilizers and the impact this can have on surface and groundwater quality **(Exhibit 12, question 6)**. The second highest increase, **109% (n=237)** came on a question related to the water cycle and what influences recharge in our aquifers **(Exhibit 12, question 5)**. This indicates that the workshops successfully addressed not only the quality issues, but the quantity issue as well. The number of participants who indicated they were considering installing a rain garden increased by **36% (n=237)** while those considering a rain barrel increased by **54% (Exhibit 12, questions 9, 10)**. The two comments that appeared more than any others were that the workshops provided ***" much more informative than they thought***" and that individuals were very appreciate of the **"free guides and handouts"** provided **(Exhibit 12, question 12)**. While these workshops were very time consuming, when I look at the results, I am satisfied we met our objectives and consider this effort to have been a successful teaching event that resulted in many homeowners installing rain gardens or rain barrels to protect surface and groundwater quality.

V. MAJOR RESEARCH PROJECT: Evaluation of Twin-Row Corn Silage

A. Research Question

Can we increase corn silage yields and/or quality simply by changing the row spacing (RS) or plant density (PD), without additional nutrient inputs, like nitrogen (N) based fertilizers? There are many parts in the state of Wisconsin that are losing farmland, as a result the challenge to producers is to grow more on less acreage, while maintaining the integrity of their nutrient management plans. The theory behind twin-row corn is that because there is more equidistant spacing between the plants, they should have a larger area to develop roots, which in turn should result in a more efficient and productive corn plant… at least that seems to be what drives the hypothesis around this effort. As for PD, many in the industry, particularly seed dealers feel the UWEX PD recommendations are too low and would like to see increases in PD across the board. Joe Lauer, UW/UWEX Corn Agronomist, has done some work on both of these issues, but, determined we needed more information on corn silage in particular as much of the available research from neighboring states focuses on corn grain production and expected returns in those systems. No other state in the union harvests more corn silage than Wisconsin, and no other area of the state harvests a greater percentage of its corn acres for silage than the northeast and east-central locations.

V. MAJOR RESEARCH PROJECT: Evaluation of Twin-Row Corn Silage (continued)

B. Methods and Materials

As previously mentioned, Joe Lauer provided a first draft protocol for the study. After sharing it with participants at the Outagamie County Forage Council Spring Field Day in 2010, the addition of the 40,000 PD occurred based on producer feedback. The first year of the study was 2010 and included only one site for silage. The site was planted with a Great Plains 1225 Yield Pro 12/24 row Twin-Row Planter. Nutrient and pest management practices followed UWEX recommendations. After collecting first year data, I applied for a Midwest Forage Association (MFA) grant. My Midwest Forage Research Proposal (MFRP) was ranked #1 in the by the MFA selection committee in 2011 when I first applied, and 2012 when I reapplied. There was clearly a strong interest in this research as ***"Populations for Corn Silage (row spacing, twin rows)"*** was identified as one of MFA's ***"Top Short-Term Research Needs"***. Grants of $2,016, $2,344, and $2,016 have been received. A Great Plains 1625 Yield Pro 16/32 Twin-Row Planter was used in the studies from 2011 forward. Yields were verified using drive over scales and samples analyzed to determine quality. Further details can be found in the MFA research paper **(Exhibit 6)**.

C. Results and Discussion

The 2010 results showed an increase in yield in the 40,000 twin-row treatment, however, it was not statistically significant. In 2011 we had four sites, three of which were successfully harvested yielding us some very good data across multiple counties. In 2012, two sites were planted, however, due to the effects of the drought on PD, only one site was successfully harvested. Lastly, in 2013 two sites were planted and successfully harvested. In 2010, co-variate analysis determined that there was no statistical difference due to RS. The full statistical analysis for the 2011 growing season can be viewed in the MFA research paper provided earlier **(Exhibit 6)**. Worth noting would be that while there was no statistical differences noted for RS, the 30,000 PD was statistically different when it came to quality or Milk Per Ton (MPT). These PD results were similar to what Joe Lauer has observed in related studies and simply confirms what we generally know about PD's influence on MPT… lower PD's generally result in higher MPT. So, if a producer is simply looking for the highest quality corn silage possible, they may want to consider reducing their PD. However, it should be noted that at one location in 2013, we saw just the opposite, where the higher PD resulted in more MPT. The other location in 2013 trended the traditional way with the lower PD having the highest MPT. Clearly, hybrid influence and multiple reactions to RS and PD may be at work here. A literature review has shown researchers encountering some of the same inconsistencies when evaluating particularly RS in twin-row versus single row studies across the nation.

D. Educational Presentations, Publications and Follow-Up

"Evaluating Twin-Row Corn Silage" presentation **(Exhibit 13)** has been shared at several statewide conferences and events. The results have also been published nationally in American Agriculturist **(Exhibit 5)**.

VI. PROFESSIONAL IMPROVEMENT

A.

Event	Sponsor	Date Attended
Soil and Water Meetings	Extension	Annually
Midwest Forage Association (MFA) Symposium	Midwest Forage Association	Annually
Agronomy/Soils Field Day	Extension	Annually
Wisconsin Crop Management Conference	Extension	2004-2014
North American Manure Expo	Extension	2012
National Association of Independent Crop Consultants Conference, Green Bay and Madison	NAICC	2010/11
NACAA Annual Meeting and Professional Improvement Conference – Oklahoma	NACAA	2010
International Silage Association (ISA) Conference	ISA	2009

B. Five Year Professional Improvement Plan

See Plan of Work **(Exhibit 14)**

VII. PLANS AND REPORTS

A. Agent Annual Reviews – provided to Department of Ag and Life Sciences (DALS) Chair via UWEX Dept. Head

B. Multi-Year Plan of Work (Exhibit 14)

C. Recent Impact Reports and Success Stories (Exhibit 15)