Annual Report of Plan of Work

Wisconsin Agricultural Experiment Station

College of Agricultural and Life Sciences
University of Wisconsin, Madison

Federal Fiscal Year 2006
Research Activities

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Certification: Richard Straub, Interim Executive Director, Wisconsin Agricultural Experiment Station

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Foreword

Choice of reporting

The Wisconsin Agricultural Experiment Station, as an 1862 Land Grant Institution, has chosen to file a report on research activities for the Plan of Work at the University of Wisconsin (UW). University of Wisconsin-Extension will be reporting in a separate document on extension activities, although we are coordinating our reporting activities with Extension. Institutions involved with research work include the University of Wisconsin-Madison (College of Agricultural and Life Sciences, School of Veterinary Medicine, and School of Human Ecology) and the University of Wisconsin-Stevens Point. Programs included in this annual report of accomplishments are those funded by formula funds provided by Hatch Act, McIntire-Stennis Cooperative Forestry Research Program, and Animal Health and Disease Research Program.

Point of contact

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Additional sources of reporting

Reporting of project titles and objectives as well as human resources have been filed in the CRIS system at USDA by means of the AD-416 and AD-417s. Expenditure data and human resources have been filed with the USDA in the CRIS system by means of the AD-419s. Annual progress reports (including impacts) and final reports have been filed with the USDA-CRIS system using the AD-421s. Impact statements for FY04 have been filed by the Wisconsin Agricultural Experiment Station with the USDA-CSREES Impact database and are included here where appropriate.

Access to the CRIS system of reporting and search capabilities is available at
http://cris.csrees.usda.gov/

The original Plan of Work for Wisconsin's research activities was filed July 15, 1999, with an Update to Plan of Work being filed in April, 2004, and is available in pdf format at:
http://www.cals.wisc.edu/research/WAES/PlanofWork.pdf

Highlights of research, extension and education programs are available at the following websites or print copies have been included with this report

2006-2007 Science Report
Title: "Profiles of our Changing College"
Selected stories at:
http://www.cals.wisc.edu/sciencereport/index.html

News releases and stories:
http://news.cals.wisc.edu/

Background

Structure

The Director of the Experiment Station is Dean Margaret M. Jahn of the College of Agricultural and Life Sciences (CALS) who has designated an Interim Executive Director, Richard Straub (Interim Associate Dean, Research Division, CALS) and Vice Dean and Associate Dean for Research Irwin Goldman (Research Division, CALS) to be responsible for research operations. The CALS Research Division is responsible for reviewing proposals, making funding decisions and administering grants in cooperation with the University of Wisconsin-Madison School of Veterinary Medicine, the University of Wisconsin-Madison School of Human Ecology, and the University of Wisconsin-Stevens Point College of Natural Resources.

CALS is composed of 21 departments with a large number of intra-college and inter-college centers, institutes and programs. CALS' mission is to improve the quality of life by discovering; critically analyzing and sharing knowledge in food and agriculture, the life sciences, natural resources and environmental stewardship, and rural community development and to offer strong, research-based education that is responsive to public needs and social, economic and environmental concerns. Additional information on the organization and personnel of UW-CALS is available on the college website at:
http://www.cals.wisc.edu/

Within the College of Agricultural and Life Sciences, the Research Advisory Committee, a faculty committee of 10 members appointed by the Associate Deans for Research meets regularly to discuss research issues. This committee recommends research policy guiding distribution and use of formula funds and is the primary peer review committee for Hatch and McIntire-Stennis proposals. The committee recommends policies and procedures that have been implemented to distribute formula funds on a competitive process.

Operating Philosophy

The Wisconsin Experiment Station is committed to the concept of investigator-driven and

peer-reviewed research activities. The general philosophy in allocating formula funds is to provide support for specific reviewed projects rather than to distribute block amounts to faculty or departments. At the University of Wisconsin, faculty appointments are funded with state appropriations thus releasing nearly all formula funding for project support. Expenditures are allowed under a series of guidelines annually reviewed by a faculty committee. Matching funds come primarily from state support of salaries for investigators and research staff.

Formula funds are distributed to approved projects with yearly budgets. Approximately 160 projects are funded with formula funds each year with budgets that include personnel (mainly graduate students) and supplies. Funding of capital equipment items, some of which may be shared by several projects, are prioritized by departments and funded in a separate exercise. Travel to multistate research meetings is provided for the official representative from a central pool of funds.

Integrated Research and Extension

Extension has its own Chancellor and is a separate "campus" within the University of Wisconsin System. CALS faculty with Extension specialist appointments are housed at the Madison campus with an annual Extension transfer of funding for portions of their appointments. These faculty are fully integrated into CALS departmental teaching and research programs and can apply for research project support under the formula-funded competitions listed above. County-based Extension faculty members are participants in research teams, but are not principal investigators for projects supported by formula funds. Thus the funding of integrated research-extension efforts is accomplished largely through salary support of Extension faculty and project support from competitive awards of research formula funds. In the following tables, the indication of integrated research/extension activities is based on projects where one or more of the principal investigators has an official extension appointment or where there is documented integrated activity related to the project.

Multistate Research

We have adopted by reference the national Coordinated Multistate Research Framework for fulfillment of our obligations to the AREERA's multistate and multidisciplinary activities. More details are available at:
http://www.agnr.umd.edu/users/NERA/workshop/RPAFramework.html

Reporting of Station accomplishments and impacts from multi-state projects are included in federal filing of the SAES-422 reports on these projects available on the CRIS system. Listing of states cooperating on these projects have already been filed with USDA Partnership office following the peer and merit review and approval by the Regional Directors multistate committees. In the following listings under the Goal headings, these projects are designated as multi-state and their regional project designations are given. Financial statements of expenditures are directly from the Wisconsin Station reports filed as AD-419s. The National Information Management and Support System (NIMSS) is a web-based application that will allow participants of Multistate Research Projects and Activities to submit proposals and reports online. Interested parties, stakeholders and cooperators can also query the System for relevant and timely information. More details are available on the WWW at http://nimss.umd.edu/.

Program Evolution

Programs in the Wisconsin Research Plan of Work are composed of a number of projects with individual review and reporting. Program duration may be extended for multiple years, but the contributing projects are a constantly shifting portfolio that can be quickly redirected. Projects are approved for periods of one to five years with the majority on a four-year cycle. Proposals for new projects require a discussion of the results from previous formula fund support, which is used as part of the criteria for ranking proposals and for evaluating the ability of the team to complete the research project successfully. Each year, approximately 25 percent of the research portfolio is shifted in new directions.

This process of continual re-examination of our portfolio allows us to address short-term, intermediate term and long-term issues. A small number of approved projects may be started at mid-year as new faculty members are hired or emerging problems trigger an early start at the discretion of the Associate Dean for Research. These processes ensure that projects are pertinent to the CSREES national goals and focus on current state research needs. In the project listing under the goals, projects that have been added to the portfolio are printed in bold to highlight the new additions since filing of last year's annual report. Projects that have been completed are no longer listed. We have chosen to report our activities under the CSREES national goals in response to the Updated Plan of Work document files in 2004 covering FY 05 and FY 06, although future reporting with focus on Knowledge Areas as expected in the Plan of Work filed in July 2007 covering FY 2007-2011.

Research Activity in Support of National Goals and Themes

The five sections that follow relate a portion of the Wisconsin Agricultural Experiment Station research effort to the five national goals established by the U.S. Department of Agriculture for the national planning and reporting process. Between 500 and 600 research projects are underway in the College during the course of a year, ranging from the most basic of scientific studies to those that are highly applied. The reports that follow concentrate on those studies that are done as part of formula funded research (Hatch, McIntire-Stennis, and Animal Health). Most of these studies are of a more applied nature, and are significant sources of new science-based information for Wisconsin Cooperative Extension programs. Of the approximately $107 million in expenditures made through the College's Research Division, these formula funded research projects represent about $5 million of the total.

In using the nationally devised goals and themes as the reporting framework, it also should be noted that research projects frequently do not fit neatly and exclusively into one and only one category. In many instances, a research project relates to multiple goals and themes. These research projects are then listed in multiple goals. Research projects; like the agricultural, natural resource, and community issues they address; are frequently at the intersecting points of disciplines and interests. We view this interdisciplinary nature of our research efforts as a strength.

Of the studies selecting for reporting in this document, the largest number (82) relate to Goal 1 "An Agricultural System that is Highly Competitive in the Global Economy" ("Enhancing Economic Opportunities for Agricultural Producers "). This included 18 projects that were multistate interdisciplinary projects and 24 that were integrated research/extension projects. The concentration of projects in this goal area is expected for two reasons: 1) the nature of the research funding sources being reported are directed toward such problem areas, and 2) the state's agricultural economy is large (between $5 billion and $6 billion cash farm receipts a year, with total economic impact of about $51 billion a year) and is dependent on new research knowledge to keep it competitive not only with international trade but with other regions of the United States producing similar food and fiber commodities. Among the research titles presented in this section are a broad array of studies that address the extreme breadth of Wisconsin and North Central U.S. agriculture. We have a highly diverse livestock and plant agriculture that stresses our research resources to the limit.

The second largest number of research projects is reported under Goal 3 "A Safe and Secure Food and Fiber System" ("Enhance Protection and Safety of the Nation's Food Supply") with 46 projects being reported. Seven of these were multi-state interdisciplinary projects and 13 were integrated research/extension projects. Projects in this area cover a diverse range of topic including management and control of disease and insect attacks on crop and animal systems, understanding all limits microbial and related contamination of food and feed products and understanding of basic metabolic processes important in insuring a safe food supply. Food Safety related projects have seen a significant growth in our college's research portfolio. The food products and food processing industries are the largest economic sector in Wisconsin and work to protect this vital part of our State and Regional economy is very import to us. Significant private support is used to fund the College's Food Research Institute that supports significant effort not captured in this report. NIH funding another significant source of College funding also

supports work related to food safety, as does federal funding focused on protecting our food system form bio-terrorism.

The third largest number of research projects is reported under Goal 5 “Greater Harmony Between Agriculture and the Environment" (“Protect and Enhance the Nation's Natural Resource Base and Environment”). There are 44 project reported here, with 6 of them being multistate interdisciplinary studies, and 7 integrated research/extension projects. Producing agricultural commodities in ways that are sustainable and protective of the natural resource base and the broader environment is one of the largest challenges facing Wisconsin farmers. The state’s cash farm receipts derive overwhelmingly from livestock enterprises, with dairying being by far the most important. Managing livestock wastes and cycling them safely and productively through the various cropping systems is the most urgent challenge. Non-point pollution regulations are increasing from both the state and federal levels. A large number of studies in this reporting section relate to the handling of waste streams from livestock and other state industries. Beyond the waste stream challenge are many other environmental challenges relating to proper use of chemical fertilizers and reduced pesticide use. Because Wisconsin has a huge tourist industry that relies heavily upon quality land, water, air, landscapes, and fish and wildlife populations, the impacts of environmental protection through proper agricultural production practices go well beyond agriculture. Management to enhance the natural resource base has a significant impact that go well beyond traditional agricultural limits when one considers the impact of tourism and natural resource based industry in Wisconsin.

Under Goal 2 “Enhanced Economic Opportunity and Quality of Life for Americans” (“Support Increased Economic Opportunities and Improved Quality of Life in Rural America”) there are a total of 19 projects reported – the fourth largest number under a goal heading. Five of these were multistate interdisciplinary projects, and 7 were integrated research/extension projects. These projects focus on a broad array of issues that support the economic and social foundation of rural Wisconsin and rural America. The rapidly changing economic sector (agricultural, manufacturing, business) poses both economic and social impacts on farms, business, and families. Understanding these dynamics will help these entities adjust to the changes that they are experiencing.

Under Goal 4 “A Healthy, Well Nourished Population” ("Improve the Nation's Nutrition and Health ") there are 14 project reported. One of these was a multistate interdisciplinary project and 2 were integrated research/extension projects. If this report covered College research projects beyond those funded with formula research funds, there would be a much larger number of projects with relevance to human nutrition. Over half of the federal competitive grant funding coming to the College is provided by the National Institutes of Health, and a large portion of those studies relate to human nutrition and health.

Finally, this report does not attempt to sort all of the research activity into key reporting themes. Instead, examples of research impacts are offered, and relevant themes addressed by the examples are listed along with focus areas from the CSREES budget.

Goal 1. An Agricultural System that is Highly Competitive in the Global Economy.

(Enhance Economic Opportunities for Agricultural Producers.)

Executive Summary

Under this goal, there were 82 projects including 18 that were multistate interdisciplinary projects, 3 were McIntire-Stennis projects, and 24 were integrated research/extension projects. Although the largest number of projects under the goals are classified as Goal 1, many of these projects address other goals as well. For instance, one of the Hatch projects, WIS05238, "Nitrogen Cycling, Loading, and Use Efficiency in Forage-Based Livestock Production Systems (NC1021)" also has relevance to Objective 2.2, Providing Science Based Technology, Products, and Information to Facilitate Informed Decisions Affecting Quality of Life in Rural Areas, to Objective 3.2, Develop and Deliver Science Based Information and Technology to Reduce the Number and Severity of Agricultural Pest and Disease Outbreaks, and to Objective 5.2, Provide Science Based Knowledge and Education to Improve the Management of Soil, Air, and Water to Support and Enhanced the Environment

Wisconsin is committed to continually changing its portfolio of research. Use of more sophisticated analysis and molecular techniques has allowed agricultural and natural resources issues to be approached on a more basic science level. New understanding of the molecular basis of plant and animal systems can bring new strategies to improve performance, reduce risk, improve food quality and safety and preserve the environment. Stakeholders insist on a scientific basis for change and demand testing and evaluation of new varieties, management strategies and recommendations. Sixteen new projects have been added including those on bioenergy from phototropic microorganisms, carotenoid bioavailability of nutrients in food and feed, strategic behavior related to biotechnology, dairy and beef farm systems for environmental quality, forage-based finishing systems for beef in the upper Midwest, new harvesting strategies for forage crops and use of distiller's bi-products in dairy diets. Newly-added projects indicate that faculty are responding to stakeholder needs and new technologies.

Updated project list for FY06

New projects are printed in **bold**. Note that recent reclassification of projects has moved some projects into goals different from those previously listed in the Plan of Work. Projects falling under multiple goals are listed in each.

Wisconsin Project No.	Principal Investigator	Title of Project	Hatch Total (Regular & Multistate)	Hatch Multistate	McIntire/ Stennis	Animal Health	Extension Activity	Total F.T.E
Goal 1: Enhance Economic Opportunities for Agricultural Producers								
Objective 1.1: Provide Information, Knowledge, and Education to Help Expand Markets and Reduce Trade Barriers								
WIS01031	**Nan, X.**	**The Importance of Brand/Cause Fit in Cause Related Agricultural Marketing**	**X**					
WIS04717	Kloppenburg, J.	Sustaining Local Food Systems in a Globalizing Environment: Forces, Responses, Impacts (NE-1012)	**X**	**X**				
WIS04748	Kleinman, D.	Where is the Social in the Regulation of Agricultural Biotechnology?	**X**					
WIS04773	Fortenbery, T. R.	Measurement of Local and National Impacts Associated with an Expanded Bio-Fuels Industry: An Economics Analysis	**X**				**X**	
WIS04883	Cox, T.	Aggregate and Interregional Impacts of Fed/State Dairy Policies and Interm. Dairy Product Usage on The US Dairy Proc. And Dairy Farm Sectors	**X**					
WIS04905	Rickenbach, M.	Assessing Opportunities for Cross Boundary Forest Management Among NIPF Owners			**X**			
WIS04948	Bell, M.	Enhancing Wisconsin's Rare Local Foods: A Study of Social Networks and Meanings	**X**					
		Total:	**118,479**	**23,783**	**13,973**	**0**	**29,804**	**3.63**
Objective 1.2: Support International Economic Development and Trade Capacity-Building through Research, Education, and Extension								
WIS04748	Kleinman, D.	Where is the Social in the Regulation of Agricultural Biotechnology?	**X**					
WIS04879	Buongiorno, J.	Dynamic Feedbacks Between Exports and Growth in Forest Product Industries			**X**			
		Total:	**12,734**	**0**	**28,901**	**0**	**0**	**1.05**
Objective 1.3: Provide Science-Based Knowledge and Technologies to Generate New and Improved High-Quality Products and Processes to Expand Markets for the Agricultural Sector								
WIS04590	Sarmadi, M.	New Technologies for the Utilization of Textile Materials (S-1002)	**X**	**X**				
WIS04668	Lucey, J.	Understanding the Structure-Function Relationships That Control the Rheological and Sensory Properties of Stirred Type Yogurt	**X**					
WIS04775	Gunasekaran, S.	Evolution of Microstructural and Rheological Characteristics of Heat-Induced Globular Protein Gels	**X**					
WIS04787	Parkin, K. L.	Identifying Potentially Anticarcinogenic Components in Common Vegetables	**X**					

Wisconsin Project No.	Principal Investigator	Title of Project	Hatch Total (Regular & Multistate)	Hatch Multistate	McIntire/ Stennis	Animal Health	Extension Activity	Total F.T.E
WIS04829	Connelly, R. K.	Investigation of the Effect of Mixing Intensity of Dough Development and Rheological Property Measurement	X					
WIS04883	Cox, T.	Aggregate and Interregional Impacts of Fed/State Dairy Policies and Interm. Dairy Product Usage on The US Dairy Proc. And Dairy Farm Sectors	X					
WIS04897	Lauer, J.	Corn Grain Composition Response to Agronomic Management	X				X	
WIS04904	Richards, M.	Utilization of Cranberry Components for Extending Shelf Life of Muscle Foods	X					
WIS04908	Steele, J.	Identifying Energy Sources Used for Growth of Non-Starter Lactic Acid Bacteria in Ripening Cheese	X					
WIS04948	Bell, M.	Enhancing Wisconsin's Rare Local Foods: A Study of Social Networks and Meanings	X					
WIS04959	**Hartel, R.**	**Ice Crystallization in Scraped Surface Heat Exchanger (SSHE) (NC-1025)**	X	X				
WIS04975	**Tanumihardjo, S.**	**Examining Factors that Affect Carotenoid Bioavailability from Food and Supplements Using Mongolian Gerbils**	X				X	
		Total:	**251,642**	**45,777**	**0**	**0**	**41,023**	**8.93**

Objective 1.4: Provide Science-Based Information, Knowledge, and Education to Facilitate Risk Management by Farmers and Ranchers

WIS01016	Mitchell, P.	Economics of Corn Rootworm Control and Resistance Management	X				X	
WIS01100	**Shi, G.**	**Commodity Bunding and Strategic Behavior in Agricultural Biotechnology**	X					
WIS04775	Gunasekaran, S.	Evolution of Microstructural and Rheological Characteristics of Heat-Induced Globular Protein Gels	X					
WIS04829	Connelly, R. K.	Investigation of the Effect of Mixing Intensity of Dough Development and Rheological Property Measurement	X					
WIS04886	Foltz, J.	Impact Analysis and Decision Strategies for Agricultural Research (NC-1003)	X	X			X	
WIS04918	Chavas, J.	Agricultural Productivity Analysis Under Risk	X					
WIS04971	**Shinners, K.**	**Harvest-fractionation of Alfalfa**	X				X	
		Total:	**104,907**	**11,723**	**0**	**0**	**42,304**	**5.75**

Objective 1.5: Contribute Science-Based Information, Analysis, and Education to Promote the Efficiency of Agricultural Production Systems

WIS01020	**Tracy, W.**	**Durable Resistance to Common Rust in Sweet Corn, Genetics and Breeding of Vegetative Phase Change and Adult Plant Resistance**	X				X	
WIS01021	**Combs, D.**	**Whole Farm Dairy and Beef Systems for**	X	X				

Wisconsin Project No.	Principal Investigator	Title of Project	Hatch Total (Regular & Multistate)	Hatch Multistate	McIntire/ Stennis	Animal Health	Extension Activity	Total F.T.E
		Environmental Quality (NE-1024)						
WIS02366	Kosola, K. R.	Rootstock and Interstem Effects on Pome and Stone Fruit Trees (NC-140)	X	X				
WIS03911	Bamberg, J. B.; Spooner, D. M.; Simon, P.	Introduction, Preservation, Classification, Distribution and Evaluation of Solanum Species(NRSP-6)	X	X				
WIS04524	Kirkpatrick, B. W.	National Animal Genome Research (NRSP-8)	X	X				
WIS04662	Amasino, R.	Identification and Characterization of Dwarfing Genes	X					
WIS04664	Martin, T.	Identifying Novel Chemical Inhibitors of Synaptic Neurotransmission with Potential Applications for Pesticide/Nematicide Development	X					
WIS04665	Sheffield, L.	Leptin Involvement in Mammary Development	X					
WIS04666	Wattiaux, M.	Dairy Cattle Diet Formulation on Performance, Nitrogen Utilization, Manure Excretion, and Potential Ammonia Loss to the Environment	X				X	
WIS04670	Goodwin, E.	3'UTR Control of TRA-2MRNA Export as a Paradigm for Understanding Regulated Export of Specific MRNAs	X					
WIS04671	Patterson, S.	Genetic, Physiological, and Molecular Characterization of DAB4-1, A Cell Separation Mutant in Arabidopsis Thaliana	X					
WIS04673	Bent, A.	Discovery of Plant Genes that Mediate Disease Resistance	X					
WIS04702	Tracy, W.	Conservation, Management, Enhancement, and Utilization of Plant Genetic Resources (NC-007)	X	X			X	
WIS04703	Palmer, R.	Management Systems to Improve the Economic and Environmental Sustainability of Dairy Enterprises (NC-1119)	X	X			X	
WIS04704	Armentano, L.	Metabolic Relationships in Supply of Nutrients for Lactating Cows (NC-1009)	X	X			X	
WIS04718	Shook, G.	Genetic Selection and Crossbreeding to Enhance Reproduction and Survival of Dairy Cattle (S-1008)	X	X				
WIS04735	Wiltbank, M., Fricke, P.	Methods to Increase Reproductive Efficiency in Cattle (NC-1006)	X	X			X	
WIS04772	Doebley, J.	Using Population Genetics to Identify Genes of Agronomic Importance in Maize	X					
WIS04774	Gianola, D.	Statistical Procedures for Genetic Evaluation of Susceptibility to Mastitis in Dairy Cattle	X					
WIS04777	Jung, G.	Mapping QTL for Dollar Spot Resistance in Bentgrass	X				X	
WIS04778	Kosola, K. R.	Plant and Soil Components of Nitrogen Cycling in Cranberry Beds - Does Dissolved Organic Nitrogen Play a Role?	X					
WIS04779	Krysan, P. J.	Genetic Analysis of Signal Transduction Pathways in Arabidopsis that Control Cytokinesis	X					
WIS04784	Masson, P. H.	Molecular Genetic Analysis of Helical Growth in Arabidopsis Thaliana	X					
WIS04786	Parrish, J. J.	The Effect of Scrotal Insulation on Male Germ Cell Apoptosis	X					

Wisconsin Project No.	Principal Investigator	Title of Project	Hatch Total (Regular & Multistate)	Hatch Multistate	McIntire/ Stennis	Animal Health	Extension Activity	Total F.T.E
WIS04788	Pelegri, F. J.	Expression and Function of the Fertility Factor Gene Deleted in Azoospermia (DAZ) in the Zebrafish	X					
WIS04791	Sussman, M. R.	Genetic Manipulation of Plasma Membrane Proteins Involved in Transport and Signal Transduction in Plants	X					
WIS04792	Reznikoff, W.	TN5 Transposase - Host Protein Interaction	X					
WIS04795	Thomas, D. L.	Effect of Feeding Level for Dairy Ewe Lambs During the Prepubertal Period on their Milk Production as Ewes	X				X	
WIS04796	Bussan, A. J.	Nutrient Trap Intercrops for Wisconsin Potato Production Systems	X				X	
WIS04797	Weigel, K.	Detecting Genes Related to Female Fertility, Maternal Calving Ease, Milk Fever, Component Percentages, and Somatic Cell Count in a Holstein	X				X	
WIS04798	Wickens, M.	MRNA Control in Arabidopsis	X					
WIS04802	Albrecht, K. A.	Improved Crop and Livestock Management for Protecting the Non-Glaciated Upper Mississippi Valley (NC-1012)	X	X			X	
WIS04810	Phillips, M.	Molecular Characterization of Atrazine Resistance in Hybrid Poplars of Phytoremediation			X			
WIS04837	Borges, R.	Soybean Grain Composition and Yields as Affected by Crop Rotation, Tillage, and SCN	X				X	
WIS04872	Ane, J.	Characterization of a Novel Plant Protein that is Required for the Early Steps of Bacterial and Funal Symbioses	X					
WIS04874	Ansari, A.	Chemical Mimics of Cellular Proteins that Control Cellular Development	X					
WIS04878	Bleecker, A.	Characterization of Action of 1-Methycyclopropene (MCP) Analogues, Inhibitors of Ethylene Responses	X					
WIS04882	Coors, J.	Developing Corn Silage Varieties with Improved Starch Utilization	X					
WIS04885	Eisenstein, R.	Mechanisms Regulating Ferroportin Synthesis	X					
WIS04887	Rutledge, J.	Germ Cell and Embryo Development and Manipulation for the Improvement of Livestock (W-1171)	X	X				
WIS04889	Grummer, R.	Feeding Metabolically Active Fatty Acids to Reduce the Incidence and Severity of Fatty Liver in Periparturient Dairy Cows	X				X	
WIS04892	Jiang, J.	Cloning and Characterization of Centromeric DNA in Potato	X					
WIS04893	Kaeppler, S.	Role of Root Complexity in P Acquisition and Standability in Maize	X					
WIS04894	Karasov, W.	Digestive and Immune Function in the Plastic Gut of Birds	X					
WIS04895	Khatib, H.	Interpreting Cattle Genomic Data: Biology, Applications, and Outreach (NC-1010)	X	X				
WIS04896	Kruger, E.	Intrinsic Factors Mediating Effects of Altered Atmospheric Chemistry on Phosynthetic Light-Use Efficiency in Wisconsin Forests	X					
WIS04897	Lauer, J.	Corn Grain Composition Response to Agronomic Management	X				X	
WIS04909	Sunde, R.	Selenium Regulation, Selenium Requirements, and	X					

Wisconsin Project No.	Principal Investigator	Title of Project	Hatch Total (Regular & Multistate)	Hatch Multistate	McIntire/ Stennis	Animal Health	Extension Activity	Total F.T.E
		Molecular Turkey Nutrition						
WIS04934	Vierstra, R.	Proteomic Analysis of the Arabidopsis 26S Proteasome	X					
WIS04949	**Claus, J.**	**Turkey Breast Quality Affected by Exposure of Birds to Endotoxin**	X					
WIS04951	**Donohue, T.**	**Response to Light-Induced Singlet Oxygen Formation by Phototrophs**	X					
WIS04957	**Greaser, M.**	**Molecular Mechanisms Regulating Skeletal Muscle Growth and Differentiation (NC-1131)**	X	X				
WIS04960	**Jackson, R.**	**Agronomic and Ecological Effects of Incorporating C4 Grasses into C3-dominated Grazed Pastures of the Upper Midwest**	X					
WIS04964	**Lehmkuhler, J.**	**Forage-based Beef Finishing Systems for the Upper Midwest Region**	X				X	
WIS04967	**Nienhuis, J.**	**Characterization of Host-plant Resistance to the Soybean Aphid Virus Complex in Snap Beans**	X				X	
WIS04970	**Reed, J.**	**High Tannin Sorghum Diets and Oxidative Stability of Beef**	X					
WIS04971	**Shinners, K.**	**Harvest-fractionation of Alfalfa**	X				X	
WIS04978	**Wiese, C.**	**Analysis of the y-tubulin Ring Complex**	X					
WIS05231	Shaver, R.	Starch Properties of Corn and Utilization by Dairy Cattle	X				X	
WIS05238	Bell, M., Gratton, C., Jackson, R.	Nitrogen Cycling, Loading, and Use Efficiency in Forage-Based Livestock Production Systems (NC-1021)	X	X			X	
WIS05239	**Armentano, L.; Karthikeyan, K.**	**Reducing Phosphorus Concentration in Lactating Dairy Diets Based on By-Products of the Corn Distilling Industry**	X				X	
		Total:	**1,888,785**	**510,486**	**10,091**	**0**	**681,734**	**62.33**
		Total Goal 1:	**2,376,548**	**591,768**	**52,965**	**0**	**794,865**	**81.69**

Impact Statements and Selected Results

Publications in refereed journals, books, and extension bulletins have been reported on projects using the AD-421 annual reports in the CRIS system. A number of projects are reported as impacts on agriculture or natural resources. Some of the projects had funding from Hatch, McIntire-Stennis and Animal Health; others were funded from competitive federal programs and industry gifts and grants. Outputs described in the original Plan of Work are illustrated by example from the past year in the following projects.

"Identifying Energy Sources Used for Growth of Non-Starter Lactic Acid Bacteria in Ripening Cheese"

Key themes and Focus areas: *Understanding and controlling the growth of bacteria in cheese will enable the cheese industry to make high-quality cheese products on a consistent basis.*

The issue: Naturally occurring bacteria found in milk, as well as bacteria that enter the milk supply during processing can have a large impact on cheese quality. These non-starter bacteria—so called because (as opposed to "starter cultures") they are not intentionally added to milk to start the cheese-making process—can have positive, neutral or negative effects on cheese flavor and texture. Currently, the various types of non-starter bacteria that end up in a particular batch of cheese are determined by chance. When these bacteria cause a batch of cheese to have an off flavor or texture, that batch cannot be sold as-is to consumers, but must be further processed and the resultant cheese commands a significantly reduced price. By understanding the energy sources in cheese that allow these non-starter bacteria to flourish, the cheese industry will be able to stop or otherwise control their growth, and thus produce consistently good cheeses. In this way, the cheese industry will maximize profits, while providing consumers with the best possible product.

What's been done: Food science researchers at the University of Wisconsin-Madison have identified many of the energy sources utilized by non-starter bacteria in cheeses. They have helped sequence the genome of one such bacterium that is commonly found in cheeses, and are studying the gene expression of this organism as it grows in cheese. In this way, the researchers can understand the energy metabolism of this organism at the level of individual genes. This information will yield tools that scientists can use to inhibit the growth of non-starter bacteria that cause bad outcomes for cheese, as well as to develop strains of 'good' bacteria that can out-compete non-starter bacteria during the cheese-making process and have a positive effect on cheese ripening.

Impact: This research has generated information about food sources and energy metabolism for non-starter bacteria that grow in cheese, and will enable the cheese industry to produce high-quality cheeses on a consistent basis. So far, scientists have communicated their findings through eight publications, eight symposia presentations, nine presentations to industry groups and 12 presentations at national meetings. This research is also shared during cheese making courses at the University of Wisconsin-Madison, which take place two times each year.

Funding: Hatch project #WIS04908

More Information: James Steele, jsteele@wisc.edu, 608-262-5960

"Response to Light-Induced Singlet Oxygen Formation by Phototrophs"

Key themes and Focus areas: *Understanding how photosynthetic cells respond to and mitigate the effects of singlet oxygen, a destructive by-product of photosynthesis, will lead to strategies to increase the conversion of sunlight into bioenergy compounds, improve crop yields and control plant pathogens.*

The issue: In all plants, singlet oxygen is a major limiting factor for plant growth. Singlet oxygen, a natural by-product of photosynthesis, destroys important cellular proteins and other structures. Instead of using all of their energy for growth, plants must expend a portion of their energy and resources repairing the cellular damage caused by singlet oxygen. Strategies to limit or control the negative effects of singlet oxygen in agricultural crops would increase the efficiency by which photosynthetic organisms harvest solar energy, improve crop yields and increase income for farmers. Because singlet oxygen is also used by plants to kill bacteria, this research could also lead to strategies to control plant diseases.

What's been done: Previously, University of Wisconsin-Madison researchers discovered proteins in photosynthetic cells that sense and respond to singlet oxygen. In this study, the researchers have begun to study that response in more detail, determining how the sensory protein that recognizes singlet oxygen works, and how the proteins under control of this sensory pathway prevent or repair damage caused by singlet oxygen. Already, the researchers have completed a three-dimensional crystal structure of the sensory protein and pinpointed how it likely responds to singlet oxygen. They have also begun to identify other proteins that are required for survival in the presence of singlet oxygen.

Impact: In plants, singlet oxygen wreaks havoc on cellular structures that the cell must then fix. This process limits plant growth by redirecting plant energy and resources from growth. This project has shed light on the cellular response to singlet oxygen, and the results have been shared through eleven talks, one paper and a podcast developed by the American Society for Microbiology; a second paper is in the review process. In the future, this research will help plant breeders to breed or engineer crops that suffer less from the toxic effects of singlet oxygen, and therefore increase the photosynthetic efficiency and yields of crops. Similarly, this information can also be used to develop strategies to make plant pathogens more susceptible to the negative effects of singlet oxygen, as a new approach to combat plant diseases.

Funding: Hatch project #WIS04951

More Information: Timothy Donohue, tdonohue@wisc.edu, 608-262-4663

Goal 2. Enhanced Economic Opportunity and Quality of Life for Americans.

(Support Increased Economic Opportunities and Improved Quality of Life in Rural America)

Executive Summary

Under this goal, there were 19 projects including 5 that were multistate interdisciplinary projects, 1 was a McIntire-Stennis project, and 8 were integrated research/extension projects. Included among these are projects addressing public perceptions and consumer behavior, economic inputs of the changing dynamics of agriculture and the rural economy, community development and change, and application of statistical and spatial analysis for data gathering and policy development.

Wisconsin is committed to continually evaluating and reviewing our research portfolio and redirecting resources to meet the important and emerging needs of our rural community. New projects include a study of adaptive management strategy related to forestry, evaluation of youth participation in community planning and environmental stewardship, and a study to evaluate treatment and research of development strategies in the management of pests and pathogens.

Updated project list for FY06

New projects are printed in **bold**. Note that recent reclassification of projects has moved some projects into goals different from those previously listed in the Plan of Work. Projects falling under multiple goals are listed in each. New projects include those to understand how communications affect willingness of citizens to participate in volunteer activities such as blood donation and research on how rural communities are able to access resources from public entities such as universities and civic organizations.

Wisconsin Project No.	Principal Investigator	Title of Project	Hatch Total (Regular & Multistate)	Hatch Multistate	McIntire/ Stennis	Animal Health	Extension Activity	Total F.T.E.
Goal 2: Support Increased Economic Opportunities and Improved Quality of Life in Rural America								
Objective 2.1:		**Expand Economic Opportunities in Rural America by Bringing Scientific Insights into Economic and Business Decisionmaking**						
WIS01021	**Combs, D.**	**Whole Farm Dairy and Beef Systems for Environmental Quality (NE-1024)**	X	X				
WIS01024	**Rojas, H.**	**Communication Effects on Voluntary Blood Donation**	X					
WIS01038	**Schechter, L.**	**Detecting Problems in Survey Data Using Benford's Law**	X					
WIS01041	**Stoecker, R.**	**Access to College/University Civic Engagement Resources for Small to Medium Size Rural Versus Urban Nonprofit Organizations**	X				X	
WIS04536	Voss, P. R.	Smart Growth Requires Smart Demography!	X				X	
WIS04653	Deller, S.	Rural Communities, Rural Labor Markets, and Public Policy (NE-1011)	X	X			X	
WIS04674	Clayton, M.	Applications of Statistics to Agriculture: Analysis of Spatially Autocorrelated Categorical Data	X					
WIS04676	Zhu, J.	Analysis of Spatial Data Using Multi-Scale Statistical Models	X					
WIS04781	Langston, N.	The History of Adaptive Management in Wisconsin Forestry			X			
WIS04886	Foltz, J.	Impact Analysis and Decision Strategies for Agricultural Research (NC-1003)	X	X			X	
WIS04888	Green, G.	Rural Development, Work, and Poverty in North Central Region (NC-1100)	X	X			X	
		Total:	**158,702**	**35,732**	**8,668**	**0**	**58,730**	**7.05**
Objective 2.2:		**Provide Science-Based Technology, Products, and Information to Facilitate Informed Decisions Affecting Quality of Life in Rural Areas**						
WIS01041	**Stoecker, R.**	**Access to College/University Civic Engagement Resources for Small to Medium Size Rural Versus Urban Nonprofit Organizations**	X				X	
WIS04875	Barham, B	The Dynamics of GMO Adoption and Compliance with Insect Resistance Management Techniques Among Wisconsin and Nebraska Farmers	X				X	
WIS04876	Bartfeld, J.	Local Level Determinants of Household Food Security in Wisconsin	X					
WIS04880	Collins, J.	Farm Work, Off-Farm Employment and Family Care: How Wisconsin Farm Families Combine Work in Three Spheres	X				X	
WIS04888	Green, G.	Rural Development, Work, and Poverty in North Central Region (NC-1100)	X	X			X	
WIS04915	Dennis, S. F., Jr.	Understanding Youth Participation in Community Planning and Environmental Stewardship	X					
WIS04938	Hammer, R.	Community Perceptions of Social and Ecological Change: A Cross-National Comparison	X					
WIS04948	Bell, M.	Enhancing Wisconsin's Rare Local Foods: A Study of Social Networks and Meanings	X					
WIS04958	**Groblewski, G.**	**CaMKII and Trafficking of Foodborne Toxins in Digestive Epithelia**	X					
WIS05238	Bell, M., Gratton, C., Jackson, R.	Nitrogen Cycling, Loading, and Use Efficiency in Forage-Based Livestock Production Systems (NC-1021)	X	X			X	
		Total:	**167,199**	**27,735**	**0**	**0**	**78,308**	**4.96**
		Total Goal 2:	**325,901**	**63,467**	**8,668**	**0**	**137,038**	**12.01**

Impact Statements and Selected Results

Publications in refereed journals, books, and extension bulletins have been reported on projects using the AD-421 annual reports in the CRIS system. A number of projects have impacts on food processors and consumers. Some of the projects had funding from Hatch, McIntire-Stennis and Animal Health; others were funded from competitive federal programs and industry gifts and grants. Outputs described in the original Plan of Work are illustrated by example from the past year in the following projects.

"Farm Work, Off-Farm Employment and Family Care: How Wisconsin Farm Families Combine Work in Three Spheres"

Key themes and Focus areas: *A comprehensive study of the growth and loss of jobs within Wisconsin's apparel industry sector will help the state's rural communities make tough choices about when and whether to entice such businesses to relocate to — or remain in — their area.*

The issue: Since the 1970s, apparel industry jobs in the United States have dropped from 1.5 million to fewer than 500,000 positions. The impact of this change has been disproportionately felt in rural communities, including Wisconsin's rural communities, where these companies tend to be located. Apparel industry representatives claims that it's the low-end manufacturing jobs that are being lost to oversea workers, while the 'new' apparel service jobs (design, marketing, taking orders, arranging the shipping of products) popping up in the United States are the better jobs. This project aims to examine this unsubstantiated claim, and to provide science-based information and guidance to rural communities who may be planning to recruit or retain apparel jobs in their region.

What's been done: A University of Wisconsin-Madison researcher has compiled an extensive set of data and conducted multiple case studies that draw a comprehensive picture of past and current trends in Wisconsin's apparel industry sector. The researcher's findings confirm the loss of apparel manufacturing jobs and the recent rise in apparel service jobs. However, the findings contradict claims that the 'new' apparel service jobs are better than the jobs available in the past. Compared to the old manufacturing jobs, the 'new' service jobs pay less, offer fewer benefits, require very few skills and are more likely to be seasonal.

Impact: This study gives rural Wisconsin communities information that can help them decide whether to recruit or retain apparel industry companies in their area, and how much to give and take during negotiations with these businesses. The results of this study were featured in three journal articles, a master's thesis, at a national conference on rural sociology, and during three on-campus presentations. In addition to students and faculty, the on-campus talks were attended by two UW-Extension agents who work directly with Wisconsin municipalities on community development and economic development issues. These findings were also shared with the mayor of Dodgeville, Wis., through an informal oral presentation and via receipt of the aforementioned master's thesis.

Funding: Hatch project #WIS04880

More Information: Jane Collins, jcollins@ssc.wisc.edu, 608-890-0348

"Rural Development, Work, and Poverty in North Central Region (NC-1100)"

Key themes and Focus areas: *Understanding the role that manufacturing jobs play in the economic health of Wisconsin's rural areas will help community leaders and policy makers develop strategies to reduce rural poverty and support economic development in those areas.*

The issue: Between the years 2000 and 2004, Wisconsin lost approximately one-third of its manufacturing jobs. Traditionally, manufacturing jobs have provided good wages, good benefits and a lifelong job. It is unclear whether or not this is still the case, but many rural economic development plans continue to emphasize the recruitment of manufacturing jobs. A thorough study of how manufacturing jobs benefit rural economic health throughout the Midwest would help Wisconsin communities decide whether or not to try to recruit manufacturing industries to their area, or to focus on other job-creation strategies.

What's been done: Researchers involved in this multi-state project have found that certain Midwestern states are gaining manufacturing jobs, including North Dakota, South Dakota and Kansas. Meanwhile, other states are losing manufacturing jobs, such as Wisconsin, Michigan, Illinois and Missouri. They also found that today's manufacturing jobs tend to offer lower wages, fewer benefits and more part-time positions than in the past. So, manufacturing jobs are not as beneficial, compared to working in other sectors, as they once were, especially in the upper Midwest. Based on this information, they conclude that rural areas with a high concentration of low-wage, low-skill jobs still stand to benefit from the recruitment of new manufacturing jobs. However, rural areas that tend to have jobs with higher wage and skill levels should focus their resources on other economic development strategies, such as helping small businesses get started, helping existing businesses expand, and helping to revitalize a municipality's downtown district.

Impact: As a UW-Extension agent and director of the Center for Community and Economic Development, the lead investigator of this project applies these findings to real-world situations as he works with Wisconsin communities on economic development issues. He also shared this information with other Wisconsin extension agents who specialize in economic development, and functioned as an expert consultant on rural development issues for the Dane County Collaborative Council, whose job it was to create a regional economic development plan for Dane County. Additionally, the results of this study have been published in two peer-reviewed journals that focus on rural sociology, and will be featured at an economic development training program for practitioners in late 2007.

Funding: Hatch project #WIS04888

More Information: Gary Green, ggreen@ssc.wisc.edu, 608-262-2710

Goal 3. A Safe and Secure Food and Fiber System.

(Enhance Protection and Safety of the Nation's Agriculture and Food Supply)

Executive Summary

Under this goal, there were 46 projects including 7 that were multistate interdisciplinary projects, 2 were McIntire-Stennis projects, 3 Animal Health projects, and 13 were integrated research/extension projects.

Wisconsin has a significant stake in our nation's food and fiber production and processing system. It is a leader in the livestock sector with a very strong dairy sector and a significant meat industry. The state is also among the leaders in many of the fruits and vegetables with many of the latter going into the processing industry but with increasing emphasis on fresh market uses, especially in the organic sector. Development of new products and processes to enhance marketing of the breadth of food products is a priority for Wisconsin as well as ensuring the safety of these products. We are also a leader in paper and timber production.

Examples of new projects include WIS04952, "Identification of Novel, Conjugally-delivered Antimicrobial Agents"; WIS04962, "Regulation of Mycotoxin Biosynthesis"; WIS01020, " Durable Resistance to Common Rust in Sweet Corn, Genetics and Breeding Vegetative Phase Change and Adult Plant Resistance", and WIS04956, "Effects of Landscape Spatial Structure and Resource Availability in Conservation Biological Control".

Updated project list for FY06

New projects are printed in **bold**. Note that recent reclassification of projects has moved some projects into goals different from those previously listed in the Plan of Work. Projects falling under multiple goals are listed in each.

Wisconsin Project No.	Principal Investigator	Title of Project	Hatch Total (Regular & Multistate)	Hatch Multistate	McIntire/ Stennis	Animal Health	Extension Activity	Total F.T.E.
Goal 3: Enhance Protection and Safety of the Nation's Agriculture and Food Supply								
	Objective 3.1:	**Reduce the Incidence of Foodborne Illnesses and Contaminants through Science-Based Knowledge and Education**						
WIS04660	Gourse, R.	Transcription Initiation Complexes in Diverse Bacteria	X					
WIS04667	Yu, J.	Genetic Studies of Fungal Asexual Sporulation Signaling Pathway	X					
WIS04769	Craig, E. A.	Understanding Cellular Factors Modulating the In Vivo Propagation of the Yeast Prion [RNQ+]	X					
WIS04771	Denes, F. S.	Generation of Antifouling Layers From High Molecular Weight Liquid Phase Compounds Under Cold Plasma Condition	X					
WIS04799	Wong, A.	Characterization of Biofilm Formation by Bacillus Cereus	X					
WIS04952	**Filutowicz, M.**	**Identification of Novel, Conjugally-delivered Antimicrobial Agents**	X					
WIS04958	**Groblewski, G.**	**CaMKII and Trafficking of Foodborne Toxins in Digestive Epithelia**	X					
WIS04962	**Keller, N.**	**Regulation of Mycotoxin Biosynthesis (NC-1025)**	X	X				
		Total:	**166,661**	**25,809**	**0**	**0**	**0**	**3.98**
	Objective 3.2:	**Develop and Deliver Science-Based Information and Technologies to Reduce the Number and Severity of Agricultural Pest and Disease Outbreaks**						
WIS01016	Mitchell, P.	Economics of Corn Rootworm Control and Resistance Management	X				X	
WIS01020	**Tracy, W.**	**Durable Resistance to Common Rust in Sweet Corn, Genetics and Breeding of Vegetative Phase Change and Adult Plant Resistance**	X				X	
WIS01022	**Cullen, E.**	**Ecology and Management of European Corn Borer and Other Lepidopteran Pests of Corn (NC-205)**	X	X			X	
WIS03910	Wedberg, J. L.; Wyman, J. A.	A National Agricultural Program to Clear Pest Control Agents for Minor Uses (NRSP-4)	X	X			X	
WIS04659	Escalante-Semerena, J.	Degradation of Trycarballyate, the Causative Agent of Grass Tetany in Ruminants	X					
WIS04660	Gourse, R.	Transcription Initiation Complexes in Diverse Bacteria	X					

Wisconsin Project No.	Principal Investigator	Title of Project	Hatch Total (Regular & Multistate)	Hatch Multistate	McIntire/ Stennis	Animal Health	Extension Activity	Total F.T.E.
WIS04661	Wasserman, K.	The Role of Ryea and Ryeb Small RNA Regulators in E. Coli	X					
WIS04664	Martin, T.	Identifying Novel Chemical Inhibitors of Synaptic Neurotransmission with Potential Applications for Pesticide/Nematicide Development.	X					
WIS04673	Bent, A.	Discovery of Plant Genes that Mediate Disease Resistance	X					
WIS04734	Ruegg, P.	Mastitis Resistance to Enhance Dairy Food Safety (NE-1009)	X	X			X	
WIS04765	Allen, C.	Understanding Bacterial Wilt Virulence from the Inside Out	X					
WIS04767	Charkowski, A. O.	Identification of Genes Unique to Highly Pathogenic Erwinia Carotovora Subsp. Carotovora	X					
WIS04769	Craig, E. A.	Understanding Cellular Factors Modulating the In Vivo Propagation of the Yeast Prion [RNQ+]	X					
WIS04770	Czuprynski, C. J.	Effect of Macrophage Receptors on Uptake, Phagosomal Fusion and Intracellular Fate of Mycobacterium Paratuberculosis				X		
WIS04776	Grau, C.	Eliminate Yield Loss Associated with Brown Stem Rot of Soybean	X				X	
WIS04777	Jung, G.	Mapping QTL for Dollar Spot Resistance in Bentgrass	X				X	
WIS04792	Reznikoff, W.	TN5 Transposase - Host Protein Interaction	X					
WIS04793	Stoltenberg, D. E.	Early Detection of Neighbor Plants: The Role of Light Quality in Crop-Weed Interactions	X					
WIS04837	Borges, R.	Soybean Grain Composition and Yields as Affected by Crop Rotation, Tillage, and SCN	X				X	
WIS04873	Andrews, J.	Microbial Colonization Patterns on Leaf Landscapes	X					
WIS04875	Barham, B	The Dynamics of GMO Adoption and Compliance with Insect Resistance Management Techniques Among Wisconsin and Nebraska Farmers	X				X	
WIS04884	Czuprynski, C.	Role of Caspase-9 Activation and Mitochondria in Mannhemia Haemolytica Leukotoxin-Mediated Apoptosis in Bovine Leukocytes				X		
WIS04898	Lindroth, R.	Impacts of Air Pollutants on Forest Insect Communities	X					
WIS04900	MacGuidwin, A.	Impact of Changing Management Strategies on Nematode Communities	X				X	
WIS04906	Splitter, G.	Comparative Genomics to Determine Mechanisms of Virulence by Brucella				X		
WIS04909	Sunde, R.	Selenium Regulation, Selenium Requirements, and Molecular Turkey Nutrition	X					
WIS04910	Raffa, K.	Interactions Among Bark Beetles, Pathogens, and Conifers in North American Forests (W-187)	X	X				
WIS04952	**Filutowicz, M.**	**Identification of Novel, Conjugally-delivered Antimicrobial Agents**	X					
WIS04953	**German, T.**	**Exploiting Tospovirus Molecular Interactions for**	X					

Wisconsin Project No.	Principal Investigator	Title of Project	Hatch Total (Regular & Multistate)	Hatch Multistate	McIntire/ Stennis	Animal Health	Extension Activity	Total F.T.E.
		Disease Control						
WIS04954	**Goodman, W.**	**Analysis of the Molecular Action of the Insect Juvenile Hormones**	**X**					
WIS04956	**Gratton, C.**	**Effects of Landscape Spatial Structure and Resource Availability in Conservation Biological Control**	**X**					
WIS04961	**Jeanne, R.**	**How Yellowjacket Wasps Track Changes in Food-resource Quality**	**X**					
WIS04962	**Keller, N.**	**Regulation of Mycotoxin Biosynthesis (NC-1025)**	**X**	**X**				
WIS04963	**Lan, Q.**	**Determination of Insecticidal Activity of Sterol Carrier Protein-2 Inhibitors**	**X**					
WIS04965	**Luschei, E.**	**Incorporating the Impact of Escapes into Bioeconomic Weed Management Models**	**X**					
WIS04966	**McManus, P.**	**Culture-independent Assessment of Erwinia Amylovora and Reservoirs of Streptomycin-resistance Genes in Apple Orchards**	**X**				**X**	
WIS04969	**Raffa, K.**	**Exotic Root Feeding Herbivores: What is Their Impact on Wisconsin's Northern Hardwood Forests?**			**X**			
WIS04972	**Shoemaker, D.**	**Effects of Wolbachia Endosymbiots on the Dynamics and Molecular Evolution of Host Insect mtDNA**	**X**					
WIS04973	**Stanosz, G.**	**Pathogen and Host Condition Influences on Sphaeropsis Shoot Blight and Canker of Jack Pine**			**X**			
WIS04976	**Thomas, M.**	**Genomic Analysis of Secondary Metabolism in Pseudomonas Syringae**	**X**					
WIS05236	Grau, C.; German, T.; Hogg, D.; Borges, R.	Dynamic Soybean Pest Management for Evolving Agricultural Technologies and Cropping Systems (S-1010)	**X**	**X**			**X**	
WIS05238	Bell, M., Gratton, C., Jackson, R.	Nitrogen Cycling, Loading, and Use Efficiency in Forage-Based Livestock Production Systems (NC-1021)	**X**	**X**			**X**	
		Total:	**881,664**	**143,505**	**43,987**	**124,027**	**308,496**	**38.23**
		Total Goal 3:	**1,048,324**	**169,313**	**43,987**	**124,027**	**308,496**	**42.21**

Impact Statements and Selected Results

Publications in refereed journals, books, and extension bulletins have been reported on projects using the AD-421 annual reports in the CRIS system. A number of projects listed under other goals have impacts on human health and nutrition. Some of the projects had funding from Hatch, McIntire-Stennis, and Animal Health; others were funded from competitive federal programs and industry gifts and grants. Outputs described in the original Plan of Work are illustrated by example from the past year in the following projects.

"Durable Resistance to Common Rust in Sweet Corn, Genetics and Breeding of Vegetative Phase Change and Adult Plant Resistance"

Key themes and Focus areas: *Breeding sweet corn to have long-lasting resistance to common rust will save farmers money and protect the environment.*

Issue: Common rust is the most serious sweet corn disease in Wisconsin today, where more than 100,000 acres of the crop are grown. Depending on the season and the chemical fungicide used, farmers spend between $25 and $75 per acre each year to minimize the impact of the disease. Before 1999, farmers were growing sweet corn varieties that were resistant to common rust due to a single gene that protected the crop. However, in 1999, the fungus mutated so that the single-gene protection no longer worked. A corn crop with multiple-gene resistance to common rust would give Wisconsin's sweet corn crop long-lasting protection from the effects of this disease, saving farmers money and reducing the impact of fungicides on the environment.

What's been done: University of Wisconsin-Madison researchers gathered corn varieties from around the world that display multiple-gene resistance to common rust. Because these exotic strains are not adapted to temperate climates, the researchers crossed them with Wisconsin sweet corn varieties, and selected for increased disease resistance and important quality factors, such as flavor and texture. Already, they have isolated several new hybrids resistant to common rust, and agricultural companies are testing their marketability to consumers. In another research vein, the scientists are breeding for sweet corn with fewer juvenile leaves, which are more susceptible to common rust than adult leaves. They have already developed sweet corn plants with 20 percent fewer juvenile leaves.

Impacts: The new sweet corn varieties developed through this research project are expected to exhibit long-lasting protection against common rust and save farmers between $25 and $75 per acre each year on fungicides. Reduced fungicide use will also benefit the environment. In addition to providing the new seeds to agricultural companies for testing, the findings from this study have been shared with the broader agricultural and research community at three conferences and through three journal articles.

Funding: Wisconsin Hatch project #WIS01020

More Information: William Tracy, wftracy@wisc.edu, 608-262-2587

"Degradation of Trycarballyate, the Causative Agent of Grass Tetany in Ruminants"

Key issues and Focus areas: *Understanding the degradation of tricarballylic acid by bacteria will give researchers the information and tools they need to prevent Grass Tetany, a disease that affects ruminant animals.*

Issue: Grass Tetany is characterized by a pronounced deficiency of magnesium ions in the bloodstream of ruminant animals. Grass Tetany is a complex disease whose onset correlates with the consumption of low-magnesium grasses (e.g. rapidly growing young pasture) that contain high levels of trans-aconitate. The latter is rapidly metabolized by rumen bacteria, leading to a buildup of tricarballylic acid, which can not be further degraded. In the rumen, tricarballylic acid is known to bind tightly to magnesium and to enhance its excretion from the animal's body, which prevents the essential metal from being absorbed into the animal's bloodstream. Grass Tetany can affect cattle, sheep, goats and deer, and often leads to death. The USDA estimates that it causes $50 to $150 million in livestock production losses each year in the United States. Finding a way to prevent the build up of tricarballylic acid in the rumen could stop these disease outbreaks.

What's been done: Researchers at the University of Wisconsin-Madison studied a bacterium known to break down tricarballylic acid into smaller chemical components, and discovered four genes integral to this degradation process. They cloned all of the genes, and are in the process of deciphering what these proteins do, and how they do it. Based on their findings, the researchers hypothesize that three of these proteins form a complex, and work together to turn tricarballylic acid into energy and carbon that the bacteria can use for growth.

Impacts: A thorough understanding of how these proteins work to degrade tricarballylic acid will give scientists the information they need to design molecular tools that can help prevent Grass Tetany. More specifically, in the future, scientists could genetically engineer some of the bacteria that are commonly found in an animal's rumen — but don't normally degrade tricarballylic acid — to metabolize tricarballylic acid, turning it into energy and carbon. By metabolizing tricarballylic acid, these bacteria would 'free up' magnesium to be absorbed into the bloodstream, and thus help prevent Grass Tetany. So far, the scientists involved in this project have shared their findings through two journal articles and four presentations.

Funding: Hatch project #WIS04659

More Information: Jorge Escalante, escalante@bact.wisc.edu, 608-262-7379

Goal 4. A Healthy, Well Nourished Population.

(Improve the Nation's Nutrition and Health)

Executive Summary

Under this goal, there were 14 projects including one that was a multistate interdisciplinary project and two that were integrated research/extension projects.

Projects included under this goal cover a wide range of topics including exercise and obesity, studies on the vitamin utilization and effect on development and work on promoting behavioral change leading to healthier lifestyles.

New projects added this year include WIS004958, "CaMKll and Trafficking of Foodborne Toxins in Digestive Epithelia" and WIS04969, "Identification of West Nile Virus Mosquito Vectors in Southern Wisconsin".

Updated project list for FY06

New projects are printed in **bold**. Note that recent reclassification of projects has moved some projects into goals different from those previously listed in the Plan of Work. Projects falling under multiple goals are listed in each.

Wisconsin Project No.	Principal Investigator	Title of Project	Hatch Total (Regular & Multistate)	Hatch Multistate	McIntire/ Stennis	Animal Health	Extension Activity	Total F.T.E.
Goal 4: Improve the Nation's Nutrition and Health								
	Objective 4.1:	**Improve the Nutritional Value of the U. S. Food Supply by Enhancing the Health-Promoting Properties of Food Products**						
WIS04672	Ney, D.	Enterotrophic Effects of Insulin-Like Growth Factor-1 and Growth Hormorne During Parenternal Nutrition	X					
WIS04768	Clagett-Dame, M.	Vitamin A and Brain Development	X					
WIS04785	Ntambi, J. M.	Regulation of Stearoyl-COA Desaturase by Leptin	X					
WIS04787	Parkin, K. L.	Identifying Potentially Anticarcinogenic Components in Common Vegetables	X					
WIS04790	Schoeller, D. A.	Time Course of Adaptation to a High Fat Diet with Exercise	X					
WIS04834	Lai, H.	Assessment of Dietary Intake and Physical Activity and their Associations to the Development of Obesity and Asthma During Early Childhood	X					
WIS04885	Eisenstein, R.	Mechanisms Regulating Ferroportin Synthesis	X					
WIS04909	Sunde, R.	Selenium Regulation, Selenium Requirements, and Molecular Turkey Nutrition	X					
WIS04975	**Tanumihardjo, S.**	**Examining Factors that Affect Carotenoid Bioavailability from Food and Supplements Using Mongolian Gerbils**	X				X	
		Total:	**208,448**	**0**	**0**	**0**	**17,425**	**10.18**
	Objective 4.2:	**Promote Healthier Food Choices and Lifestyles through Research and Education**						
WIS03967	Nitzke, S. A.	Using Stages of Change Model to Promote Consumption of Grains, Vegetables and Fruits by Young Adults (NC-219)	X	X			X	
WIS04948	Bell, M.	Enhancing Wisconsin's Rare Local Foods: A Study of Social Networks and Meanings	X					
WIS04958	**Groblewski, G.**	**CaMKII and Trafficking of Foodborne Toxins in Digestive Epithelia**	X					
WIS04963	**Lan, Q.**	**Determination of Insecticidal Activity of Sterol Carrier Protein-2 Inhibitors**	X					
WIS04968	**Paskewitz, S.**	**Identification of West Nile Virus Mosquito Vectors in Southern Wisconsin**	X					
		Total:	**75,635**	**10,519**	**0**	**0**	**12,093**	**2.15**
		Total Goal 4:	**284,083**	**10,519**	**0**	**0**	**29,518**	**12.33**

Impact Statements and Selected Results

Publications in refereed journals, books, and extension bulletins have been reported on projects using the AD-421 annual reports in the CRIS system. A number of projects are listed in other goals but have impacts on agriculture or natural resources. Some of the projects had funding from Hatch, McIntire-Stennis, and Animal Health; others were funded from competitive federal programs and industry gifts and grants. Outputs described in the original Plan of Work are illustrated by example from the following projects.

"Development of 13C Stable Isotope Techniques to Assess Vitamin A Status and Carotenoid Bioavailability"

Key themes and Focus areas: *The development of a more sensitive method to measure the total amount of vitamin A in people will help public health officials locate and treat individuals suffering from vitamin A depletion and toxicity, as well as to help test the ability of vegetable varieties to increase amounts of vitamin A in the body.*

The issue: In the United States, vitamin A depletion disproportionately affects low-income women and children who tend to have insufficiently varied diets, as well as pregnant and nursing women due to the increased demands of pregnancy and lactation. The current methods used to determine vitamin A status are inadequate for various reasons. There is a need for improved testing methods that are less invasive, more sensitive, and take into account vitamin A concentrations in the liver, where vitamin A reserves are stored in the body.

What's been done: University of Wisconsin-Madison researchers have developed, and continue to fine-tune, a new vitamin A assessment method superior to other methods. It features the administration of a small amount of carbon-13, a stable isotope of carbon that is safe for women and children. After carbon-13 equilibrates in the body, a blood sample is assessed using one of the most sensitive spectrometry techniques available today. This method is minimally invasive, sensitive, and estimates liver reserves of vitamin A. In a second vein of research activity, traditional methods were used to determine the bioavailability of carotenoids — a class of health-promoting plant pigments — in the body from various carrot types. This research found that beneficial compounds in yellow and red carrots were very bioavailable, meaning that the body was able to absorb and use the compounds from the carrots.

Impact: This project led to the development of an improved vitamin A assessment method, and generated promising data about the bioavailability of plant pigments from yellow- and red-colored carrots. These findings have been shared through 16 journal articles, more than 40 presentations to scientific audiences and more than 40 presentations to the general public. The researchers have received funding from the National Institutes of Health to continue perfecting and assessing the limitations of their vitamin A assessment tool. The results of the carrot studies were included in an educational module about functional foods, which has been used to educate thousands of Wisconsin citizens about proper nutrition. The results were also written up in the form of six radio scripts that were aired on more than 100 radio stations across the nation. Since this work began, red, purple and yellow carrots have become available at the national grocery

chain Trader Joe's, at Wisconsin's Dane County farmer's market and are served at the downtown Madison, Wis. restaurant L'Etoile.

Funding: Hatch project #WIS04533

More Information: Sherry Tanumihardjo, sherry@nutrisci.wisc.edu, 608-265-0792

"Identifying Potentially Anticarcinogenic Components in Common Vegetables"

Key themes and Focus areas: *Identifying healthful compounds in common vegetable crops will encourage consumers to eat more vegetables, thereby improving public health and supporting agriculture.*

The issue: Although there have been multiple national-level efforts to encourage the general public to eat more vegetables (and fruits), including the "five-a-day" campaign, many Americans do not consume enough of these healthful foods. However, when a specific health-promoting compound is linked to a particular vegetable or fruit, as when broccoli was shown to contain sulforaphane (an anti-cancer compound) in the 1990s, consumption can increase dramatically. So, to encourage the public to include more vegetables in their diets, it is important to identify and promote healthful compounds in vegetables, as well as the specific health benefits that they confer to humans.

What's been done: University of Wisconsin-Madison researchers have analyzed common crop plants for healthful compounds, in particular, those with potential to reduce cancer risk. So far, the researchers have identified ten different compounds with anti-cancer activities in green onions. They have also isolated compounds (or groups of compounds that work together) that have potential anti-cancer activities in red beet root and maize. The findings have been shared in three journal articles, at five symposia and with a group of food industry representatives at an annual meeting at UW-Madison.

Impact: The discovery of health-promoting compounds in crops will encourage consumers to eat more vegetables. This, in turn, will improve the health of Americans and help curb rising health care costs. Once these compounds are known, crop breeders can develop plants—via traditional breeding or genetic engineering—with increased levels of these compounds. Also, food processors can adjust their methods to preserve these components during processing.

Funding: Hatch project #WIS04787

More Information: Kirk Parkin, klparkin@wisc.edu, 608-263-2011

Goal 5. Greater Harmony Between Agriculture and the Environment.

(Protect and Enhance the Nation's Natural Resource Base and Environment)

Executive Summary

Under this goal, there were 44 projects including 6 that were multistate interdisciplinary projects, 17 were McIntire-Stennis projects, and 7 were integrated research/extension projects. Many projects under this goal are also listed under other goals.

Wisconsin is committed to continually changing its portfolio of research. Rural areas are struggling with many land use issues including the conversion of farmland to housing and retail businesses, and economic pressure for increased corn production for fuel and feed needs. Stakeholder meetings have emphasized the need for research to support the decision-making of local county boards and townships particularly with respect to runoff from agricultural operations and developed land. Stakeholders are also encouraging us to look holistically at biological systems as part of management decisions and environmental impacts of policy changes. New projects include those looking at the reducing the phosphorus concentration in dairy diets and the environment by modifying distillers grain, at thermal pollution and its effects in urban landscapes, and at designing effective policies to manage spatial configuration of private forest lands.

Updated project list for FY06

New projects are printed in **bold**. Note that recent reclassification of projects has moved some projects into goals different from those previously listed in the Plan of Work. Projects falling under multiple goals are listed in each.

Wisconsin Project No.	Principal Investigator	Title of Project	Hatch Total (Regular & Multistate)	Hatch Multistate	McIntire/ Stennis	Animal Health	Extension Activity	Total F.T.E.
Goal 5: Protect and Enhance the Nation's Natural Resource Base and Environment								
	Objective 5.1:	**Provide Science-Based Knowledge and Education to Improve the Management of Forests and Rangelands**						
WIS01026	**Cook, J.**	**Barriers to White Pine Regeneration on Productive Sites**			**X**			
WIS01027	**Hauer, R.**	**Regeneration of Urban American Elm (Ulmus Americana) Trees and Economics of Dutch Elm Disease (Ophiostoma ulmi) Control Revisited**			**X**			
WIS01028	**Bozek, M.**	**Forecasting Future Riparian Forest Stand Characterisitics and Sustainable Contributions of Riparian Trees to Littoral Zone Woody Habitatis in Developing Watersheds**			**X**			
WIS01033	**Lewis, D.**	**Designing Effective Policies to Manage the Spatial Configuration of Private Forest Land**	**X**					
WIS04682	Field, D.	Demographic Change and Landowner Behavior in the Pine Barrens of Wisconsin			**X**			
WIS04684	Lorimer, C.	Dynamics and Management of Multi-Cohort Northern Hardwood Forests: A New Ecosystem-Based Approach to Maintaining Diversity and Aesthetics			**X**			
WIS04685	Young, R.	High Performance Wood Composite Materials Through Activation Bonding			**X**			
WIS04744	Bockheim, J.	Soil Dynamics in Gaps of Old-Growth Northern Hardwood Ecosystems in the Upper Great Lakes Region			**X**			
WIS04781	Langston, N.	The History of Adaptive Management in Wisconsin Forestry			**X**			
WIS04800	Young, D.	A Survey of the Checkered Beetles in Wisconsin (Coleoptera:Cleridae) with Special Emphasis on Wisconsin's Forests			**X**			
WIS04809	Russell, K.	The Influence of Forest Structure on Mortality, Survival and Dispersal of Juvenile American Marten (Martes Americana) in Forests of N. WI			**X**			
WIS04896	Kruger, E.	Intrinsic Factors Mediating Effects of Altered Atmospheric Chemistry on Phosynthetic Light-Use Efficiency in Wisconsin Forests	**X**					
WIS04901	Mladenoff, D.	The Functional Role of Large Woody Debris and Canopy Gaps in Northern Hardwood Forests			**X**			
WIS04903	Radeloff, V.	Sprawl in Wisconsin's Forested Regions and Its Effects on Forest Bird Population			**X**			
WIS04905	Rickenbach, M.	Assessing Opportunities for CrosspBoundary Forest Management Among NIPF Owners			**X**			

Wisconsin Project No.	Principal Investigator	Title of Project	Hatch Total (Regular & Multistate)	Hatch Multistate	McIntire/ Stennis	Animal Health	Extension Activity	Total F.T.E.
WIS04920	Ginnett, T.	Comparison of Neotropical Bird Assemblages and Black-Throated Blue Warbler Nest Site Selection in 3 Northern Hardwood Silvicultural Systems			X			
WIS04973	**Stanosz, G.**	**Pathogen and Host Condition Influences on Sphaeropsis Shoot Blight and Canker of Jack Pine**			X			
WIS05240	**Handelsman, J.; Raffa, K.**	**Small Molecule Synergists of Bacillus thuringiensis for Control of Insect Pests**	X					
		Total:	**90,040**	**0**	**293,605**	**0**	**0**	**11.82**

Objective 5.2: Provide Science-Based Knowledge and Education to Improve the Management of Soil, Air, and Water to Support Production and Enhance the Environment

WIS01015	Laboski, C.	Manure Phosphorus Availability	X				X	
WIS01021	**Combs, D.**	**Whole Farm Dairy and Beef Systems for Environmental Quality (NE-1024)**	X	X				
WIS01033	**Lewis, D.**	**Designing Effective Policies to Manage the Spatial Configuration of Private Forest Land**	X					
WIS03879	Bundy, L. G.	Characterizing Nitrogen Mineralization and Availability in Crop Systems to Protect Water Resources (NC-218)	X	X			X	
WIS04595	Karthikeyan, K.	Animal Manure and Waste Utilization, Treatment and Nuisance Avoidance for a Sustainable Agriculture (S-1000)	X	X				
WIS04655	Karthikeyan, K.G.	Fate of Phosphorus During Chemical Manure Treatment and Subsequent Land Disposal of Treated Solids	X				X	
WIS04661	Wasserman, K.	The Role of Ryea and Ryeb Small RNA Regulators in E. Coli	X					
WIS04666	Wattiaux, M.	Dairy Cattle Diet Formulation on Performance, Nitrogen Utilization, Manure Nutrient Excretion, and Potential Ammonia Loss to the Environment	X				X	
WIS04681	Ribic, C.	Predator Activity and its Relationship to Grassland Bird Nesting Success in an Agricultural Landscape	X					
WIS04744	Bockheim, J.	Soil Dynamics in Gaps of Old-Growth Northern Hardwood Ecosystems in the Upper Great Lakes Region			X			
WIS04766	Balser, T. C.; Pedersen, J. A.	Role of Microbial Community Structure and Forest Management Practices in Soil Carbon Storage			X			
WIS04778	Kosola, K. R.	Plant and Soil Components of Nitrogen Cycling in Cranberry Beds – Does Dissolved Organic Nitrogen Play a Role?	X					
WIS04781	Langston, N.	The History of Adaptive Management in Wisconsin Forestry			X			
WIS04789	Provencher, W.	The Economic Effects of Rural Land Use Restrictions to Preserve Environmental Amenities			X			
WIS04800	Young, D.	A Survey of the Checkered Beetles in Wisconsin (Coleoptera:Cleridae) with Special Emphasis on			X			

Wisconsin Project No.	Principal Investigator	Title of Project	Hatch Total (Regular & Multistate)	Hatch Multistate	McIntire/ Stennis	Animal Health	Extension Activity	Total F.T.E.
		Wisconsin's Forests						
WIS04802	Albrecht, K. A.	Improved Crop and Livestock Management for Protecting the Non-Glaciated Upper Mississippi Valley (NC-1012)	X	X			X	
WIS04809	Russell, K.	The Influence of Forest Structure on Mortality, Survival and Dispersal of Juvenile American Marten (Martes Americana) in Forests of N. WI						
WIS04877	Bishop, R.	The Economic Impacts of CWD in Wisconsin	X					
WIS04890	Helmke, P.	Geochemical Survey of Wisconsin Soils	X					
WIS04891	Hickey, W.	Molecular and Biophysical Basis of Bacterial Competence to Degrade Humic_sorbed Compounds	X					
WIS04894	Karasov, W.	Digestive and Immune Function in the Plastic Gut of Birds	X					
WIS04899	Lowery, B.	Carbon Sequestration and Distribution in Soils of Eroded Landscapes (NC-1017)	X	X				
WIS04902	Pedersen, J.	Peroxidase-Mediated Cross-Coupling of Sulfonamide Antimicrobial Agents with Humic Sustances	X					
WIS04920	Ginnett, T.	Comparison of Neotropical Bird Assemblages and Black-Throated Blue Warbler Nest Site Selection in 3 Northern Hardwood Silvicultural Systems			X			
WIS04936	**Van Deelen, T.**	**Expansion of Black Bear Populations into Agricultural Resions of Wisconsin**	X					
WIS04946	**Balser, T.**	**Breaking the Stranglehold: Reed Canary Grass and Nutrient Cycling in Wisconsin Wetland Soils**	X					
WIS04947	**Balster, N.**	**Carbon, Water, and Nitrate Leaching in Compacted Urban Soil Beneath Prairie and Turfgrass: A Microcosm Experiement**	X					
WIS04974	**Stiles, C.**	**Pedological Relationships and Biogeochemical Properties of Rountree Formation Sub-Soils in the Driftless Area of Southwestern Wisconsin**	X					
WIS04977	**Thompson, A.**	**Characterizing Thermal Pollution in Urban Landscapes**	X					
WIS05238	Bell, M., Gratton, C., Jackson, R.	Nitrogen Cycling, Loading, and Use Efficiency in Forage-Based Livestock Production Systems (NC-1021)	X	X			X	
WIS05239	**Armentano, L.; Karthikeyan, K.**	**Reducing Phosphorus Concentration in Lactating Dairy Diets Based on By-Products of the Corn Distilling Industry**	X				X	
		Total:	**627,973**	**132,954**	**111,100**	**0**	**215,834**	**23.74**
		Total Goal 5:	**718,012**	**132,954**	**404,705**	**0**	**215,834**	**35.56**
		Grand Total:	**4,752,869**	**968,020**	**510,324**	**124,027**	**1,456,423**	**183.80**

Impact Statements and Selected Results

Publications in refereed journals, books, and extension bulletins have been reported on projects using the AD-421 annual reports in the CRIS system. A number of projects are reported as impacts on agriculture or natural resources. Some of the projects had funding from Hatch, McIntire-Stennis, and Animal Health; others were funded from competitive federal programs and industry gifts and grants. Outputs described in the original Plan of Work are illustrated by example from the past year in the following projects.

"Improved Crop and Livestock Management for Protecting the Non-Glaciated Upper Mississippi Valley (NC-1012)"

Key themes and Focus areas*: A new cropping system, featuring year-round ground cover, will protect the environment and save farmers money, while maintaining agricultural yields.*

The issue: Intensive row-crop production on unglaciated soils in the Upper Mississippi Valley results in high soil erosion of already fragile land, degrading soil and water quality. In particular, soil erosion reduces agricultural productivity, and results in silt deposition in streams that damages fish habitat. Agricultural nitrogen runoff from this region also contributes to the seasonal hypoxic "dead zone" in the Gulf of Mexico where there is too little oxygen in the water to support aquatic life. So, Midwestern states have multiple reasons to limit nitrogen and sediment runoff from farms, from maintaining soil health of agricultural fields to avoiding the payment of reparations to coastal states affected by the dead zone.

What's been done: Researchers at the University of Wisconsin-Madison are using field studies to develop alternative cropping systems that will minimize nitrogen and sediment runoff from farms in Wisconsin's driftless region. They developed a system where corn — for silage or grain — is grown amongst a year-round cover crop of kura clover with no negative effect on corn yields. The presence of a year-round cover crop, or 'living mulch,' causes a substantial reduction in soil erosion. Kura clover has also been grown in this way with winter wheat, producing an excellent yield. The mixture of clover and wheat was harvested (together) in spring for silage, and produced a dairy cattle forage of equal value to high-quality alfalfa. Additionally, this legume living mulch cropping system eliminates the need to apply nitrogen to fields, saving farmers close to $50 per acre each year. Because farms run on such narrow profit margins, for many farmers in Wisconsin, this financial savings could mean doubling their current profits.

Impact: This alternative cropping system protects the environment and saves farmers money to the tune of $50 per acre. Agriculture on as many as five million acres in Wisconsin could become more profitable and reduce soil erosion using this type of crop rotation. So far, the scientists have communicated their preliminary findings to growers and state extension agents through ten conferences, four journal articles, a public field day and a field day for Wisconsin extension agents who work with grain crops. Additionally, this research has inspired similar field studies in Iowa, including six large-scale on-farm demonstrations. Collaboration with USDA-ARS soil scientists is also underway, looking at the ability of kura clover, with its deep roots, to absorb nitrate that has moved past the corn root zone and would otherwise contaminate groundwater. Living mulches and other nitrogen self-sufficient cropping systems will become

even more important as nitrogen fertilizer prices rise and as marginal fields on hilly landscapes are put into use to meet the increased demand for biofuel feedstocks.

Funding: Hatch project #WIS04802

More Information: Kenneth Albrecht, kaalbrec@wisc.edu, 608-262-2314

"Reducing Phosphorus Concentration in Lactating Dairy Diets Based on By-products of the Corn Distilling Industry"

Key themes and Focus areas: *To ensure a robust market for distiller's grains and solubles (a major by-product of corn ethanol production) as a dairy cattle feed, it is important to find ways to remove phosphorus from the feed or to mix it with low-phosphorus feeds in a way that optimizes animal health and protects the environment.*

The issue: For every bushel of corn processed in an ethanol plant, approximately one-third ends up as a by-product that is sold as animal feed. While this by-product, called distiller's grains and solubles (DGS), contains a lot of protein, it also contains a high level of phosphorus, which when fed to animals, eventually ends up in surface water where it negatively impacts water quality. This study seeks to maximize the use of DGS while minimizing its negative environmental impact using two different approaches: (1) by reducing phosphorus levels in DGS, and (2) by balancing DGS "as is" with other feed supplements to maximize production, optimize diet costs and reduce phosphorus excretion from dairy cattle.

What's been done: Researchers at the University of Wisconsin-Madison are experimenting with different ways to minimize the amount of phosphorus in DGS that ends up in cow manure, and thus surface water. In one study, they found a method to remove 85 percent of the phosphorus from distiller's solubles, where a vast majority of the phosphorus is located. In a second study, researchers performed a feeding trial and found that dairy cows could eat up to 18 percent DGS in their diet (mixed with a variety of other common protein and nutrient sources) without reductions in milk yield and quality. However, phosphorus levels were still too high in all cases, highlighting the need to develop technologies to remove phosphorus from DGS (the aim of the first part of this project) or from the other animal feed sources, or to reduce the amount of DGS in diets below 18 percent.

Impact: Findings from this project will help ensure that the corn ethanol industry has customers for its DGS by-product, while simultaneously solving an environmental issue for farmers — phosphorus runoff into surface water. Already, the researchers have developed a method to remove 85 percent of phosphorus from distiller's solubles, and ruled out the possibility of using 18 percent or more DGS "as is" in dairy cattle feed. So far, the preliminary results of this study have been shared with important stakeholders through three conferences, a field day, one journal article and two meetings—one attended by dairy farmers and one attended by Wisconsin extension agents working in this field.

Funding: Hatch project #WIS05239

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KG Karthikeyan, karthikeyan@wisc.edu, 608-262-9367

Evaluation of Success of Multistate, Multi-institutional and Multidisciplinary Activities

The College of Agricultural and Life Sciences and indeed the entire UW-Madison campus place a high value upon faculty-driven, multistate, multi-institutional, and multidisciplinary activities. This traditional value has served science and the state well for many years. For the most part, UW Madison administrators take pride in breaking down barriers to multistate, multi-institutional, and multidisciplinary work so that faculty can form effective teams to address pressing problems and issues.

Interdisciplinary tradition and enthusiasm on the UW-Madison campus received recent reaffirmation in the creation of a faculty hiring strategy called "cluster hiring." This hiring strategy encourages and rewards creation of new faculty positions that are interdisciplinary, inter-college, and inter-departmental in nature. A recent example of a cluster is one where four faculty members were hired to address food safety problems, particularly those related to mycotoxin contamination. New faculty members have been hired in areas of mycotoxin biosynthesis, mycotoxin genomics, food microbiology and toxicology (surface coatings), and human medicine – all with a focus of reducing human health dangers posed by mycotoxin and other contaminants of foods. Similarly, clusters are underway in land use planning, structural biology, chemical biology, genomics, and a host of other areas across campus. A recent cluster hire in agroecology and symbiosis, which has resulted in additional hires for College of Agricultural and Life Sciences.

Discussions under each of the goals previously presented in this report identify multistate, multi-institutional research projects, as well as those that have integrated research and extension objectives. Those data will not be cataloged again here. UW-Madison faculty members are heavily involved in North Central Regional research projects. Evaluation of multistate activities is done by the North Central Regional Experiment Station Directors at the midterm and end of each multistate project. Chairs and heads of departments are organized into fourteen North Central Administrative (NCA) committees. These committees meet annually and review proposals and midterm reports for multistate projects. Each project has an administrative advisor from the North Central region who also submits a written review at the same times. The North Central Multistate Review Committee meets three times a year to consider these reviews and make recommendations for new projects, continuing projects after midterm review, and terminating projects. Minutes of the meetings and review process are available on the NCRA website: http://www.wisc.edu/ncra/. Reviews and actions on NRSP projects are available on the NIMSS website: http://nimss.umd.edu/

The UW-Madison College of Agricultural and Life Sciences participates in a UW System Consortium for Agricultural and Natural Resources Research, Extension, and Instruction. The purpose of the consortium is to conduct collaborative research among investigators at UW-Madison, UW-Platteville, UW-River Falls, and UW-Stevens Point, in addition to bringing better coordination to instructional and extension programs operated by the four Wisconsin universities. The Midwest Poultry Science Undergraduate Center of Excellence is yet another

example of multistate programming in the instructional area that has great value in offering students from a number of different institutions educational opportunities that otherwise would not be available to them. This program is organized through the UW-Madison. Multistate and multi-institutional programming in all three land grant functional areas (research, extension, and instruction) is a strategy that individual states and institutions adopt with increasing enthusiasm as budget constraints are imposed. New discussions on coordination of dairy production and Upper Mississippi watershed programs have been initiated.

User input and program response to that input is also referenced in each to the goals sections. It will not be repeated here, other than to stress that great amounts of energy are devoted to meeting with various user groups and incorporating their suggestions and needs into research and extension programming.

Serving the entire community

The Wisconsin Agricultural Experiment Station makes sincere efforts to serve the needs of consumers, minority populations, small landowners, alternative agriculture, and non-traditional clientele. Below lists a number of research projects that relate to these special client groups. Note that four of the following projects are multistate, multidisciplinary projects.

Projects serving underrepresented and minority populations:

Population	Project	Principal Investigator(s)	Title
Rural communities	WIS04653	Deller, S.	Rural Communities, Rural Labor Markets, And Public Policy (NE-1011)
Young adults	WIS03967	Nitzke, S.	Using Stages Of Change Model To Promote Consumption Of Grains, Vegetables And Fruits By Young Adults (NC-219)
Small growers, especially minority populations such as Hmong and Hispanic	WIS04717	Kloppenburg, J.	Sustaining Local Food Systems In A Globalizing Environment: Forces, Responses, Impacts (NE-1012)
Rural communities and minority populations	WIS04536	Voss, P.	Smart Growth Requires Smart Demography
Green industry producers	WIS04777	Jung, G.	Mapping QTL for Dollar Spot Resistance in Bentgrass
Alternative forestry & small holders	WIS04781	Langston, N.	The History of Adaptive Management in Wisconsin Forestry
Small livestock farms	WIS04795	Thomas, D.	Effect of Feeding Level for Dairy Ewe Lams During the Prepubertal Period on Their Milk Production as Ewes
Populations genetically susceptible; Poor families & children	WIS04834	Lai, H.	Assessment of Dietary Intake and Physical Activity and Their Associations to the Development of Obesity and Asthma During Early Childhood
Rural economies	WIS04789	Provencher, W.	The Economic Effects of Rural Land Use Restrictions to Preserve Environmental Amenitites
Youth in communities	WIS04915	Dennis, S. Jr.	Understanding Youth Participation in Community Planning and Envirnomental Stewardship
Rural communities, ethnic groups, and minorities	WIS04948	Bell, M	Enhancing Wisconsin's Rare Local Foods: A Study of Social Networks and Meanings
Small farms	WIS01021	Combs, D.	Whole Farm Dairy and Beef Systems for Environmental Quality (NE-1024)
Small farms	WIS04964	Lehmkuhler, J.	Forage-based Beef Finishing Systems for the Upper Midwest Region

Rural communities and minority populations	WIS01041	Stoecker, R.	Access to College/University Civic Engagement Resources for Small to Medium Size Rural Versus Urban Nonprofit Organizations
Farm families, women, and rural communities	WIS04880	Collins, J.	Farm Work, Off-Farm Employment and Family Care: How Wisconsin Farm Families Combine Work in Three Spheres
Rural communities, youth, families, and minority populations	WIS04888	Green, G.	Rural Development, Work, and Poverty in North Central Region (NC-1100)
Rural economies	WIS04877	Bishop, R.	The Economic Impacts of CWD in Wisconsin

Although formal evaluations have not been done to determine the effectiveness of these efforts, there is ample field experience and observations to support the contention that they do have significant impact on the problems and populations addressed. See earlier presented research impact statements.

Stakeholder groups include those from a wide diversity of backgrounds. For instance, members on the Board of Visitors; the College advisory committee; are recommended by chairs of departments and advisory groups for programs and centers. Current membership includes 5 women, owners of 11 small or family-owned businesses, and two minority representatives. Each year as members rotate, new nominations are solicited with a request to include diversity as a criteria for nomination.

Stakeholder input for the development and conduct of research relating to state needs has been accomplished in a tiered system. The College of Agricultural and Life Sciences has a central Advisory Board (CALS Board of Visitors) that meets twice a year with the Dean and Associate Deans. Members of this committee (see Appendix B for current list of members) are selected from a wide range of producer, industry, consumer, environmental groups, and state agencies. In addition to advisory groups, the Dean of CALS has been meeting with small groups of leaders representing Wisconsin organizations (see Appendix C) for roundtable discussions. These meetings include traditional and non-traditional stakeholders (invitees included in original Plan of Work).

Meeting Short, Intermediate and Long-term Needs

In the stakeholder process, it is clear that our stakeholders are concerned about immediate needs (e.g. nutrient management to meet new regulatory requirement) and longer-term issues (e.g. the sustainability of agricultural and natural resource systems). In proposals written by faculty for funding, a justification for how the project will meet the CSREES goals and the identified Wisconsin needs is required. In the review process, the reviewers are asked to specifically address how the proposal will meet the issues and needs for Wisconsin and the nation and to characterize the project as meeting short, intermediate or long-term needs. These reviews are used by the Faculty Review Panel in prioritizing projects. In fall 2006, a review of 70 projects at UW-Madison resulted in funding of 35 projects with 4 Hatch projects characterized as meeting short-term needs, 17 Hatch projects as intermediate, and 11 Hatch projects as long term. One McIntire-Stennis project was considered as meeting intermediate-term needs and one McIntire-Stennis project was considered as meeting long term needs. One Animal Health project was considered as meeting long-term needs. Administrative staff were involved in determining whether proposals met short, intermediate, and long term needs when discrepancies among reviewers were noted. This review process has been successful at identifying outstanding proposals ranging from very basic (usually longer-term impacts) to very applied (often short-term impacts). Under the featured projects described under the various goals, note that both short and long-term impacts have been included.

Stakeholder Input Process

The Dean and Associate Deans attend many meetings of organizations concerned with our research priorities. Faculty regularly attend national scientific conferences and are members of national and international scientific committees. Many attend national forums for research priority setting such as the FAIR 2002 (Food Animal Integrated Research Symposium) and CROPS 99 (Coalition for Research on Plant Systems). These national conferences include stakeholders and representatives from federal agencies. Many departments, centers, and institutes maintain advisory committees that meet periodically with researchers in the units. Additionally, faculty regularly attend events with agricultural, natural resource, and community service activities.

Wisconsin Cooperative Extension has developed 15 system and issue teams (comprised of University research and Extension professionals, other agency personnel, and producers) to develop educational programs directed at both farm and industry clientele. System teams conduct applied research and educational programming that address issues and problems specific to commodities (dairy, beef, swine, sheep, grain crops, forages, vegetable crops, fruit crops, and urban agriculture/horticulture). Issue teams deal with integrated issues across the agricultural systems (marketing and risk management, farm business management, nutrient management, land use and agriculture, food safety and quality, and new and emerging farm and agricultural markets). Principal investigators with Hatch, McIntire-Stennis, and Animal Health grants are members of both system and issue teams.

Implementation of research priorities in the formula funding process is accomplished through a compilation of the departments' research priorities based on their interactions with stakeholders. Department chairs were asked to provide a small number of research topics from each unit of CALS for use in annual Hatch and McIntire-Stennis calls for proposals. The Dean and Associate Deans assembled a list of common themes from this set that is included in this year's call for proposals. In 2001, a revised list of priorities was collected and issued. This list was reviewed in May 2006 and distributed with the call for proposals for 2008.

For the Animal Health process, every two years, the Association of American Veterinary Medical Colleges (AAVMC), with numerous co-sponsors, organizes a two-day listening conference entitled "Critical Issues in Animal Health Research Conference." Representatives from major and minor commodity groups present their positions on the most critical area for research investment. The Associate Dean of the School of Veterinary Medicine (SVM) attends and helps organize this national conference. The SVM has a Board of Visitors, which meets twice a year with SVM administration and faculty to provide input on critical research issues. Faculty reviewers of proposals annually attend a meeting of a variety of stakeholder groups such as the American Veterinary Medical Association, the National Pork Producers, the Bovine Practitioners Association, and the National Turkey Growers Association.

At UW-Stevens Point, concurrent with the distribution of request for proposals, members of the UWSP Forestry Advisory Committee were contacted and asked to submit priority areas of forestry-related research needs in Wisconsin. The committee consists of 21 members who are recognized as leaders in the forestry and conservation community in the State of Wisconsin.

CALS administrative activities for planning and input:

October 2006 April 2006	CALS Board of Visitors (advisory committee, see Appendix B for current members	CALS Executive Staff and Deans, Dept. chairs of departments
May 2006	All day administrative retreat	CALS Deans and chairs of departments
January 2007	CALS budget retreat	CALS Deans

Areas of Identified Research Need for Wisconsin

Meetings with stakeholders, such as those listed above, are utilized to identify research needs specific to Wisconsin. Faculty meet regularly with a number of college and departmental advisory groups, commodity organizations, state agencies, consumer groups, and private citizens. Input from these stakeholders and from those who are performing the research is used to help highlight areas of research need. Every other year, department chairs are asked to provide a small number of research topics from each unit of CALS for use in Hatch and McIntire-Stennis calls for proposals. The Dean and Associate Deans of the College of Agricultural and Life Sciences work on these needs to identify a set of goals for use in the Hatch and McIntire-Stennis call for proposals. Reviewers are provided theses priorities as is the Research Advisory Committee that ranks the proposals for funding. The following is a compilation of common themes identified and published in the UW-Madison Call for Proposals in summer 2006.

1. Mechanisms of pest and pathogen resistance and safe and effective control, with minimum effects on environmental quality and human health.
2. Effects of change in global climate, population pressures, or public policy on agricultural production, environmental resources, ecosystem management, and future land uses.
3. Identification of socioeconomic or other forces that shape the viability of Wisconsin industries and employment including agriculture, bio-based industry, forestry, wildlife management, recreation, and other land uses.
4. Research on food safety, nutritional health, environmental protection, and biotechnology and on providing information on dietary choices, lifestyle and community decisions.
5. Sustainable agricultural and forestry production and processing systems that provide improved food safety and security, environmental protection, economically viable communities, protection of public goods, and human well-being. This need requires an understanding of basic life processes in order to manage biotic systems for human use.

Program Review Process

Hatch, McIntire-Stennis, and Animal Health funds are used for specific projects solicited in an annual call for proposals. Animal Health proposals are reviewed at the School of Veterinary Medicine; Hatch and McIntire-Stennis proposals are reviewed in CALS.

CALS process:
The following is published in the call for proposals as guidance to the scientists requesting Hatch or McIntire-Stennis funding. This process occurred in December of 2006 for 70 new proposals.

The Faculty Review Panel (FRP):
The Associate Dean for Research will choose members of the FRP in consultation with the Research Advisory Committee (RAC). Each proposal will be reviewed by two members of the FRP and at least two other (ad hoc) reviewers. The CALS Research Division, in consultation with RAC members, will make the identification of the ad hoc reviewers. Where possible, ad hoc reviewers will be CALS faculty, though other reviewers both on and off campus may be appointed as necessary. The critical criteria for selection of FRP members and ad hoc reviewers will be scientific excellence, appropriate disciplinary expertise, and overall balance. No member of the FRP will have a proposal under review.

Review Criteria for Reviewers:
Reviewers are asked to critique and evaluate proposals in a constructive way, identifying both the strengths and weaknesses of the proposal(s) reviewed. Reviews should be concise and include comments addressing each of the following criteria:

- *An evaluation of the scientific significance of the objectives and appropriateness of the research approach as indicated in the original Congressional Acts and CSREES Goals.*
- *A judgment of the potential usefulness to society of the research, in the short and/or long term. Problem solving is a key feature of the formula funding guidelines.*
- *An evaluation of the ability of the research team to accomplish the stated objectives and the match between the objectives and available resources. For teams with multiple investigators, please include a plan of coordination of the work across laboratories or departments.*

Review Process:

- *Copies of the proposal will be sent to two members of the Faculty Review Panel (FRP) and at least two ad hoc reviewers. Each reviewer will prepare a written critique of the proposal and rank the proposal from excellent to unacceptable. The reviews will be submitted to the CALS Research Division and recorded anonymously upon receipt. The two FRP reviewers will receive copies of all reviews (anonymity maintained) on which they are primary or secondary reviewers prior to the FRP meeting so they may be prepared to lead the discussion on the proposals assigned to them.*
- *A meeting will be held of FRP to discuss proposals. Prior to the meeting, copies of all reviews will be provided to FRP members.*
- *At the meeting, the primary reviewer will give a short description of the proposal, the principal investigator's background, and his/her own critique. The secondary reviewer will provide his/her own critique and raise any other points that have been overlooked. Where the FRP has insufficient expertise in the proposal area, an ad hoc reviewer may be brought*

in as primary or secondary discussant. Comments from ad hoc reviewers will be provided by the primary reviewer and confusing issued clarified.

- *An approximate placement will be made with respect to proposals as discussion takes place. Obviously this placement will involve some degree of reconsideration of previously placed proposals. Because of this process, an inappropriately negative external review will not condemn a proposal. At the end of the process, FRP members will go over the list and look for any inappropriate placement. The prioritized list will be forwarded to the Associate Dean for Research.*
- *The primary reviewer of each proposal will prepare a summary of the written review comments and FRP discussion. The summary and reviews from individual reviewers will be returned to applicants.*

The Research Advisory committee of CALS (10 faculty) approves the guidelines for Hatch proposals, review, and funding. The committee has changed the wording slightly from year to year, but no substantial change in the review process has occurred from the Plan of Work Update description submitted in April 2004.

SVM Process

Animal Health proposals are reviewed by a faculty committee appointed by James Tracy, Associate Dean for Research, UW-Madison School of Veterinary Medicine. Proposals for research grants from Animal Health Formula Funds are reviewed by the Research Committee of the School of Veterinary Medicine (SVM) in a dual peer review process. After receiving and reading all proposals, the Research Committee first meets to select two peer reviewers, experts in the area of each proposal. These experts are asked to comment both on the scientific merit as well as the relevancy to animal health and specifically to health of livestock in Wisconsin. The Associate Dean for Research of the School of Veterinary Medicine together with the Research Committee from the SVM reviews the overall portfolio of research projects sponsored by the Animal Health Formula Funds to make sure that the portfolio of projects is representative of the livestock health issues in Wisconsin.

UW–Stevens Point Process

The McIntire-Stennis Proposal Review Panel consists of five members, three from the College of Natural Resources and two from the forestry community in Wisconsin. Each review panel member is asked to rank the proposals using the following criteria: scientific and technical merit, ability of the principal investigators to perform the research potential for publishable results, and recommended research topics by the UWSP Forestry Advisory Committee. Decisions are made by the Christine Thomas, Dean of the College of Natural Resources, UW-Stevens Point.

Integrated Research and Extension Activities

Our integrated research and extension activities are organized into projects that have been listed under the appropriate goals. Brief descriptions of activities on our Research Stations are included in Appendix D as examples of the integration.

U.S. Department of Agriculture
Cooperative State Research, Education, and Extension Service
Supplement to the Annual Report of Accomplishments and Results
Actual Expenditures of Federal Funding for Multistate Extension and Integrated Activities
(Attach Brief Summaries)
Fiscal Year: 2006

Select One: ☐ **Interim** **X Final**

Institution: Wisconsin Agriculture Experiment Station, College of Agricultural and Life Sciences

State: Wisconsin

	Integrated Activities (Hatch)		**Multistate Extension Activities (Smith-Lever)**		**Integrated Activities (Smith-Lever)**	
Established Target %	31	**%**		**%**		**%**
This FY Allocation (from 1088)						
This FY Target Amount	$1,485,751					
Title of Planned Program Activity						
WI Integrated Research and Extension Projects						
Please see project lists under goals and example descriptions						
Total	$1,485,751					
Carryover	0					

Certification: I certify to the best of my knowledge and belief that this report is correct and complete and that all outlays represented here accurately reflect allowable expenditures of Federal funds only in satisfying AREERA requirements.

Director **Date**

Appendices

Appendix A – CALS Advisory Committee membership

CALS Board of Visitors. January 2007

Will Allen
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Frederick Usinger

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Appendix B – 2006 Stakeholder Meetings with CALS Dean and/or Associate/Assistant Dean(s)

Date	Event
January 4, 2006	Ag Source Board
January 10, 2006	590 Committee
January 13, 2006	WI Agricultural Stewardship Initiative Coordinating Council
January 17, 2006	Water Quality Program - Milwaukee, WI
January 18, 2006	Breakfast with Big 5
January 19, 2006	Dairy Business Innovation Center Board Meeting
January 25, 2006	WI Agricultural Stewardship Initiative Strategic Planning Committee
February 1, 2006	FB Ag. Day on the Hill
February 7, 2006	Bayfield, Ashland County Representatives
February 10, 2006	Kickapoo Valley Reserve, Organic Valley
February 13, 2006	590 Committee
February 14, 2006	WI Agricultural Stewardship Initiative Strategic Planning Committee
February 22, 2006	Tom Lochner – WI Cranberry Growers
February 28, 2006	Superior Days Meeting
March 7, 2006	Northern District Conference Call
March 14, 2006	Ag. Leaders Breakfast
March 21, 2006	Wisconsin Green Industry Federation Board Meeting
March 24, 2006	Wisconsin Potato and Vegetable Growers Conference Call
March 27, 2006	Dap Kapanke's Staff
April 4, 2006	WI Agricultural Stewardship Initiative
April 6, 2006	Tom Lochner – WI Cranberry Growers
April 7, 2006	Western District WACEC Meeting
April 11, 2006	Al Ott – Assembly Ag. Committee
April 12, 2006	Wisconsin Farm Technology Days Board Meeting
April 17, 2006	Tom Lyon
April 19, 2006	Governor's Mansion
April 20-21, 2006	CALS Board Of Visitors
April 24, 2006	CIG Advisory Committee
April 28, 2006	Farm Bureau Breakfast
April 28, 2006	Professional Dairy Producers of WI Board and Staff
May 4, 2006	Representative Hines
May 5, 2006	Dairyland State Academy Reps
May 16, 2006	Tom Lochner – WI Cranberry Growers
May 19, 2006	WI Agricultural Stewardship Initiative Strategic Planning Committee
May 23, 2006	Wisconsin Future of Farming and Rural Life – Menominee, WI
May 23, 2006	Wisconsin Farm Technology Media Event
June 8, 2006	Future of Farming and Rural Life – Waukesha, WI
June 8, 2006	Wisconsin Livestock Identification Consortium
June 21, 2006	Wisconsin AgriBusiness Council Board Meeting
June 23, 2006	Eric Hurley – Dairyland State Academy
July 10, 2006	Wisconsin Farm Technology Days Banquet
July 11, 2006	Wisconsin Green Industry Federation Board Meeting

July 11, 2006	SPUDDRO Meeting – Rhinelander, WI
July 18, 2006	Ag Source Board
July 21, 2006	Future of Farming, Ashland, WI
July 26, 2006	Hancock Potato Field Day
July 27, 2006	Meed Residence Hall Dedication
August 1, 2006	OJ Noer Turfgrass Day
August 8, 2006	State Fair 4 H Meat Auctin
August 10, 2006	Wisconsin Nursery Association- Salem, WI
August 11, 2006	Northwest Extension Initiative – Spooner, WI
August 12, 2006	Savor The Summer Festival
August 14, 2006	Sustainable Ag Lunch Oconomowoc
August 15, 2006	WI Farm Bureau
August 16, 2006	Wisconsin Potato and Vegetable Growers/Karsting Meeting
August 17, 2006	Mike Schmidt
August 22, 2006	Wisconsin Farm Technology Days Board Meeting
August 23, 2006	Marshfield Ground Breaking
August 23, 2006	Future of Farming and Rural Life – Fox Valley, WI
August 30, 2006	Pork Producers- Arlington, WI
August 30, 2006	Arlington Welcome Event
September 5, 2006	Farm Bureau
September 5, 2006	WI Agricultural Stewardship Initiative Strategic Planning Committee
September 6, 2006	Al Ott – Assembly Ag. Committee
September 18, 2006	ICPM Advisory Committee
September 13, 2006	Professional Dairy Producers of Wisconsin
September 13, 2006	Professional Dairy Producers of WI
September 18, 2006	Green Industry Reception
September 18, 2006	Wisconsin Green Industry Federation Welcome Event
September 29, 2006	Cranberry Growers Meeting
October 4, 2006	Dairy Industry Stockholders
October 7, 2006	Michael Fields Institute
October 9, 2006	Farm Bureau Ag Coalitions Meeting
October 9, 2006	Eco Health 1st Conference
October 10, 2006	Vita Plus Reception
October 13, 2006	Future of Farming and Rural Life – Platteville, WI
October 20, 2006	WI Agricultural and Life Sciences Alumni Association Board Mtg.
October 23, 2006	Margaret Krome/Michael Fields Institute
October 24, 2006	Future of Farming and Rural Life – Wausau, WI
October 30, 2006	Nature Conservancy
October 31, 2006	The Nature Conservancy
November 1, 2006	Dairy Business Innovation Center Board Meeting
November 3, 2006	Agriablity Advisory Board Meeting
November 6, 2006	Goat Initiative Meeting
November 7, 2006	Wisconsin Green Industry Federation Board of Directors Meeting
November 7, 2006	Wisconsin Potato and Vegetable Growers Research Comm.
November 8, 2006	Wisconsin Farm Bureau
November 15, 2006	Wisconsin Potato and Vegetable Growers Res. Committee

November 16, 2006	Grow WI Livestock Farm at DATCP
November 16, 2006	WI Agricultural Stewardship Initiative Strategic Planning Committee
November 16, 2006	Coffee with Paul Zimmerman
November 21, 2006	Milk Quality Task Force
November 29, 2006	Al Ott, Assembly of Ag. Committee
November 29, 2006	Certified Seed Growers
December 2, 2006	NFO State Convention- Marshfield, WI
December 4, 2006	Wisconsin Farm Bureau Federation Banquet
December 5, 2006	Northern Extension Meeting – Ashland, WI
December 7, 2006	Wisconsin Livestock Identification Consortium
December 13, 2006	Arlington Dairy Day
December 15, 2006	Wisconsin Turfgrass Association
December 21, 2006	Wisconsin School For Beginning Dairy Farmers

Appendix C - Agricultural Research Stations 2006 Schedule of Events

Date	Title	Location
April 29, 2006	Family Horticulture Day	West Madison
May 18, 2006	Central Wisconsin Rural youth Safety Day	Hancock
June 21, 2006	Insects in the Garden	West Madison
June 27, 2006	UW Pest Management Field Day	Arlington
June 30, 2006	Wisconsin's Orchids	Kemp Natural Resources Station
July 1, 2006	Orchid Discovery Hike	Kemp Natural Resources Station
July 6, 2006	Focus on Research: Northern WI Forest Community: 1960-2005	Kemp Natural Resources Station
July 14, 2006	Rhinelander Field Day	Rhinelander
July 17, 2006	Dragonflies & Damselflies	Kemp Natural Resources Station
July 18, 2006	Dragonflies Field Experience	Kemp Natural Resources Station
July 18, 2006	Diseases in the Garden	West Madison
July 26, 2006	Central Wisconsin Potato Field Day	Hancock
July 26, 2006	Beef Cow-Calf Field Day	Lancaster
August 1, 2006	WI Turfgrass Association Summer Field Day	OJ Noer Turfgrass Facility
August 3, 2006	Growing Vegetables in Wisconsin	West Madison
August 10, 2006	Commercial Flower Field Day	West Madison
August 10, 2006	Spooner Potato Grower Field Day	Spooner
August 11, 2006	Aurora Borealis Kemp NRS	Kemp Natural Resources Station
August 11, 2006	6th Annual Profitable Pastures Field Day	Lancaster
August 14, 2006	Fruits, Flowers & Vegetables Twilight Tour	Hancock
August 16, 2006	Focus on Research: Using Psychology to Help Snakes	Kemp Natural Resources Station
August 19, 2006	Trial & Demonstration Garden Field Day	West Madison
August 22, 2006	Spooner Twilight Garden Tour	Spooner
August 23, 2006	Twighlight Garden Tour	Marshfield
August 26, 2006	Spooner Sheep Day	Spooner
August 30, 2006	Agronomy Field Day	Arlington
December 13, 2006	Arlington Dairy Day	Arlington

Additional information on Research Station activities:
http://www.ars.wisc.edu/events.aspx