2015 University of Wisconsin Combined Research and Extension Plan of Work

Status: Accepted

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I. Plan Overview

1. Brief Summary about Plan Of Work

Operating Philosophy/ Program Overview:

The Wisconsin Agricultural Experiment Station (WAES) and University of Wisconsin Cooperative Extension (CES) are partners in an effort to generate new research-based knowledge and applying that knowledge to help Wisconsin's citizens and communities address challenges and take advantage of new opportunities.

Priorities are aligned with input from stakeholders with interests in traditional and non-traditional agriculture, natural resources, human health and communities. We receive input through conversations and correspondence with individuals and groups, as well as at public meetings such as field days at Agricultural Research Stations and other Extension events. We also ask issue-based teams, comprised of UW-Extension faculty and county-based educators, about the priorities in their areas.

These priorities inform decisions about what research to conduct, and about the development of educational initiatives conducted by Cooperative Extension in partnership with local, state, tribal and regional organizations, farmers, consumers, business owners and entrepreneurs, support services, coalitions, decision makers, and public and tribal government agencies.

How we allocate formula funds

The success of our statewide educational efforts is founded on the generation of new, relevant knowledge through peer-reviewed, investigator-driven research supported by formula funding. We seek to allocate these funds in a manner that best addresses the needs of our stakeholders.

WAES's general approach is to allocate formula funds to support specific, peer-reviewed projects rather than to distribute block grants to departments. We use formula funds to support approximately 130 projects each year, covering the cost of personnel (mainly graduate students), supplies, student hourly help and travel. We use a different approach to distribute funds for capital equipment. In this case, departments set the priorities and where practical, several projects may share capital equipment. We cover the costs of travel to multistate research meetings (for two representative per project) out of a central pool of funds.

Our formula-funded research program consists of a number of projects, each reported and reviewed individually. While the program itself may extend for multiple years, the projects that comprise it are a constantly shifting portfolio that can be quickly redirected. Projects are approved for periods of one to four years, with most on a three- or four-year cycle. When we rank a new proposal, one thing we look at is how successful the research team has been in completing previous Formula-funded projects. Multistate revised proposals must be reviewed and approved at least once every four years.

Each year, we redirect roughly 20 percent of our formula-funded research portfolio to address state and national priorities as spelled out in the annual RFP. We continually re-examine our research portfolio in order to address short-term, intermediate term and long-term issues. We may fund a small number of

new projects at mid-year as new faculty members are hired or to address emerging problems that require immediate attention. These mid-year projects are funded at the discretion of the associate dean and assistant dean for research in the College of Agricultural and Life Sciences (CALS), of which WAES is a part. This ongoing portfolio review ensures that we invest in projects that are relevant to the REE and NIFA national goals and emphasis areas and focus on current state research needs.

How we measure research success

WAES uses several indicators to assess the impact and outcomes of a research project. Weconsider peer-reviewed publications, efforts to share results with client groups, patent disclosures and graduate students trained. The list may be expanded in the future to include other criteria that will enable us not only to assess the effectiveness of current programs, but also to help us set future formula grant funding priorities.

Publications in refereed journals, books and extension bulletins have been reported on projects using the annual reports in the new REEport system. CALS published research has been ranked first among peer institutions in terms of the Scientific Impact Factor. Formula funding plays a major role in this achievement, not just because of the success of our formula-funded projects, but also because formula grants help our researchers attract significant funding from other sources. CALS also ranks very high in extramural funding awarded to land-grant universities and public institutions, as well as private universities.

How Extension educational initiatives are structured

Wisconsin Cooperative Extension's interdisciplinary and cross-program area statewide teams are co-chaired by campus-based specialists and community-based educators. Structuring team leadership in this manner is intentional, building relationships and linkages among communities of research interest, communities of practice, and communities of locale. Teams develop plans focused on interests that cut across these communities. They do so from the point of issue identification and priority-setting, to resource commitment, plan implementation and evaluation. This same approach applies to multi-state and joint research and extension activities.

Meeting NIFA Priorities

The 2015-2019 combined Research and Cooperative Extension federal plan of work describes how statewide interdisciplinary campus and county faculty, staff and colleagues provide research-based education and assistance to sustain and grow the state's vital agricultural economy across NIFA priorities:

1. Global Food Security Food Availability: Crops and Agronomic Plants
2. Global Food Security Food Availability: Dairy and Livestock
3. Global Food Security and Hunger: Food Accessibility
4. Climate Change and Energy Needs
5. Sustainable use of Natural Resources
6. Nutrition
7. Food Safety
8. Education and Science Literacy
9. Rural Prosperity
10. Wisconsin Competitive Research Program

1. Global Food Security Food Availability: Crops and Agronomic Plants:

The WAES and Cooperative Extension collaboration among campus, county and regional colleagues, partners and trained volunteers, provides research-based education and assistance to improve food security by strengthening local food markets and systems, responding to growing consumer

demand for sustainably produced local foods, building community capacity to increase access to healthy foods for vulnerable populations, increasing household access to healthy foods for those in need, and providing education to assist with the succession of farm businesses and retaining on-farm jobs.

2. Global Food Security Food Availability: Dairy and Livestock:

WAES research and Extension colleagues, partners, and trained volunteers provide timely research based education and assistance to improve food availability through managing and minimizing losses due to animal diseases, enhancing economic and environmental sustainability of agribusinesses, building the capacity of the agriculture service and support industry, training the next generation of agricultural service providers, and introuducig which leads to innovations and increased efficiencies in production.

3. Global Food Security and Hunger: Food Accessibility:

The WAES and Wisconsin Cooperative Extension collegues collaborate among campus, county and regional colleagues, partners and trained volunteers, providing research-based education and assistance to improve food security by strengthening local food markets and systems, responding to growing consumer demand for sustainably produced local foods, building community capacity to increase access to healthy foods for vulnerable populations, and increasing household access to healthy foods for those in need.

4. Climate Change and Energy Needs:

Climate change and energy needs have a variety of impacts on communities, agriculture, natural resources, local economies and human health. In addition, The WAES and Cooperative Extension educators in both agriculture and community development program areas are being called upon to respond to questions about bioenergy and sustainable renewable energy. Professionals and community leaders need locally relevant, science-based climate change and energy needs information and methods to incorporate into economic development and resource management planning processes.

5. Sustainable Use of Natural Resources:

Communities are interested in developing renewable energy industries for energy independence, job creation, and economic development. The Wisconsin Agricultural Experiment Station incorporates research to benefit forest production, weed management, surface water quality, and promoting new farm based practices. Wisconsin Cooperative Extension campus and county faculty and staff are conducting integrated research and extension programs, and building capacity for scalable, sustainable energy among extension colleagues and communities.

6. Nutrition:

Research projects range from assessing the causes and consequences of childhood obesity, nutritional aspects of diabetes, healthy eating campaigns, the management of pancreatitis and other areas. Effective research based interventions that are practical to implement and sustain are needed to prevent obesity among preschoolers, and to support parents and others to help young children develop healthy behaviors.

7. Food Safety:

The WAES and Wisconsin Cooperative Extension plans collaboration among campus and county faculty and staff, colleagues, partners and trained volunteers to provide research-based training and support to improve the safety of the food supply.

8. Education and Science Literacy:

The research in this program will educate land managers and landowners about the development of improved grassland and natural resource models to improve decision support systems. Education and Science Literacy reaches beyond local communities to impact regional and national communities to have an impact globally.

9. Rural Prosperity:

Rural Prosperity depends on attracting, retaining and informing young people through community development efforts that build upon a community's assets, while improving agricultural development and marketing. The WAES and Wisconsin Cooperative Extension are uniquely positioned to play a key role in supporting local community and landowner planning efforts.

In addition, Rural Prosperity reaches beyond local economies to impact local, regional and national communities. While half of Wisconsin farmers are nearing retirement, most do not discuss farm succession plans with anyone. Wisconsin Cooperative Extension county agriculture agents and campus specialists will continue to deliver comprehensive regional farm succession trainings.

10. Wisconsin Competitive Program:

Formula funds are being used to address a number of state priority research activities that cannot be classified in the nine priority areas. We have grouped these ongoing projects under the rubric of the "Wisconsin Competitive Research Program", but funds supporting these projects will be redirected to the new national priorities in the future. These projects do contribute to a variety of important state needs and are focused in several areas, including water resource issues, animal health, including wildlife and non-farm animals, applied statistics in support of agricultural research, policy analysis for use in land use planning and commodity programs, immigrant farm labor issues, management of invasive exotic organisms and bio-waste management.

Estimated Number of Professional FTEs/SYs total in the State.

Year	Extension		Research	
	1862	1890	1862	1890
2015	102.0	null	133.0	null
2016	102.0	null	133.0	null
2017	102.0	null	133.0	null
2018	102.0	null	133.0	null
2019	102.0	null	133.0	null

II. Merit Review Process

1. The Merit Review Process that will be Employed during the 5-Year POW Cycle

- Internal University Panel
- External University Panel
- External Non-University Panel
- Combined External and Internal University Panel
- Combined External and Internal University External Non-University Panel

- Expert Peer Review

2. Brief Explanation

Proposals for formula grant funding on the UW-Madison campus are reviewed by a 10-person faculty Research Advisory Committee appointed by the CALS Associate Dean for Research. Each proposal is reviewed by two RAC members (designated primary and secondary reviewers) and by two non-committee members--drawn from the Madison campus, other UW campuses, state agencies, non-governmental organizations and other states-- who are established experts in the field. The reviewers are asked to consider a proposal's merit in terms of its relevance to program guidelines and to national goals and emphases areas, pertinence to state problems and priorities, relationship to multistate projects and inclusion of integrated activity. Some Wisconsin faculty are cooperators in multistate committees in the North Central, North East, Southern, and Western Region as well as a few National (NRSP) projects. Each region has a review process with slight modifications.

Cooperative Extension educators are organized into self-directed teams that develop specifics for implementing and evaluating planned programs. At the state level, program area administrators review and oversee team programming. Teams co-chaired by campus and county faculty set the direction for their initiatives, complete a statewide team plan of work, develop research based educational resources, evaluate and report progress toward planned outcomes.

Merit reviews in Cooperative Extension are conducted jointly by team leaders and program directors. Teams use reviewers' recommendations to improve program quality and relevance for the intended audience, and include review comments in annual accomplishment reports and plans of work. Cooperative Extension curricula and publications are peer reviewed by research and extension faculty, government or industry colleagues and professionals as appropriate to the content, purpose and intended audience. Translations are also reviewed for cultural appropriateness. Scholarly peer review and cultural review assure the quality and relevance of educational materials and outreach scholarship.

III. Evaluation of Multis & Joint Activities

1. How will the planned programs address the critical issues of strategic importance, including those identified by the stakeholders?

The planned programs rely on annual input from stakeholder groups to identify critical issues of strategic importance. Researchers consider these priorities (along with national goals which have been established by USDA, NIFA) when they apply for project support from Formula Grant funds. The CALS Research Advisory Committee uses these priorities to evaluate the project proposals (as described above in the Merit Review section). The priorities are also used by the WAES associate and assistant directors when they make the final funding decisions. A small pool of formula grant funds (5-10 percent of total) are held back from the competitive allocation process for use when critical needs arise outside of the normal funding cycle. Usually about half of this pool is ultimately used to provide capital support to ongoing projects. The actual amount varies depending on the extent and nature of critical issues that arise over the course of the year.

As indicated above, Cooperative Extension is organized into interdisciplinary, cross-program statewide teams that are co-chaired by campus-based specialists and community-based educators. This pairing of campus- community-based leadership is designed to build relationships and linkages among communities of research interest, communities of practice, and communities of locale. Teams develop plans focused on interests that cut across these communities. They do so from the point of issue identification and priority-setting, to resource commitment, plan implementation and evaluation. This same approach applies to multi-state and joint research and extension activities, whether regional or national.

2. How will the planned programs address the needs of under-served and under-represented populations of the State(s)?

We are using broad-based programs to promote awareness of the needs of the underserved community. Many societal needs such as those related to health, nutrition and economic development often affect the under-served and under-represented disproportionately. Our portfolio currently addresses problems related to small farms, organic products, youth, nutrition, minorities, and rural communities. We are committed to continue to provide research results that will improve the lives of all of our population.

UW-Extension Cooperative Extension statewide program teams implement a variety of approaches to assess and address the needs of Wisconsin's under-served and underrepresented populations. When appropriate, teams develop culturally sensitive educational strategies; translate and review educational materials for cultural relevance; and partner with agencies and groups representing and supporting under-served and under-represented populations. Statewide team efforts accord with the local context, where all 72 Wisconsin county extension offices have civil rights plans designed to reach traditionally under-served audiences.

3. How will the planned programs describe the expected outcomes and impacts?

The planned programs will describe the outcomes and impacts in a number of ways. Initially, we will use three indicators to measure outcomes: Patents (as the single required outcome indicator), number of publications, and graduate students trained based on the project portfolio. We believe that patent disclosures might be a better long term indicator, since the patent process may not come to completion until well after the active research project has terminated.

Directors of Wisconsin Cooperative Extension's four program areas - Agriculture and Natural Resources Extension, Community, Natural Resource and Economic Development, Family Living Programs and 4-H Youth Development - are all working with their regional counterparts in other states to define outcomes and indicators of common interest. Their work will provide the foundation for evaluating multi-state and joint research and extension efforts.

4. How will the planned programs result in improved program effectiveness and/or

• Planned programs are reviewed annually with the annual CALS WAES proposal process.

• Multi-state and joint activities will result in improved program effectiveness and/or efficiencies if they adhere to the following principles.

• They must be developed from the ground up with significant staff involvement. Ultimately staff members are the ones who will have to provide leadership for multi-state and joint efforts.

• Collaborations should be developed as win-win options that result in more effective

research and programming, and not as a strategy to meet budget reductions.

• An inventory of current and expected capacities needs to be developed across state lines before alternative multi-state approaches can be established. Both extension and research capacities, along with audience needs and relationships, need to be considered when establishing multi-state collaborations.

• Coordinating mechanisms, memoranda of understanding, expectations, and specific roles and responsibilities must be clearly articulated.

IV. Stakeholder Input

1. Actions taken to seek stakeholder input that encourages their participation

- Use of media to announce public meetings and listening sessions
- Targeted invitation to traditional stakeholder groups
- Targeted invitation to non-traditional stakeholder groups
- Targeted invitation to traditional stakeholder individuals
- Targeted invitation to non-traditional stakeholder individuals
- Targeted invitation to selected individuals from general public
- Survey of traditional stakeholder groups
- Survey of traditional stakeholder individuals
- Survey of the general public
- Other (meeting specifically with non-traditional groups)

Brief explanation.

Stakeholder identification and involvement are key components to the planning processes. UW-Madison/WAES/CALS administrative leadership group hold sessions wih agricultural industry leaders, heads of state agencies, our own Board of Visitors and specific commodity groups. Wisconsin Cooperative Extension uses a development model which provides the overall framework for soliciting, analyzing, and summarizing stakeholder input. The model includes situation analysis, priority setting,inputs, outputs, anticipated outcomes and evaluation planning. Campus and county faculty and staff participate in regular grower, producer, consumer, network, community, school, government, business and community coalition meetings to stay informed of key stakeholders' changing needs.

2(A). A brief statement of the process that will be used by the recipient institution to identify individuals and groups stakeholders and to collect input from them

1. Method to identify individuals and groups

- Use Advisory Committees
- Use Internal Focus Groups
- Open Listening Sessions
- Needs Assessments
- Use Surveys

Brief explanation.

The CALS Administrative Leadership group maintains a close relationship with leaders of the industries and advocacy groups that have an interest in disciplines we study. Wisconsin Cooperative Extension use county offices that have latitude in tailoring their

planning process to their unique needs. All individuals, whether they are internal or external, are encouraged to use methods that solicit feedback, needs and issues of concern from the communities' diverse populations.

2(B). A brief statement of the process that will be used by the recipient institution to identify individuals and groups who are stakeholders and to collect input from them

1. Methods for collecting Stakeholder Input

- Meeting with traditional Stakeholder groups
- Survey of traditional Stakeholder groups
- Meeting with traditional Stakeholder individuals
- Survey of traditional Stakeholder individuals
- Meeting with the general public (open meeting advertised to all)
- Survey of the general public
- Meeting specifically with non-traditional groups
- Survey specifically with non-traditional groups
- Meeting specifically with non-traditional individuals
- Survey specifically with non-traditional individuals
- Meeting with invited selected individuals from the general public
- Survey of selected individuals from the general public

Brief explanation.

Stakeholders' input for the development and conduct of research relating to state needs is accomplished in a tiered system. Many departments, centers, and institutes maintain advisory committees that meet periodically with researchers in the units. Departments convey this input to the CALS Administrative Leadership Group. The College of Agricultural and Life Sciences is advised by a Board of Visitors that meets with the Administrative Leadership Group twice a year. That board includes accomplished and influential individuals representing a number of interest groups, including ag producers, industries, consumers, environmentalists and state agencies. In addition to advising CALS on research and outreach needs, the board also provides a source of contacts for various constituencies.

Input has been gathered from diverse and under-represented audiences statewide through focus groups, interviews, listening sessions and case studies of youth-adult partnerships. When appropriate, teams develop culturally sensitive educational strategies; translate and review educational materials for cultural relevance; and partner with agencies and groups representing and supporting under-served and under-represented populations. Statewide team efforts accord with the local context, where all 72 Wisconsin county extension offices have civil rights plans designed to reach traditionally under-served audiences.

3. A statement of how the input will be considered

- In the Budget Process
- To Identify Emerging Issues
- Redirect Extension Programs

- Redirect Research Programs
- In the Staff Hiring Process
- In the Action Plans
- To Set Priorities

Brief explanation.

Results from stakeholder input identify priority issues. Planning is ongoing and continues to set direction for research and extension to address priority issues, for incorporation into budget and staffing decisions through statewide self-directed teams, and shape team implementation and evaluation plans as well as statewide federal plans of work.

V. Planned Program Table of Content

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Global Food Security Food Availability: Crops and Agronomic Plants

2. Brief summary about Planned Program

The Global Food Security and Hunger Program aims to support the best science relative to national, regional, and state needs and priorities. Wisconsin is directing proposals toward Global Food Security Food Availability as well as the other priorities. Using national goals and emphasis areas established by USDA and NIFA, the University of Wisconsin College of Agriculture and Life Sciences (CALS) is developing strategic plans and areas of identified research needs. This process allows us to continually update our portfolio. For continued research support, faculty are required to submit a new proposal, documenting both need, relevance to program priorities (including integrated activity and multistate programs), scientific merit, and productivity of the project to date.

The Wisconsin Agricultural Experiment Station (WAES) and the Wisconsin Cooperative Extension plan collaboration among campus, county and regional colleagues, partners and trained volunteers, providing research-based education and assistance to improve food security by strengthening local food markets and systems, responding to growing consumer demand for sustainably produced local foods, building community capacity to increase access to healthy foods for vulnerable populations, increasing household access to healthy foods for those in need, and providing education to assist with the succession of farm businesses and retaining on-farm jobs.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : No

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	20%		0%	
133	Pollution Prevention and Mitigation	15%		0%	
201	Plant Genome, Genetics, and Genetic Mechanisms	0%		17%	
202	Plant Genetic Resources	5%		4%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	10%		0%	
204	Plant Product Quality and Utility (Preharvest)	0%		14%	
205	Plant Management Systems	10%		4%	
206	Basic Plant Biology	0%		9%	
211	Insects, Mites, and Other Arthropods Affecting Plants	0%		9%	
212	Pathogens and Nematodes Affecting Plants	0%		22%	
215	Biological Control of Pests Affecting Plants	0%		4%	
216	Integrated Pest Management Systems	20%		9%	
302	Nutrient Utilization in Animals	0%		4%	
307	Animal Management Systems	0%		4%	
601	Economics of Agricultural Production and Farm Management	10%		0%	
608	Community Resource Planning and Development	10%		0%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Wisconsin ranks third in the nation for production of sweet corn for processing, growing more than 73,000 acres annually, nearly one-fifth (20%) of total U.S. processing sweet corn acreage (USDA, 2013). Other Wisconsin processing crops include potatoes, carrots, snap beans, dry beans, and peas. Wisconsin is also a major cash grain producer, ranking first among the states for oat production, seventh for corn and thirteenth for soybeans. Wisconsin's 3.3 million acres of corn and 1.70 million acres of soybeans plus small grains were valued at almost $4 billion as of 2012. Cranberry growers continue to expand production and consolidate the state's number one position in the industry despite a prolonged period of low prices and minimal profit margins. Fruit crop values include cranberries at $231 million, 410 growers; apples

$13.4 million, 935 growers; strawberries $5 million, 455 growers; and cherries $1.9 million, 25 growers.

An important consideration for growers is the opportunity to develop a niche market that will distinguish their product for their retail customers. While some early adopters may readily regard Integrated Pest Management (IPM) as a marketing opportunity, fear regarding the salability of IPM crops has been cited as an obstacle to the adoption of IPM practices. A growing consumer trend is an increased demand for local products produced with sustainable methods. Recently developed global principles and criteria help form regional production standards that if met by producers, result in an eco-label on the product for marketplace awareness. This sustainable or "green" label concept is similar to an organic label in that it is used to convey production information and requires independent certification to verify the accuracy of the information.

The economic and environmental sustainability and profitability of individual food crop enterprises is closely linked to crop management decision-making and the use of economically sound production practices. Economic efficiency is improved when growers have the knowledge to select among available tools to address both crop challenges and opportunities effectively. The WAES and Cooperative Extension are uniquely positioned to provide current on-farm research-based and field-tested information to assist Wisconsin growers and those who serve them in evaluating these tools and making choices appropriate to their individual operations and goals. Providing educational training to colleagues and other professionals results in a large multiplier effect as WAES and Wisconsin Cooperative Extension research-based recommendations ultimately reach an increasing portion of the Great Lakes Region crop production sector including growers.

2. Scope of the Program

- In-State Extension
- In-State Research
- Multistate Research
- Multistate Extension
- Integrated Research and Extension
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

1. The greatest advances in addressing national, regional, and state needs can be made by competitively soliciting the best science and research.

2. Graduate training efforts supported through the UW-Madison competitive Formula Grant opportunity will provide a sound basis for the future of the Formula Grant related sciences and issues.

3. Funding of the program will continue in a stable manner.

4. Resources are and will continue to be available in a timely manner.

5. Education can and will lead to the desired expected change.

6. The research base is accurate and relevant, and participants attend and engage.

7. Motivation exists and can be generated.

8. Projected timeline for program implementation is realistic.

9. Interest and mandates remain consistent and stable.

2. Ultimate goal(s) of this Program

The WAES goal for this program is to address national and state issues with the science of the highest quality and greatest potential to have an effect in addressing the issues relevant to the formula grant mission. We also strive to train graduate students to build the human resources needed to address current and future problems relevant to the formula grant mission.

The purpose of the integrated approach of state specialists and county-based educators is to educate Wisconsin agricultural producers and those who serve them throughout the food supply chain. The WAES and Wisconsin Cooperative Extension, county and regional colleagues, partners and trained volunteers improve food security by:

- Strengthening local food markets and systems,
- Responding to growing consumer demand for sustainably produced local foods,
- Building community capacity to increase access to healthy foods for vulnerable populations, and
- Increasing household access to healthy food for those in need.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2015	28.0	0.0	21.7	0.0
2016	28.0	0.0	21.7	0.0
2017	28.0	0.0	21.7	0.0
2018	28.0	0.0	21.7	0.0
2019	28.0	0.0	21.7	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Faculty working on food availability issues transcend discipline lines and use a variety of biological, physical and social science approaches in working on these issues. The majority of our work involves improvements in the management of important livestock and crop food sources, especially in the upper Midwestern US, but many projects will have broad applications beyond our borders, including herbicide

resistance, identification and application of genes of economic significance, practices for maintaining soil fertility, conservation and management of crop genetic resources, technologies to improve fertility in livestock, and management of a variety of globally important micro-organisms. Work is also occurring in the areas of urban poverty and food security, especially in metropolitan areas and among recent immigrants, and in social network analysis and socio-ecological systems.

Wisconsin Cooperative Extension plans collaboration among campus, county and regional colleagues, partners and trained volunteers, providing research-based education and assistance to improve food availability by strengthening local food markets and systems, responding to growing consumer demand for sustainably produced local foods, building community capacity to increase access to healthy foods for vulnerable populations, and increasing household access to healthy foods for those in need.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods
● Education Class ● Workshop ● Group Discussion ● One-on-One Intervention ● Demonstrations ● Other 1 (field days) ● Other 2 (Train-the-trainer and on-farm)	● Public Service Announcement ● Newsletters ● Web sites other than eXtension ● Other 1 (News media releases) ● Other 2 (Web-based training)

3. Description of targeted audience

Integrated activity for our formula grant programs targets a broad group of stakeholder audiences in agricultural, natural resources, and the public. The audience includes North Central Region colleagues, agricultural professionals and other educational partners, grains, commercial vegetable, fruit and specialty crop growers and workers, 4-H and FFA youth, grower associations, food processors and entrepreneurs, food coalitions and cooperatives, agricultural service providers, agronomic retail and wholesale suppliers, local and regional economic development initiatives, local and tribal officials, planning commissions, state and federal rural development and regulatory agencies, and others. Thousands of agricultural professionals from Wisconsin, Minnesota, Iowa, Illinois, Indiana and Michigan who attend the annual Wisconsin Crop Management Conference produce a large multiplier effect as WAES and Wisconsin Cooperative Extension research-based recommendations ultimately reach an increasing portion of the Great Lakes Region crop production sector including growers.

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Outcome measures for this work are both qualitative and quantitative. We will rely on feedback from stakeholder groups, advisory boards, and individual constituents, as well as from UW-Extension teams on the relevance, importance and impact of our research program. The output measures listed earlier will also serve as outcome measures in that patents graduate degrees and publications all include an element of critical review and assessment of uniqueness, originality, contribution to the science and knowledge base, or other performance criteria.

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Manage and minimize the loss due to plant pests and/or diseases.
2	Enhance the economic and environmental sustainability of agribusiness.
3	Build the capacity of the agriculture service and support industry.
4	Innovations and increased efficiencies in production.

Outcome # 1

1. Outcome Target

Manage and minimize the loss due to plant pests and/or diseases.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 133 - Pollution Prevention and Mitigation
- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 202 - Plant Genetic Resources
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 206 - Basic Plant Biology
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 215 - Biological Control of Pests Affecting Plants
- 216 - Integrated Pest Management Systems
- 302 - Nutrient Utilization in Animals
- 307 - Animal Management Systems
- 601 - Economics of Agricultural Production and Farm Management

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 2

1. Outcome Target

Enhance the economic and environmental sustainability of agribusiness.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 133 - Pollution Prevention and Mitigation
- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 202 - Plant Genetic Resources

- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 206 - Basic Plant Biology
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 215 - Biological Control of Pests Affecting Plants
- 216 - Integrated Pest Management Systems
- 302 - Nutrient Utilization in Animals
- 307 - Animal Management Systems
- 601 - Economics of Agricultural Production and Farm Management
- 608 - Community Resource Planning and Development

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 3

1. Outcome Target

Build the capacity of the agriculture service and support industry.

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 133 - Pollution Prevention and Mitigation
- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 202 - Plant Genetic Resources
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 206 - Basic Plant Biology
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 215 - Biological Control of Pests Affecting Plants
- 216 - Integrated Pest Management Systems
- 302 - Nutrient Utilization in Animals
- 307 - Animal Management Systems
- 601 - Economics of Agricultural Production and Farm Management

- 608 - Community Resource Planning and Development

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 4

1. Outcome Target

Innovations and increased efficiencies in production.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 133 - Pollution Prevention and Mitigation
- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 202 - Plant Genetic Resources
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 206 - Basic Plant Biology
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 215 - Biological Control of Pests Affecting Plants
- 216 - Integrated Pest Management Systems
- 302 - Nutrient Utilization in Animals
- 307 - Animal Management Systems
- 601 - Economics of Agricultural Production and Farm Management
- 608 - Community Resource Planning and Development

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Populations changes (immigration, new cultural groupings, etc.)

Description

A variety of factors could affect the outcomes of this project including those listed above. However, the breadth of the program makes it unlikely that the outcomes would be completely disrupted unless there was some major natural, economic, or public policy disruption. A major change in Ffederal policy or appropriation affecting the formula grant program could affect our ability to produce our outcomes. UW-Madison has implemented a policy change regarding tuition remission. Formula grants have previously been exempt from tuition remission charges in the UW-System, but are no longer exempt. Since these funds do not allow tuition remission, we continue to discuss alternatives to meeting our formula grant mission in order to continue training graduate students. We continue to make graduate student training the priority of our program.

Public policy changes: As an example of a public policy change that could have a positive affect, a significant portion of Wisconsin cropland is being planted to corn, which is ultimately used for ethanol production increasing the price per bushel of corn. If corn prices were lower, more fruit and vegetables might be produced and available locally.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Evaluation studies planned include qualitative and quantitative methodology. We have already described a number of methods used to solicit stakeholder input. At the time input is being sought from these groups, boards, and individuals, we are also soliciting feedback on the pertinence and effectiveness of our current programs. This information is primarily qualitative, but provides important feedback on the program. Similar input will be sought from UW-Extension's issue-oriented teams.

In the competitive re-application process for WAES projects, project productivity (past performance) and impact are also evaluated. This occurs every 2-4 years and is an important factor in whether a scientist's new project will be approved. Overall project success will be evaluated by monitoring the number of patents, graduate students trained and peer-reviewed publications.

The purpose of the evaluation is to determine the effectiveness of educational programming to change agricultural management practices of Wisconsin farms. The results will be used to refine educational programming to meet policy makers' goals for phosphorous and water quality while enhancing farm management profitability.

Evaluation questions:
As a result of the WAES and Wisconsin Cooperative Extension education and assistance,

Are nutrient management plans being developed and implemented?
Are dairy animal diets matching National Research Council recommendations?
Are more soil tests in the optimal range?
Are soil loss estimates below tolerable levels?
Are certified custom applicators using best management practices?
Is there a reduction of manure spills reaching surface water?

Methods: Evaluation methods to be used are preliminary.

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Global Food Security Food Availability: Dairy and Livestock

2. Brief summary about Planned Program

The Wisconsin Agricultural Experiment Station (WAES) research and Cooperative Extension colleagues, partners and trained volunteers provide timely research-based education and assistance to improve food availability through managing and minimizing losses due to animal diseases, enhancing economic and environmental sustainability of agribusinesses, building the capacity of the agriculture service and support industry, training the next generation of agricultural service providers, and introducing innovations and increased efficiencies in production.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : No

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
201	Plant Genome, Genetics, and Genetic Mechanisms	0%		5%	
202	Plant Genetic Resources	0%		5%	
212	Pathogens and Nematodes Affecting Plants	0%		5%	
301	Reproductive Performance of Animals	10%		9%	
302	Nutrient Utilization in Animals	0%		9%	
303	Genetic Improvement of Animals	0%		9%	
304	Animal Genome	0%		5%	
305	Animal Physiological Processes	0%		19%	
307	Animal Management Systems	15%		9%	
308	Improved Animal Products (Before Harvest)	10%		0%	
311	Animal Diseases	5%		5%	
315	Animal Welfare/Well-Being and Protection	5%		5%	
501	New and Improved Food Processing Technologies	0%		5%	
503	Quality Maintenance in Storing and Marketing Food Products	0%		5%	
601	Economics of Agricultural Production and Farm Management	20%		0%	
602	Business Management, Finance, and Taxation	15%		0%	
702	Requirements and Function of Nutrients and Other Food Components	0%		5%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	10%		0%	
806	Youth Development	10%		0%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

The WAES and Wisconsin Cooperative Extension colleagues, partners and trained volunteers provide research-based education and assistance to sustain and grow the state's vital agricultural economy, and the $26.5 billion dairy industry employing over 146,000 people. Wisconsin makes more

cheeses than any other state. More than 11,490 dairy farms maintain 1.27 million milk cows, producing 27.2 billion pounds of milk in 2012. The average dairy cow generates about $21,000 a year in economic activity, which circulates throughout local communities. Wisconsin is home to the largest number of dairy sheep operations in the country and the only dairy sheep research facility in North America. The dairy sheep industry and sheep milk products are gaining recognition - pure sheep milk and mixed milk cheeses are winning national competitions. Livestock production encompasses beef and dairy beef, small ruminants (sheep and goats), swine, horses and poultry. Part-time production, small farms, hobbyists, and youth projects also comprise a substantial portion of the Wisconsin animal agriculture industry.

While Wisconsin produces more cheese than any other state, dairy processors must import milk to do so. Wisconsin dairies produce only 90% of milk needed to make more than 600 award-winning artisan cheeses. In 2012, the Wisconsin Department of Agriculture, Trade and Consumer Protection is accepting grant applications for the new "Grow Wisconsin Dairy 30x20" program to improve long-term viability of Wisconsin's dairy industry through services to help farmers achieve an annual milk production of 30 billion pounds by 2020 to meet growing demand--keeping state cheese plants running with locally produced milk. Each dairy farm has unique animals, facilities and resource bases (land, etc.) that require specific management practices. As producers struggle to make management changes, how can they best cut production costs and reduce losses'. For example, both clinical and subclinical mastitis result in financial losses. Increased treatment costs and greater cull rates, reduced milk production, reproductive performance and longevity, and lower cheese yields are well-documented losses due to mastitis (Lago et al, 2011). In Wisconsin, milk production loss due to subclinical mastitis costs about $4 per cow per day (Rodrigues et al, 2005). Thus a typical 100-cow herd (33% with subclinical mastitis) loses about $4,000 per month.

The 2007 Census of Agriculture reported that half of Wisconsin farmers identified as principal operators were 55 years old or older. Recent research in Wisconsin, Iowa, Pennsylvania, New Jersey, North Carolina, Tennessee, Virginia, and California shows that few farmers have identified a successor or developed farm business succession plans, nor have most discussed their retirement or succession plans with anyone. Further, farmers can no longer just draft a simple will to transfer ownership to their children. Successfully transferring the farm business to the next generation takes place over a number of years, requiring trust, a sound financial footing, good planning and communication as families face an increasingly volatile agriculture economy. Wisconsin Cooperative Extension county agriculture agents and campus specialists will continue to deliver comprehensive regional "Transferring the Farm in a High-Stakes Era" workshops, providing research-based tips and tools for hundreds of farmers each year. "Heart of the Farm" and "Annie's Project" trainings reach hundreds more hard-to-reach women farm-owners with farm succession planning.

2. Scope of the Program

- In-State Extension
- In-State Research
- Multistate Research
- Multistate Extension
- Integrated Research and Extension
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

1. The greatest advances in addressing national, regional, and state needs can be made by competitively soliciting the best science and research.

2. Graduate training efforts supported through the UW-Madison competitive Formula Grant opportunity will provide a sound basis for the future of the Formula Grant related sciences and issues.

3. Funding of the program will continue in a stable manner.

4. Resources are and will continue to be available in a timely manner.

5. Education can and will lead to the desired expected change.

6. The research base is accurate and relevant, and participants attend and engage.

7. Motivation exists and can be generated.

8. Projected timeline for program implementation is realistic.

9. Interest and mandates remain consistent and stable.

2. Ultimate goal(s) of this Program

1. To address national and state issues with the science of the highest quality and greatest potential to have an effect in addressing the issues relevant to the Formula Grant mission.

2. Train graduate students to build the human resources needed to address current and future problems relevant to the Formula Grant mission.

The purpose of the integrated approach of state specialists and county-based educators is to educate Wisconsin agricultural producers and those who serve them throughout the food supply chain. The WAES and Wisconsin Cooperative Extension campus, county and regional colleagues, partners and trained volunteers improve food security by:

- Strengthening local food markets and systems,
- Responding to growing consumer demand for sustainably produced local foods,
- Building community capacity to increase access to healthy foods for vulnerable populations, and
- Increasing household access to healthy food for those in need.

The WAES and Wisconsin Cooperative Extension colleagues and partners improve global food availability of dairy and livestock through:

- Managing and minimizing losses due to animal diseases,
- Enhancing economic and environmental sustainability of agribusinesses,
- Building the capacity of the agriculture service and support industry,
- Training the next generation of agricultural service providers, and
- Innovations and increased efficiencies in production.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2015	35.0	0.0	21.0	0.0
2016	35.0	0.0	21.0	0.0
2017	35.0	0.0	21.0	0.0
2018	35.0	0.0	21.0	0.0
2019	35.0	0.0	21.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Faculty working on food security and hunger issues transcend discipline lines and use a variety of biological, physical and social science approaches in working on these issues. The majority of our work involves improvements in the management of important livestock and crop food sources, especially in the upper Midwestern US, but many projects will have broad applications beyond our borders, including herbicide resistance, identification and application of genes of economic significance, practices for maintaining soil fertility, conservation and management of crop genetic resources, technologies to improve fertility in livestock, and management of a variety of globally important micro-organisms. Work is also occurring in the areas of urban poverty and food security, especially in metropolitan areas and among recent immigrants, and in social network analysis and socio-ecological systems.

The WAES and Wisconsin Cooperative Extension plans collaboration among campus, county and regional colleagues, partners and trained volunteers, providing research-based education and assistance to improve food security by strengthening local food markets and systems, responding to growing consumer demand for sustainably produced local foods, building community capacity to increase access to healthy foods for vulnerable populations, and increasing household access to healthy foods for those in need.

In preparation for today's specialized careers in agriculture, youth must understand their many options for gaining experience and obtaining the education needed to attain their chosen career. Wisconsin Cooperative Extension 4-H Youth Development outreach staff coordinates the annual National 4-H Dairy Conference in collaboration with a national committee of dairy specialists, industry leaders, recent alumni youth, and 4-H dairy project volunteers. All youth delegates explore careers while attending seminars on the UW-Madison College of Agricultural and Life Sciences campus, sparking an interest in attending this or another college to pursue a specialized educational degree for a career in agriculture.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods

● Education Class	● Public Service Announcement
● Workshop	● Newsletters
● Group Discussion	● Web sites other than eXtension
● One-on-One Intervention	● Other 1 (News media releases)
● Other 1 (Train-the-trainer and on-farm)	● Other 2 (Web-based training)
● Other 2 (state, regional & national conf)	

3. Description of targeted audience

The audience includes extension colleagues, veterinarians, agricultural professionals and other educational partners, trained volunteers, youth and adult dairy and livestock producers and workers, cheesemakers, current and potential dairy sheep producers and artisan cheesemakers using sheep milk, meat and dairy food processors and entrepreneurs, forage growers and grazing networks, agricultural service providers, farm lenders, local and regional economic development initiatives, local and tribal officials, state and federal regulatory agencies, and others. In 2012, 3,993 Wisconsin youth enrolled in 4-H dairy cattle curricula and 1,001 enrolled in 4-H dairy goats curricula. Another 18,438 enrolled in 4-H beef, swine, sheep, meat goats, rabbits and poultry projects, many of them with the goal of producing a quality meat animal. Integrated campus faculty, staff and county extension agents are engaged in international and multi-state collaborations to increase sustainability of the global food supply by developing new and updated research-based recommendations for farm owners and managers nationwide and around the world.

University of Wisconsin-Extension Cooperative Extension colleagues are connected by email ListServ, blogs and online newsletters, shared resources such as statewide and national teleconferences, webinars, eXtension Communities of Practice, and the Extension Disaster Education Network (EDEN) to quickly address critical and emerging issues. Interdisciplinary colleagues and other professionals in this network include researchers at the UW-Madison College of Agricultural and Life Sciences and Discovery Farms, UW-Platteville Pioneer Farm, UW-River Falls, UW-Stevens Point, 11 agricultural research stations, and the USDA Dairy Forage Research Center.

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Outcome measures for this work are both qualitative and quantitative. We will rely on feedback from stakeholder groups, advisory boards, and individual constituents, as well as from UW-Extension teams on the relevance, importance and impact of our research program. The output measures listed earlier will also serve as outcome measures in that patents, graduate degrees and publications all include an element of critical review and assessment of uniqueness, originality, contribution to the science and knowledge base, or other performance criteria.

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Manage and minimize the loss due to animal disease.
2	Enhance the economic and environmental sustainability of agribusinesses.
3	Build the capacity of the agriculture service and support industry.
4	Innovations and increased efficiencies in production.

Outcome # 1

1. Outcome Target

Manage and minimize the loss due to animal disease.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 303 - Genetic Improvement of Animals
- 304 - Animal Genome
- 305 - Animal Physiological Processes
- 307 - Animal Management Systems
- 308 - Improved Animal Products (Before Harvest)
- 311 - Animal Diseases
- 315 - Animal Welfare/Well-Being and Protection
- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 2

1. Outcome Target

Enhance the economic and environmental sustainability of agribusinesses.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 307 - Animal Management Systems
- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 3

1. Outcome Target

Build the capacity of the agriculture service and support industry.

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 303 - Genetic Improvement of Animals
- 307 - Animal Management Systems
- 308 - Improved Animal Products (Before Harvest)
- 311 - Animal Diseases
- 315 - Animal Welfare/Well-Being and Protection
- 601 - Economics of Agricultural Production and Farm Management
- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 4

1. Outcome Target

Innovations and increased efficiencies in production.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 308 - Improved Animal Products (Before Harvest)

- 311 - Animal Diseases
- 315 - Animal Welfare/Well-Being and Protection
- 601 - Economics of Agricultural Production and Farm Management
- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Competing Public priorities
- Populations changes (immigration, new cultural groupings, etc.)

Description

A variety of factors could affect the outcomes of this project including those listed above. However, the breadth of the program makes it unlikely that the outputs would be completely disrupted unless there was some major natural, economic, or public policy disruption. A major change in federal policy or appropriation affecting the formula grant program could affect our ability to produce our outcomes. UW-Madison has implemented a policy change regarding tuition remission. Formula grants have previously been exempt from tuition remission charges in the UW-System, but are no longer exempt. Since these funds do not allow tuition remission, we continue to discuss alternatives to meeting our formula grant mission in order to continue training graduate students. We continue to make graduate student training the priority of our program.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Evaluation purpose: The purpose of planned evaluation is to determine the impact and return on investment of dairy farm management advisory teams on the functioning and health of participating dairy farm businesses. Results will be used by WAES, Wisconsin Cooperative Extension, the Wisconsin Department of Agriculture, Trade and Consumer Protection, and other decision makers to determine whether to continue the program (funding and time invested in the program).

Evaluation questions:
As a result of the farm management advisory team program, did milk production increase?
As a result of the farm management advisory team program, did farm business health improve?
Financial (profitability, liquidity, solvency, cost control)?

Operational changes to improve production practices and efficiencies?
Farm transfer?
Quality of life?
Management skills (employee management, relationships, family)?
Jobs created?
As a result of the farm management advisory team program, were investments made by farm businesses (expansion, modernization, operational changes, etc.)?
As a result of the farm management advisory team program, what advisory team investments were made to achieve improvements (number of teams, advisory team time invested, etc.)?

Methods: Evaluation methods to be used are preliminary.

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Global Food Security and Hunger: Food Accessibility

2. Brief summary about Planned Program

The Wisconsin Agricultural Experiment Station (WAES) and Wisconsin Cooperative Extension plans collaboration among campus, county and regional colleagues, partners and trained volunteers, providing research-based education and assistance to improve food security by strengthening local food markets and systems, responding to growing consumer demand for sustainably produced local foods, building community capacity to increase access to healthy foods for vulnerable populations, and increasing household access to healthy foods for those in need.

Almost 300 farmers' markets are critical outlets for medium and small-scale agricultural producers in Wisconsin. These markets provide benefits not only to the farmers looking for important income opportunities, but also to the communities looking for fresh, healthy foods. Some markets also provide central city residents their only access to seasonal fruits and vegetables. Farmers' market managers play a vital role in the success and sustainability of small and medium-sized farms in Wisconsin. Providing successful markets for these growers to sell their products keeps them viable. Since 2006, Wisconsin Cooperative Extension county educators have been assessing the needs of farmers' market managers who are often volunteers, providing training, resources and support to improve managers' marketing and promotion skills so they can realize their markets' full potential.

Food insecurity can be offset when there are strong and widely used nutrition assistance programs such as food stamps, school breakfast, and summer feeding programs. To ensure that more Wisconsin children receive proven benefits of eating a healthy breakfast, Cooperative Extension partners with the Department of Public Instruction to help schools with breakfast programs increase their student participation, support other schools in starting breakfast programs, and share research-based resources.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : No

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
101	Appraisal of Soil Resources	5%		0%	
205	Plant Management Systems	10%		0%	
601	Economics of Agricultural Production and Farm Management	5%		0%	
602	Business Management, Finance, and Taxation	15%		0%	
604	Marketing and Distribution Practices	10%		0%	
607	Consumer Economics	25%		0%	
608	Community Resource Planning and Development	15%		0%	
703	Nutrition Education and Behavior	15%		0%	
	Total	100%		0%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

In an ideal world, adequate amounts of nutritious food should be consumed by every inhabitant of the planet. Given the wealth of arable land, production capacity, know-how, and other ingredients, this vision should be readily achievable by a nation such as the United States. Yet USDA indicates that 17 million households were food insecure throughout 2008. A substantial portion of the U.S. population does not have access to and is not consuming healthy food. Negative consequences are most acute in poor communities.

More than one in nine (11.3%) Wisconsin households are food insecure, meaning that they do not have sufficient access to enough affordable, healthy food to achieve an active and productive life. Another indicator of food-related hardship is the share of the population participating in the Supplemental Nutrition Assistance Program (SNAP - FoodShare in Wisconsin). Overall, the proportion of Wisconsin residents who participated in FoodShare increased substantially between 2000 and 2012, particularly as households continued to feel the economic effects of the recession. More than 1 million Wisconsin residents received FoodShare benefits at some time during 2012, accounting for nearly 20% of the state's population. Without FoodShare benefits, the percentage of food insecure households would probably have been even higher than the 11% reported.

While food insecurity is closely linked to poverty, community characteristics, economic assistance policies, and the availability and use of public and private resources also play an important role. Factors that contribute to achieving household and community food security include family and economic well-being, access to affordable healthy foods, federal nutrition assistance programs, and emergency food assistance programs.

Food insecurity can be offset when there are strong and widely used nutrition assistance programs such as food stamps, school breakfast, and summer feeding programs. Nutrition research shows that children

who eat breakfast demonstrate both increased ability to learn, as well as improved behavior in the classroom. Eating breakfast improves their mood, decreases their risk of being overweight, and enhances the quality of their diet. Yet many Wisconsin children still miss breakfast daily, due to lack of time, limited household income or because they do not have access to breakfast at school. Regardless of household income, any school-age child can participate in a School Breakfast Program -where one is available. In the 2003-2004 school year, Wisconsin ranked last in the nation, with only 47.2% of the schools offering lunch also offering breakfast, and reaching only 24.8% of the low-income students. Since then, Wisconsin Cooperative Extension Family Living Programs, the Department of Public Instruction, and the Wisconsin Milk Marketing Board have partnered to improve breakfast access for more low-income children in more schools. In the 2011-2012 school year, we had 71.2% of schools offering breakfast and reached 43.6% of our low-income students. We have shown steady increases in school participation as well as student participation over the past eight years. The number of students eating breakfast in all categories (free, reduced-price, and paid) has increased from approximately 73,000 in 2003-2004 to over 170,000 in 2011-2012.

2. Scope of the Program

- In-State Extension
- In-State Research
- Multistate Research
- Multistate Extension
- Integrated Research and Extension
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

1. The greatest advances in addressing national, regional, and state needs can be made by competitively soliciting the best science and research.

2. Graduate training efforts supported through the UW-Madison competitive formula grant opportunity will provide a sound basis for the future of the formula grant related sciences and issues.

3. Funding of the program will continue in a stable manner.

4. Resources are and will continue to be available in a timely manner.

5. Education can and will lead to the desired expected change.

6. The research base is accurate and relevant, and participants attend and engage.

7. Motivation exists and can be generated.

8. Projected timeline for program implementation is realistic.

9. Interest and mandates remain consistent and stable.

2. Ultimate goal(s) of this Program

1. To address national and state issues with the science of the highest quality and greatest potential to have an effect in addressing the issues relevant to the formula grant mission.

2. Train graduate students to build the human resources needed to address current and future problems relevant to the formula grant mission.

The purpose of the integrated approach of state specialists and county-based educators is to educate Wisconsin communities, agricultural producers and those who serve them throughout the food supply chain. The WAES, Wisconsin Cooperative Extension campus, county and regional colleagues, partners and trained volunteers improve food security through strengthening local food markets and systems, responding to growing consumer demand for sustainably produced local foods, building community capacity to increase access to healthy foods for vulnerable populations, and increasing household access to healthy foods for those in need.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2015	12.0	0.0	2.0	0.0
2016	12.0	0.0	2.0	0.0
2017	12.0	0.0	2.0	0.0
2018	12.0	0.0	2.0	0.0
2019	12.0	0.0	2.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

The WAES and Wisconsin Cooperative Extension collegues collaborate among campus, county and regional colleagues, partners and trained volunteers, providing research-based education and assistance to improve food security by strengthening local food markets and systems, responding to growing consumer demand for sustainably produced local foods, building community capacity to increase access to healthy foods for vulnerable populations, and increasing household access to healthy foods for those in need.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods

● Education Class	● Public Service Announcement
● Workshop	● Newsletters
● Group Discussion	● Web sites other than eXtension
● One-on-One Intervention	● Other 1 (News media releases)
● Other 1 (Train-the trainer and micro-farm)	● Other 2 (Web-based training)
● Other 2 (state, regional & national conf)	

3. Description of targeted audience

The audience includes farmers' market managers, vendors and customers, small-scale producers, producer associations, food processors and entrepreneurs, gardeners and Master Gardener volunteers, food coalitions and cooperatives, hunger coalitions and task forces, food pantries and other community service providers, local and regional economic development initiatives, local and tribal governments, school boards, school food service directors, teachers and parents of school-age children, low-income women with infants and young children, Hmong and Spanish-speaking central city residents, state and federal agency personnel, and others.

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Outcome measures for this work are both qualitative and quantitative. We will rely on feedback from stakeholder groups, advisory boards, and individual constituents, as well as from UW-Extension teams on the relevance, importance and impact of our research program. The output measures listed earlier will also serve as outcome measures in that patents, graduate degrees and publications all include an element of critical review and assessment of uniqueness, originality, contribution to the science and knowledge base, or other performance criteria.

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Strengthen local food markets and systems.
2	Increase household access to healthy foods for vulnerable populations

Outcome # 1

1. Outcome Target

Strengthen local food markets and systems.

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 602 - Business Management, Finance, and Taxation
- 604 - Marketing and Distribution Practices
- 608 - Community Resource Planning and Development

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 2

1. Outcome Target

Increase household access to healthy foods for vulnerable populations

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 205 - Plant Management Systems
- 607 - Consumer Economics
- 703 - Nutrition Education and Behavior

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes

- Public Policy changes
- Government Regulations
- Competing Public priorities
- Populations changes (immigration, new cultural groupings, etc.)

Description

A variety of factors could affect the outcomes of this project including those previously listed. However, the breadth of the program makes it unlikely that the outputs would be completely disrupted without a major natural, economic, or public policy disruption. A major change in federal policy or appropriation affecting the formula grant program could affect our ability to produce our proposed outcomes. UW-Madison has implemented a policy change regarding tuition remission. Formula grants have previously been exempt from tuition remission charges in the UW-System, but are no longer exempt. Since these funds do not allow tuition remission, we continue to discuss alternatives to meeting our formula grant mission in order to continue training graduate students. Graduate student training remains a priority of our program.

Public policy changes: As an example of a public policy change that could have a positive affect, a significant portion of Wisconsin cropland is being planted to corn, which is ultimately used for ethanol production increasing the price per bushel of corn. If corn prices were lower, more fruit and vegetables might be produced and available locally.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Evaluation purpose: The purpose of planned evaluation is to determine the impact of Wisconsin Cooperative Extension efforts in community and youth gardens. The evaluation results will be used to inform future programming efforts, such as identifying best practices and enhanced networking with other organizations supporting community gardens.

Evaluation questions and methods: Case studies will provide the basis for a more comprehensive evaluation of Wisconsin Cooperative Extension community gardens programming. The case studies will:

(1) Capture in-depth descriptions of garden-based programming;
(2) Measure, assess, and describe programming impacts and outcomes; and
(3) Contribute to the design of a statewide evaluation of garden-based programming.

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Climate Change and Energy Needs

2. Brief summary about Planned Program

Climate change and energy needs have a variety of impacts on communities, agriculture, natural resources, local economies and human health. In addition, The WAES and Cooperative Extension educators in both agriculture and community development program areas are being called upon to respond to questions about bioenergy and sustainable renewable energy. Professionals and community leaders need locally relevant, science-based climate change and energy needs information and methods to incorporate into economic development and resource management planning processes.

Wisconsin Cooperative Extension plans collaboration among campus and county faculty and staff as well as tribal, regional and national colleagues and trained volunteers to provide timely, research-based education and assistance for adapting to and mitigating climate change. This will involve developing, implementing and evaluating outreach programs to reduce carbon, nitrogen, energy and water footprints in their communities. The Wisconsin Initiative on Climate Change Impacts supports this work.

3. Program existence : New (One year or less)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : No

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	10%		13%	
111	Conservation and Efficient Use of Water	0%		4%	
112	Watershed Protection and Management	0%		4%	
131	Alternative Uses of Land	0%		6%	
132	Weather and Climate	0%		6%	
133	Pollution Prevention and Mitigation	15%		6%	
135	Aquatic and Terrestrial Wildlife	0%		4%	
136	Conservation of Biological Diversity	0%		4%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	5%		3%	
205	Plant Management Systems	10%		4%	
206	Basic Plant Biology	0%		6%	
213	Weeds Affecting Plants	0%		4%	
215	Biological Control of Pests Affecting Plants	0%		4%	
216	Integrated Pest Management Systems	0%		4%	
307	Animal Management Systems	0%		6%	
403	Waste Disposal, Recycling, and Reuse	5%		8%	
511	New and Improved Non-Food Products and Processes	0%		6%	
601	Economics of Agricultural Production and Farm Management	10%		3%	
605	Natural Resource and Environmental Economics	20%		5%	
608	Community Resource Planning and Development	25%		0%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Wisconsin farmers face increasing regulatory pressures due to excess agricultural nutrient contributions to lakes, streams and the atmosphere. Government agricultural programs, zoning, large farm licenses, state animal feeding operation permits and new farmland preservation tax credits all require

farms to have nutrient management plans. Regulations aside, improving nutrient management practices to include mitigation of climate change impacts can also address greenhouse gas mitigation, improve farm profitability and water quality.

Anaerobic digestion is a waste-to-energy technology and Wisconsin leads the nation with more than 35 large-scale operational systems. Training is needed for safe production and biogas use with small-scale biogas digesters costing only a few hundred dollars in climates as harsh as Wisconsin's.

Throughout the Great Lakes Region, resource managers and local elected officials struggle to integrate science-based information on environmental and economic issues into comprehensive planning efforts and day-to-day policy decisions. The Land Grant institutions have many programs and tools to help collaborative and public officials address these needs, but these programs and tools are only beginning to be used to address climate change impacts and energy needs. Efforts to coordinate their development and delivery could increase awareness and access, as well as facilitate multi-state and multi-institutional collaboration. Such collaboration across regional states can help the WAES and Extension educators and the communities they serve solve common problems such as excess nutrients on cropland, maintaining sufficient drinking water quality and quantity, conserving flagship water resources such as the Great Lakes and Upper Mississippi River Basins, and developing more effective ways of measuring the impacts of resource management programs.

2. Scope of the Program

- In-State Extension
- In-State Research
- Multistate Research
- Multistate Extension
- Integrated Research and Extension
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

1. The greatest advances in addressing national, regional, and state needs can be made by competitively soliciting the best science and research.

2. Graduate training efforts supported through the UW-Madison competitive Formula Grant opportunity will provide a sound basis for the future of the Formula Grant related sciences and issue.

3. Funding of the program will continue in a stable manner.

4. Resources are and will continue to be available in a timely manner.

5. Education can and will lead to the desired expected change.

6. The research base is accurate and relevant, and participants attend and engage.

7. Motivation exists and can be generated.

8. Projected timeline for program implementation is realistic.

9. Interest and mandates remain consistent and stable.

2. Ultimate goal(s) of this Program

1. To address national and state issues with the science of the highest quality and greatest potential to have an effect in addressing the issues relevant to the formula grant mission.

2. Train graduate students to build the human resources needed to address current and future problems relevant to the formula grant mission.

The WAES and Wisconsin Cooperative Extension campus and county faculty and staff, tribal, regional and national colleagues, partners and trained volunteers will provide timely science-based education and assistance for climate change adaptation and mitigation. Extension will develop, implement and evaluate outreach programs to reduce carbon, nitrogen, energy and water footprints and to identify climate vulnerabilities in Wisconsin communities.

To address energy needs, Wisconsin Cooperative Extension plans collaboration among the cross-program area BioEnergy and the BioEconomy Team. Campus and county faculty and staff are conducting integrated research and extension programs, building capacity for scalable, sustainable energy among extension colleagues and communities. Communities of interest and place will develop and use strategies that address emerging and economic vitality issues, that build the organizational and leadership capacity of local governments, community based organizations, and businesses, and that engage people, businesses, and communities in the process of protecting and enhancing the resource base that underlies the vitality of Wisconsin communities and agriculture.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2015	17.0	0.0	30.0	0.0
2016	17.0	0.0	30.0	0.0
2017	17.0	0.0	30.0	0.0
2018	17.0	0.0	30.0	0.0
2019	17.0	0.0	30.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

The State of Wisconsin has initiated a Wisconsin Climate Change Initiative (WICCI) group that brings together faculty, interested clientele from other agencies, and industry representatives to discuss and plan for climate change research, and adaptive response to, climate change. Current projects include work on

the development of monitoring systems for detecting changes in ecosystems structure and processes over time, soil carbon management practices, silvicultural practices to help ameliorate ecosystem changes resulting from anticipated climate change, remote sensing detection of insect and disease problems associated with climate change, and modeling conservation practices and land use patterns that might result from climate change.

Improving nutrient management practices improves farm profitability and reduces harmful effects of nitrogen and phosphorus on water quality. This can likewise reduce a harmful by-product of climate mediated excess soil moisture--emissions of the greenhouse gas nitrous oxide into the atmosphere. As a result of Extension Nutrient Management Farmer Education, by 2012 at least 1,033,000 acres of cropland and grazing land by the 4,156 producers were covered under a nutrient management plan.

The WAES and Wisconsin Cooperative Extension plans collaboration among campus, county faculty and staff, tribal, regional and national colleagues, partners and trained volunteers to provide timely, science-based education and assistance for climate change adaptation and mitigation. Efforts will focus on developing, implementing, and evaluating outreach programs to reduce carbon, nitrogen, energy and water footprints in local communities. Supporting this work is the interagency Wisconsin Initiative on Climate Change Impacts: http://www.wicci.wisc.edu

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods
● Education Class ● Group Discussion ● One-on-One Intervention ● Other 1 (Train-the-trainer and on-farm) ● Other 2 (state, regional, & national Conf)	● Public Service Announcement ● Web sites other than eXtension ● Other 1 (News media releases) ● Other 2 (Web-based training)

3. Description of targeted audience

Integrated activity for our Formula Grant programs targets a broad group of stakeholder audiences in agricultural, natural resources, and the public. The audience includes colleagues and other professionals, growers and grower associations, certified crop advisors, agricultural service providers, coalitions and cooperatives, community leaders, business owners, local elected officials, town, city, county and tribal governments, state and federal agencies, local planning departments and regional planning commissions, utilities, school districts, economic development practitioners, the news media, and families.

The interdisciplinary BioEnergy and the BioEconomy Team is addressing statewide emerging bioenergy education needs. Farmers and foresters are interested in supplying feedstocks to the bioenergy industry as a potential alternative market and source of revenue. Communities are interested in developing renewable energy industries for energy independence, job creation, and economic development. At the onset of the bioenergy industry, policy makers, as well as entrepreneurial businesses, encouraged the rapid development of new energy sources using biomass as a renewable feedstock.

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Outcome measures for this work are both qualitative and quantitative. We will rely on feedback from stakeholder groups, advisory boards, and individual constituents, as well as from UW-Extension teams on the relevance, importance and impact of our research program. The output measures listed earlier will also serve as outcome measures in that patents, graduate degrees, and publications all include an element of critical review and assessment of originality, contribution to the science and knowledge base, or other performance criteria.

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Work to reduce atmospheric greenhouse gas emissions.
2	Develop biomass use for biofuels
3	Build capacity to create, refine and implement scalable conversion technologies

Outcome # 1

1. Outcome Target

Work to reduce atmospheric greenhouse gas emissions.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 133 - Pollution Prevention and Mitigation
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 403 - Waste Disposal, Recycling, and Reuse
- 601 - Economics of Agricultural Production and Farm Management
- 605 - Natural Resource and Environmental Economics
- 608 - Community Resource Planning and Development

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 2

1. Outcome Target

Develop biomass use for biofuels

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 133 - Pollution Prevention and Mitigation
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 403 - Waste Disposal, Recycling, and Reuse
- 601 - Economics of Agricultural Production and Farm Management
- 605 - Natural Resource and Environmental Economics
- 608 - Community Resource Planning and Development

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 3

1. Outcome Target

Build capacity to create, refine and implement scalable conversion technologies

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 112 - Watershed Protection and Management
- 131 - Alternative Uses of Land
- 403 - Waste Disposal, Recycling, and Reuse
- 601 - Economics of Agricultural Production and Farm Management
- 605 - Natural Resource and Environmental Economics
- 608 - Community Resource Planning and Development

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Populations changes (immigration, new cultural groupings, etc.)

Description

A variety of factors could affect the outcomes of this project including those previously listed.

However, the breadth of the program makes it unlikely that the outputs would be completely disrupted without a major natural, economic, or public policy disruption. A major change in federal policy or appropriation affecting the formula grant program could affect our ability to produce our proposed outcomes. UW-Madison has implemented a policy change regarding tuition remission. Formula grants have previously been exempt from tuition remission charges in the UW-System, but are no longer exempt. Since these funds do not allow tuition remission, we continue to discuss alternatives to meeting our formula grant missions in order to continue training graduate students. Graduate student training remains a priority of our program.

Appropriations changes: The National Estuarine Research Reserve (NERR) System is a nationwide network of protected coastal estuaries designated and supported through the National Oceanic and Atmospheric Administration. The NERR program integrates research, outreach, and stewardship activities. Wisconsin Cooperative Extension successfully facilitated the nomination of the St. Louis River freshwater estuary along the border between Wisconsin and Minnesota at the headwaters of the Great Lakes. With its designation in October 2010, the 16,697-acre Lake Superior National Estuarine Research Reserve joined Old Woman Creek (Ohio) as the second Great Lakes freshwater estuary in the NERR System. The Lake Superior NERR partners with Wisconsin, Minnesota and tribal governments. In addition, the program partners with the Ohio NERR on Great Lakes Climate Impacts Workshops for community leaders, planners and other professionals, and is supported by the interagency Wisconsin Initiative on Climate Change Impacts.

Public policy changes: The Wisconsin Initiative on Climate Change Impacts (WICCI) is a statewide collaboration that brings scientists and stakeholders together to adapt strategies to reduce potential negative impacts of climate change in Wisconsin. WICCI issued its first comprehensive report, "Wisconsin's Changing Climate: Impacts and Adaptation" in February 2011. The WICCI outreach program focuses on building capacity among Wisconsin decision makers to integrate climate projections into resource management decisions: http://www.wicci.wisc.edu

Economy: While still a small part of the agricultural, forestry and industrial sectors, bioenergy production and new bioenergy facilities continue to be explored. As volatile energy costs continue, the Wisconsin Cooperative Extension Bioenergy and the Bioeconomy Team will play a key role in helping new bioenergy projects - from ultra-small to large - create new jobs for new industries. These uncertain times require careful analysis by informed developers, municipalities and other decision makers to ensure the best chance for a proposed project's success. While some larger-scale projects have been put on hold, extension business education and assistance will continue to bring research and innovation to an emerging bioeconomy.

Competing public priorities: Given Wisconsin's wealth of resources in forests and agricultural production, there is great interest among state businesses and communities in producing alternative fuels and feedstocks from biomass. Outreach and extension collaborations need further development. Professional training and cross-discipline sharing of research and information need additional collaboration to effectively and efficiently bring new technology to application. A new collaboration was formed among Wisconsin Cooperative Extension, the University of Wisconsin-Madison College of Agricultural and Life Sciences and Wisconsin Bioenergy Initiative to develop the curriculum for USDA Farm Service Agency Biomass Crop Assistance Program education. Acres of farmland being used for biomass/fuel are not available for food production - commodities or locally produced foods that support communities.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Evaluation studies include qualitative and quantitative methodology. We have previously described a number of methods used to solicit stakeholder input. At the time input is being sought from these groups, boards, and individuals, we will also solicit feedback on the pertinence and effectiveness of our current programs. This information is primarily qualitative, but provides important feedback on the program. Similar input will be sought from the CES issue-oriented teams.

In the competitive re-application process for WAES projects, project productivity (past performance) and impact are also evaluated. This occurs every two-to-four years and is an important factor in whether a scientist's new project will be approved. Overall monitoring of the number patents, number of graduate students trained, peer-reviewed publications will evaluate success.

Purpose of the evaluation: Wisconsin Cooperative Extension can help communities understand and use information about climate change. To do so, Extension educators must understand the:

- Science of climate change and adaptation and mitigation strategies;
- Needs of diverse stakeholders; and
- Development of effective educational programs.

Educators must also overcome challenges such as public uncertainty and skepticism regarding:

- Climate science methods and conclusions;
- The human role in climate change; and
- Human ability to mitigate negative climate changes.

All Extension faculty will need professional development for climate literacy to address these challenges with diverse stakeholders and to build capacity for integrating climate into effective educational programming.

Questions to be addressed: Expected outcomes and indicators

Short term

1. The Climate Change Work Group will identify Extension capacity for building resources applicable to change outreach education for identified audiences.

Extension educators will demonstrate knowledge of:

1.1 Climate science concepts
1.2 The role of science in society and climate policy
1.3 Public controversies about climate change
1.4 Extension climate science core competencies

2. The Climate Change Work Group will understand the range of educational programs needed.
Extension educators will demonstrate the ability to:

2.1 Recognize their personal biases and beliefs about science and climate change
2.2 Assess the quality of diverse climate information sources
2.3 Integrate climate concepts into local and statewide programs

Medium term

3. The Climate Change Work Group will measure effectiveness of professional development.
Specifically, can Extension educators demonstrate ability to?

3.1 Apply Extension climate science core competencies to outreach program development
3.2 Integrate climate change considerations into Extension outreach programs by (a) making use of appropriate climate resource materials, (b) selecting or adapting program content to specific audiences, and (c) responding effectively to ethical and political debate around

climate

3.3 Evaluate and report outcomes from delivering climate outreach and education

Long term

4. Will have a consistent message about climate change

5. WAES and Extension educators incorporate current Wisconsin and regional data and projections about climate and climate change impacts and implement climate change education as appropriate to their stakeholders.

6. Wisconsin interest groups and communities will make use of Extension resources and teaching when considering changes based on climate science.

7. The WAES and Wisconsin Cooperative Extension is recognized by counties and other stakeholders as a credible source on information related to climate change.

Methods: Evaluation methods to be used are preliminary.

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Sustainable Use of Natural Resources

2. Brief summary about Planned Program

Communities are interested in developing renewable energy industries for energy independence, job creation, and economic development. The Wisconsin Agricultural Experiment Station incorporates research to benefit forest production, weed management, surface water quality, and promoting new farm-based practices.

Wisconsin Cooperative Extension campus and county faculty and staff are conducting integrated research and extension programs, building capacity for scalable, sustainable energy among extension colleagues and communities. Cooperative Extension educators in both agriculture and community development program areas are being called upon to respond to questions about bioenergy and sustainable renewable energy. ThinkWater, a national water education program supported by the USDA and NIFA, has been created to help formal and informal educators engage students in water topics. The goal is to help youth think and care deeply about water to protect our water resources.

3. Program existence : New (One year or less)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : No

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	0%		7%	
112	Watershed Protection and Management	0%		7%	
123	Management and Sustainability of Forest Resources	0%		12%	
132	Weather and Climate	0%		12%	
133	Pollution Prevention and Mitigation	0%		7%	
135	Aquatic and Terrestrial Wildlife	0%		20%	
201	Plant Genome, Genetics, and Genetic Mechanisms	0%		7%	
213	Weeds Affecting Plants	0%		7%	
302	Nutrient Utilization in Animals	0%		7%	
511	New and Improved Non-Food Products and Processes	0%		7%	
601	Economics of Agricultural Production and Farm Management	0%		7%	
806	Youth Development	60%		0%	
903	Communication, Education, and Information Delivery	40%		0%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Farming is a large part of Wisconsin's industry. Water quality, forest production and introducing new farming practices all play part in the role of the success of Wisconsin's farming industry. Northern Wisconsin's forests and farmlands offer a rich supply of herbaceous and woody biomass. Farmers and foresters are interested in supplying feedstocks to the bioenergy industry as a potential alternative market and source of revenue. Recognizing the feedstock availability, a number of companies have announced plans to establish or expand their use of woody biomass for energy production. As another region rich in renewable resources, rural southwest Wisconsin also has an opportunity to create new jobs and develop renewable energy both for use within the nine-county region as well as to supply nearby urban areas. As demand for new sources of energy increases, University of Wisconsin-Extension educators in both agriculture and community development program areas are being called upon to respond to questions about bioenergy and sustainable renewable energy. Communities are interested in developing renewable energy industries for energy independence, job creation, and economic development.

Anaerobic digestion is a proven waste-to-energy technology. Wisconsin is the leading state for on-farm anaerobic digestion with more than 35 operational systems. During the last decade, demand for

knowledge of system components, processes and mechanisms, and operation skills grew. Since large-scale implementation is relatively recent, training is needed for safe production and use of biogas. While these multi-million dollar systems only run economically on the waste from 500 or more cows, hundreds of thousands of very small farms worldwide use small-scale biodigesters costing only a few hundred dollars in climates as harsh as Wisconsin's. The bulk of Wisconsin dairy farms with fewer than 200 cows lack information on small-scale biodigesters.

Water has often been described as Earth's most valuable natural resource. ThinkWater provides a foundation for the transformation of water education through research, theory and practice. Using cross-disciplinary research in human learning, ThinkWater's foundation is "positively disruptive." The theories that drive ThinkWater programming have the potential to "disrupt" every aspect of water education in a positive way toward more effective teaching and learning. This same approach can be used in other areas of natural resource education.

2. Scope of the Program

- In-State Extension
- In-State Research
- Multistate Research
- Multistate Extension
- Integrated Research and Extension
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

1. The greatest advances in addressing national, regional, and state needs can be made by competitively soliciting the best science and research.

2. Graduate training efforts supported through the UW-Madison competitive formula grant opportunity will provide a sound basis for the future of the formula grant related sciences and issues.

3. Funding of the program will continue in a stable manner.

4. Resources are and will continue to be available in a timely manner.

5. Education can and will lead to the desired expected change.

6. The research base is accurate and relevant, and participants attend and engage.

7. Motivation exists and can be generated.

8. Projected timeline for program implementation is realistic.

9. Interest and mandates remain consistent and stable.

2. Ultimate goal(s) of this Program

1. To address national and state issues with the science of the highest quality and greatest potential to have an effect in addressing the issues relevant to the formula grant mission.

2. Train graduate students to build the human resources needed to address current and future problems relevant to the formula grant mission.

The goal of Sustainable use of Natural Resources is to develop renewable energy sources for industries to encourage energy independence, job creation, and economic development. This involves research to benefit forest production, weed management, surface water quality, and promoting new farm based practices.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2015	2.0	0.0	22.0	0.0
2016	2.0	0.0	22.0	0.0
2017	2.0	0.0	22.0	0.0
2018	2.0	0.0	22.0	0.0
2019	2.0	0.0	22.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

The WAES will encourage research to benefit forest production, weed management, surface water quality, and promoting new farm based practices. Wisconsin Cooperative Extension plans collaboration among the cross-program area BioEnergy and the BioEconomy Teams. Campus and county faculty and staff are conducting integrated research and extension programs, building capacity for scalable, sustainable energy among extension colleagues and communities. UW-Madison Environmental Resources Center staff worked with 50 North Central Region colleagues to develop the BioEnergy and Renewable Energy Community Assessment Toolkit and Energy Independence, BioEnergy Generation and Environmental Sustainability curricula disseminated via the Wisconsin Bioenergy Training Center web site: http://fyi.uwex.edu/biotrainingcenter.

Working with ThinkWater colleagues across the U.S., Wisconsin Cooperative Extension Program Development and Evaluation staff continue to train natural resources educators in effective methods of engaging students in water education and to launch the ThinkWater website.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods
● Education Class ● Workshop ● Group Discussion ● One-on-One Intervention ● Other 1 (Train-the-trainer and on-farm) ● Other 2 (State, regional & National Conf)	● Public Service Announcement ● Newsletters ● Web sites other than eXtension ● Other 1 (News media releases) ● Other 2 (Web-based training)

3. Description of targeted audience

At the onset of the bioenergy industry, policy makers, as well as entrepreneurial businesses, encouraged the rapid development of new energy sources using biomass as a renewable feedstock. The interdisciplinary BioEnergy and the BioEconomy Team is addressing statewide emerging bioenergy education needs. Farmers and foresters are interested in improving land, farming and supplying feedstocks to the bioenergy industry as a potential alternative market and source of revenue. Communities are interested in developing renewable energy industries for energy independence, job creation, and economic development.

ThinkWater is targeting water educators and parents by providing an online forum for water educators (both formal and informal) to visually map, analyze, present, share, adapt, rate and discuss lesson plans.

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Outcome measures for this work are both qualitative and quantitative. We will rely on feedback from stakeholder groups, advisory boards, and individual constituents, as well as from UW-Extension teams on the relevance, importance and impact of our research program. The output measures listed earlier will also serve as outcome measures in that patents, graduate degrees and publications all include an element of critical review and assessment of uniqueness, originality, contribution to the science and knowledge base, or other performance criteria.

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Develop and implement new ways to promote biomass use for biofuels
2	Build capacity to create, refine and implement scalable conversion technologies
3	Improve and encourage the use of and growth in the ThinkWater curricula
4	Implement and improve forest production, weed management, water quality, and promote new farming practices.

Outcome # 1

1. Outcome Target

Develop and implement new ways to promote biomass use for biofuels

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 112 - Watershed Protection and Management
- 123 - Management and Sustainability of Forest Resources
- 133 - Pollution Prevention and Mitigation
- 511 - New and Improved Non-Food Products and Processes
- 806 - Youth Development
- 903 - Communication, Education, and Information Delivery

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 2

1. Outcome Target

Build capacity to create, refine and implement scalable conversion technologies

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 123 - Management and Sustainability of Forest Resources
- 132 - Weather and Climate
- 133 - Pollution Prevention and Mitigation
- 511 - New and Improved Non-Food Products and Processes
- 601 - Economics of Agricultural Production and Farm Management
- 806 - Youth Development
- 903 - Communication, Education, and Information Delivery

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 3

1. Outcome Target

Improve and encourage the use of and growth in the ThinkWater curricula

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 511 - New and Improved Non-Food Products and Processes
- 601 - Economics of Agricultural Production and Farm Management
- 806 - Youth Development
- 903 - Communication, Education, and Information Delivery

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 4

1. Outcome Target

Implement and improve forest production, weed management, water quality, and promote new farming practices.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 112 - Watershed Protection and Management
- 123 - Management and Sustainability of Forest Resources
- 132 - Weather and Climate
- 133 - Pollution Prevention and Mitigation
- 135 - Aquatic and Terrestrial Wildlife
- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 213 - Weeds Affecting Plants
- 302 - Nutrient Utilization in Animals
- 511 - New and Improved Non-Food Products and Processes
- 601 - Economics of Agricultural Production and Farm Management
- 806 - Youth Development
- 903 - Communication, Education, and Information Delivery

4. Associated Institute Type(s)

- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Populations changes (immigration, new cultural groupings, etc.)

Description

A variety of factors could affect the outcomes of this project including those listed above. However, the breadth of the program makes it unlikely that the outputs would be completely disrupted unless there was some major natural, economic, or public policy disruption. A major change in federal policy or appropriation affecting the formula grant program could affect our ability to produce our outcomes. UW-Madison has implemented a policy change regarding tuition remission. Formula grants have previously been exempt from tuition remission charges in the UW-System, but are no longer exempt. Since these funds do not allow tuition remission, we continue to discuss alternatives to meeting our formula grant mission in order to continue training graduate students. We continue to make graduate student training the priority of our program.

Economy: While still a small part of the agricultural, forestry and industrial sectors, bioenergy production and new bioenergy facilities continue to be explored. As volatile energy costs continue, the Wisconsin Cooperative Extension Bioenergy and the Bioeconomy Teams will play a key role in helping new bioenergy projects--from ultra-small to large--create new jobs for new industries. These uncertain times require careful analysis by informed developers, municipalities and other decision makers to ensure the best chance for a proposed project's success. While some larger-scale projects have been put on hold, extension business education and assistance will continue to bring research and innovation to an emerging bioeconomy.

Public policy changes: State and federal policies are driving research and development of the bioeconomy, and projects that can generate energy from bio-based residuals and specialty crops are being widely investigated. However, the changing political and economic landscapes in energy and environment have complicated bioeconomic development decision-making. Recent renewable energy stagnation, incentive and policy uncertainty in biomass-based energy have slowed numerous stakeholders' interest and participation in bioenergy development. Even so, investments in bio-based chemicals and manufacturing precursors have been increasing. Both larger and smaller municipalities have reached the conclusion that locally-sponsored bio-energy (power and thermal) may provide their community with a number of benefits.

Competing public priorities: Given Wisconsin's wealth of resources in forests and agricultural production, there is great interest among state businesses and communities in producing alternative fuels and feedstocks from biomass. Outreach and extension collaborations need further development. Professional training and cross-discipline sharing of research and information need additional collaboration to effectively and efficiently bring new technology to application. A new collaboration was formed among Wisconsin Cooperative Extension, the University of Wisconsin-Madison College of Agricultural and Life Sciences and Wisconsin Bioenergy Initiative to develop the curriculum for USDA Farm Service Agency Biomass Crop Assistance Program education. Acres of farmland being used for biomass/fuel are not available for food production - commodities or locally produced foods that support communities.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Evaluation studies planned include qualitative and quantitative methodology. We have already described a number of methods used to solicit stakeholder input. At the time input is being sought from these groups, boards, and individuals, we are also soliciting feedback on the pertinence and effectiveness of our current programs. This information is primarily qualitative, but provides important feedback on the program. Similar input will be sought from UW Extension's issue oriented teams.

In the competitive re-application process for WAES projects, project productivity (past performance) and impact are also evaluated. This occurs every 2-4 years and is an important factor in whether a scientist's new project will be approved.

Overall project success will be evaluated by monitoring the number of patents, graduate students trained, and peer-reviewed publications. While this is an indicator of our overall CALS research program, we believe that it is also representative of our formula grant research component.

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Nutrition

2. Brief summary about Planned Program

Research projects range from assessing the causes and consequences of childhood obesity, nutritional aspects of diabetes, healthy eating campaigns, the management of pancreatitis and other areas. Effective research based interventions that are practical to implement and sustain are needed to prevent obesity among preschoolers, helping parents and others help young children develop healthy behaviors.

Wisconsin Cooperative Extension plans collaboration among Family Living Programs campus and county faculty and staff, colleagues and partners providing research-based education and assistance for preventing childhood obesity through developing and implementing behavioral interventions that improve nutrition and increase physical activity, as well as building capacity among colleagues and communities to address issues related to preventing childhood obesity. Education and assistance that help preschoolers develop healthy eating and physical activity behaviors will improve children's health and ability to learn, and reduce childhood obesity. Diverse participants will make informed, science-based decisions regarding nutrition, health and physical activity. These improvements will lead to decreased health care costs for families and the state BadgerCare program, and contribute to a productive workforce in the future.

Wisconsin Cooperative Extension nutrition education programs such as the Supplemental Nutrition Assistance Program (SNAP-Ed) provide keys to better health by showing people how to eat better and incorporate healthy activity into their lives. Extension educators reach diverse audiences through a variety of methods from home visits to classes and activities at community centers, festivals and fairs.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : No

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
305	Animal Physiological Processes	0%		16%	
502	New and Improved Food Products	0%		16%	
701	Nutrient Composition of Food	0%		8%	
702	Requirements and Function of Nutrients and Other Food Components	0%		16%	
703	Nutrition Education and Behavior	75%		20%	
704	Nutrition and Hunger in the Population	10%		0%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	0%		8%	
724	Healthy Lifestyle	15%		8%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	0%		8%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Illnesses related to obesity and lack of exercise, such as diabetes, cancer and heart disease, are shortening lives and driving up health care costs. Diet-linked diseases account for an estimated $250 billion each year in increased medical costs and lost productivity, according to the Center for Nutrition Policy and Promotion Strategic Plan. As documented in the national objectives of Healthy People 2010, improving the U.S. diet and boosting physical activity could reduce cardiovascular disease, diabetes and cancer. The importance of education to improve nutrition and physical activity behaviors is further documented by reports from the Centers for Disease Control and Prevention that state: "Poor diet and physical inactivity are associated with 300,000 deaths each year, second only to tobacco use."

Results of the Healthy Eating Index indicate that 76% of children ages 2 to 5 have poor diets that can put them at risk of obesity (USDA, DHHS). Childhood obesity has become a common health problem, especially among low-income populations. In 2010, 29% of 2- to 3-year-old children in the Wisconsin Supplemental Nutrition Program for Women, Infants and Children (WIC) were overweight or obese. Studies show that more than half of obese children become overweight at or before age two. Mothers most often are the dominant influence on children's food consumption and dietary habits. Positive modeling is key to preventing childhood obesity as children's food preferences mirror those of their mothers. In children as young as 2 years old, food preferences were associated with those of their mothers.

2. Scope of the Program

- In-State Extension

- In-State Research
- Multistate Research
- Multistate Extension
- Integrated Research and Extension
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

1. The greatest advances in addressing national, regional, and state needs can be made by competitively soliciting the best science and research.

2. Graduate training efforts supported through the UW-Madison competitive Formula Grant opportunity will provide a sound basis for the future of the Formula Grant related sciences and issues.

3. Funding of the program will continue in a stable manner.

4. Resources are and will continue to be available in a timely manner.

5. Education can and will lead to the desired expected change.

6. The research base is accurate and relevant, and participants attend and engage.

7. Motivation exists and can be generated.

8. Projected timeline for program implementation is realistic.

9. Interest and mandates remain consistent and stable.

2. Ultimate goal(s) of this Program

1. To address national and state issues with the science of the highest quality and greatest potential to have an effect in addressing the issues relevant to the Formula Grant mission.

2. Train graduate students to build the human resources needed to address current and future problems relevant to the Formula Grant mission.

The WAES and Wisconsin Cooperative Extension plan collaboration among Family Living Programs campus and county faculty and staff, colleagues and partners providing research-based education and assistance for preventing childhood obesity and promoting nutrition through developing and implementing behavioral interventions that improve nutrition and increase physical activity, as well as building capacity among colleagues and communities to address issues related to preventing childhood obesity. Education and assistance that help preschoolers develop healthy eating and physical activity behaviors will improve children's health and ability to learn, and reduce childhood obesity. Diverse participants will make informed, science-based decisions regarding nutrition, health and physical activity. These improvements will lead to decreased health care costs for families and the state BadgerCare program, and contribute to a productive workforce in the future.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2015	2.0	0.0	7.0	0.0
2016	2.0	0.0	7.0	0.0
2017	2.0	0.0	7.0	0.0
2018	2.0	0.0	7.0	0.0
2019	2.0	0.0	7.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Faculty in CALS Nutritional Science, Biochemistry and Food Science are assessing the causes and consequences of childhood obesity and poor nutrition. Ongoing projects include work in nutritional aspects of diabetes, promotion of healthful eating campaigns, dietary markers of human health and nutrition, obesity prevention, and related studies.

Wisconsin Cooperative Extension plans collaboration among Family Living Programs campus and county faculty and staff, colleagues and partners providing research-based education and assistance for preventing childhood obesity through developing and implementing behavioral interventions that improve nutrition and increase physical activity, as well as building capacity among colleagues and communities to address issues related to preventing childhood obesity. Education and assistance that help preschoolers develop healthy eating and physical activity behaviors will improve children's health and ability to learn, and reduce childhood obesity. Diverse participants will make informed, science-based decisions regarding nutrition, health and physical activity. These improvements will lead to decreased health care costs for families and the state BadgerCare program, and contribute to a productive workforce min the future.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods
● Education Class	● Public Service Announcement
● Workshop	● Newsletters
● Group Discussion	● Web sites other than eXtension
● One-on-One Intervention	● Other 1 (New media releases)
● Other 1 (train-the-trainer & field days)	● Other 2 (Web-based training)
● Other 2 (Group facilitation, peer network)	

3. Description of targeted audience

Wisconsin Cooperative Extension nutrition education programs such as the Supplemental Nutrition Assistance Program (SNAP-Ed) provide keys to better health by showing people how to eat better and incorporate healthy activity into their lives. Extension educators reach diverse audiences through a variety of methods from home visits to classes and activities at community centers, festivals and fairs.

The audience for research and extension includes colleagues and other professionals, diverse children and youth, caregivers, parents and family members, local and tribal officials, public and private collaborating and community agencies, child care providers, teachers, school districts, administrators, tribal, state and federal agencies and others in a variety of educational settings to reach under-represented audiences including low-income Latino/a, African American, American Indian and Hmong parents, families and youth, translating and interpreting as needed.

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Outcome measures for this work are both qualitative and quantitative. We will rely on feedback from stakeholder groups, advisory boards, and individual constituents, as well as from UW-Extension teams on the relevance, importance and impact of our research program. The output measures listed earlier will also serve as outcome measures in that patents, graduate degrees and publications all include an element of critical review and assessment of uniqueness, originality, contribution to the science and knowledge base, or other performance criteria.

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Develop and implement behavioral interventions that improve nutrition and increase physical activity
2	Build capacity among community partners and schools to address issues related to nutrition and childhood obesity

Outcome # 1

1. Outcome Target

Develop and implement behavioral interventions that improve nutrition and increase physical activity

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 701 - Nutrient Composition of Food
- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior
- 704 - Nutrition and Hunger in the Population
- 724 - Healthy Lifestyle
- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 2

1. Outcome Target

Build capacity among community partners and schools to address issues related to nutrition and childhood obesity

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 502 - New and Improved Food Products
- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior
- 704 - Nutrition and Hunger in the Population
- 724 - Healthy Lifestyle
- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Populations changes (immigration, new cultural groupings, etc.)

Description

Public policy: Nearly $150 billion per year is now being spent to treat obesity-related medical conditions. The White House Task Force on Childhood Obesity Report to the President, Solving the Problem of Childhood Obesity within a Generation, presents an action plan for the prevention of childhood obesity and healthy living: (1) empower parents and caregivers; (2) provide healthy food in schools; (3) improve access to healthy, affordable foods; and (4) increase physical activity. The goal of the action plan, developed by an interagency task force, is to reduce childhood obesity to a rate of just 5% by 2030: http://www.letsmove.gov/tfco_fullreport_may2010.pdf

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Evaluation studies planned include qualitative and quantitative methodology. We have already described a number of methods used to solicit stakeholder input. At the time input is being sought from these groups, boards, and individuals, we are also soliciting feedback on the pertinence and effectiveness of our current programs. This information is primarily qualitative, but provides important feedback on the program. Similar input will be sought from UW Extension's issue oriented teams. In the competitive re-application process for WAES projects, project productivity (past performance) and impact are also evaluated. This occurs every 2-4 years and is an important factor in whether a scientist's new project will be approved. Overall project success will be evaluated by monitoring the number of patents, graduate students trained, published peer reviewed publications.

Preventing Childhood Obesity project focuses on 4-year-old low-income rural children because multiple parties provide food and activity for these children, not just parents. Head Start, Food SHARE, WIC, child care, family and friends all play a role. Results will be used by Cooperative Extension colleagues and community partners in 7 collaborating states and nationwide to improve the environment for preventing childhood obesity, and by extension professionals in determining how to be effective coalition leaders and members.

Evaluation questions:
Can childhood obesity be prevented through collective action at multiple ecological levels?
Do evidence-based programs result in improved community outcomes?
Does environmental scanning lead to effective action?
Do the skill of a trained community coach result in better coalition outcomes?
What skills are needed by extension educators and coalition leaders to plan effective sustainable programs?

Methods:

The evaluation will use multiple methods with multiple data collection points. The seven states have agreed to identified measures and high quality tools that will be administered under the same protocols to allow for pooling data. In the first year, counties will conduct an environmental scan including relevant demographics on health, healthy eating and physical activity of children. They will conduct a standardized community assessment that identifies both assets and barriers to healthy eating and activity looking at child care centers, child food programs, recreation options and healthy food availability. They will use a standardized parent survey with 30 low-income parents that will bring the voice of young families into the planning process as they report on foods available at home, monitoring of screen time, and barriers to healthy eating and activity. These data will serve as the foundation for creating action plans.

County extension educators will complete a coalition leadership self-assessment, and coalition members will complete a coalition functioning self-assessment. These evaluation tools will increase understanding of roles, skills, meeting effectiveness, conflict management and other coalition functions that may affect outcomes. These tools will be administered annually to note growth. Each county's work will be described in a case study of the interplay of individual and coalition skills, practices, and challenges. The community coach will keep detailed notes on her roles, tasks and inputs into the work of the coalition. The coach's intervention will be described and compared to the results found in the non-coached community.

Final analysis will revisit the original environmental scan process to determine if the environment for rural low-income children has improved in ways that decrease their risk for obesity. The final multi-state evaluation will pool data, include case studies and share lessons learned and best practices with colleagues and partners nationwide.

V(A). Planned Program (Summary)

Program # 7

1. Name of the Planned Program

Food Safety

2. Brief summary about Planned Program

The Wisconsin Agricultural Experiment Station (WAES) and Wisconsin Cooperative Extension plan collaboration among campus and county faculty and staff, colleagues, partners and trained volunteers to provide research-based training and support to improve the safety of the food supply.

With a strong dairying industry, Wisconsin has more dairy farms than any other state in the nation. More than 13,000 farms in Wisconsin produce the milk that goes into the cheese for which Wisconsin is famous. Wisconsin also ranks high in the production of processed vegetables including green beans (snap beans), peas, corn, carrots, cranberries and potatoes for processing.

Wisconsin ranks fourth in the country for fresh meat production. Wisconsin has a strong state meat inspection program that oversees the production of award winning processed meats produced in some of the 300-plus state-inspected meat-processing plants. In addition there are over 145 federally inspected meat-processing establishments and another 60 with custom licenses. From small, family businesses to very large multi-plant facilities, all are tasked with the daily challenge of producing safe, high-quality foods.

Cooperative Extension educators and specialists work with the Wisconsin Department of Agriculture, Trade and Consumer Protection (WDATCP) supervisors to train personnel in the dairy, meat, and canned food industries. Unique programs such as the Master Cheese Maker program and newly established Master Meat Crafter Training Program provide a foundation for the manufacture of safe, high quality, award-winning products from Wisconsin manufacturers.

Wisconsin also has a vibrant "buy local" economy and small food processors are benefiting. In some cases, farmers wishing to add value to their crops are delving into the sale of canned pickles, salsas and other family-favorite products. Canned foods such as pickles, salsas and tomato-based products are referred to as acidified foods. The Cooperative Extension-WDATCP partnership also works to train and support processors of canned foods, both low-acid meats and vegetables and acidified foods such as pickles and salsas. Processed incorrectly, acidified canned foods are potentially hazardous because they present the risk of botulism poisoning.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : No

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
212	Pathogens and Nematodes Affecting Plants	0%		6%	
302	Nutrient Utilization in Animals	0%		3%	
305	Animal Physiological Processes	0%		9%	
308	Improved Animal Products (Before Harvest)	0%		3%	
311	Animal Diseases	0%		10%	
501	New and Improved Food Processing Technologies	0%		15%	
502	New and Improved Food Products	0%		15%	
503	Quality Maintenance in Storing and Marketing Food Products	0%		6%	
701	Nutrient Composition of Food	0%		3%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	50%		6%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	50%		24%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

The WAES and Wisconsin Cooperative Extension plans collaboration among interdisciplinary campus and county faculty and staff, colleagues, partners and trained volunteers providing research-based training and support to improve the safety of the food supply by helping youth and adult agricultural producers, meat, dairy and acidified canned food processors and entrepreneurs adopt best practices and comply with government regulations.

Wisconsin has a strong and vibrant meat industry that is important for meeting consumer needs. The industry ranks fourth in the U.S. for fresh meat production, and second for the most processing plants: 145 federally inspected meat processing plants, approximately 300 state-inspected and another 60 with custom licenses, providing services only for specific clients. Food safety ranks as a top priority for all meat and poultry establishments, with productivity and profit often ranking lower. Without a clear understanding of pathogenic bacteria and a progressive approach to preventing bacterial presence or growth, meat processors may face a negative food safety situation such as a food borne illness outbreak. Within a small margin of error, meat processors must thoroughly understand what pathogens must be controlled and how most effectively to control them. From small, family businesses to very large multi-plant facilities, all are tasked with the daily challenge of producing safe, high-quality nutritious foods.

Beef packing plants are required both to randomly test carcasses for drug residues as well as to test suspect carcasses identified by the USDA Food Safety Inspection Service (FSIS). Each carcass that tests positive is condemned and does not enter the food supply. When violators are detected they are reported to the U.S. Food and Drug Administration, which is required to investigate. Fines can be assessed to the producer, and their names are posted on the public national FSIS web site. As a consequence of being found on the violator list, those producers face limited market access for their animals, and in some cases their milk as well. Even the seemingly low 1% rate of violations detected is unacceptable to many consumers.

Wisconsin also has a vibrant "buy local" economy and small food processors are benefiting from the economic momentum. In some cases, farmers wishing to add value to their crops are delving into the sale of canned pickles, salsas and other family-favorite products. As a group, canned foods such as pickles, salsas and tomato-based products are referred to as acidified foods. Processed incorrectly, acidified canned foods are potentially hazardous--they present the risk of botulism poisoning. As a result, the federal government requires processors of acidified canned foods to receive training before they are issued a processing license.

2. Scope of the Program

- In-State Extension
- In-State Research
- Multistate Research
- Multistate Extension
- Integrated Research and Extension
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

1. The greatest advances in addressing national, regional, and state needs can be made by competitively soliciting the best science and research.

2. Graduate training efforts supported through the UW-Madison competitive formula grant opportunity will provide a sound basis for the future of the formula grant related sciences and issues.

3. Funding of the program will continue in a stable manner.

4. Resources are and will continue to be available in a timely manner.

5. Education can and will lead to the desired expected change.

6. The research base is accurate and relevant, and participants attend and engage.

7. Motivation exists and can be generated.

8. Projected timeline for program implementation is realistic.

9. Interest and mandates remain consistent and stable.

2. Ultimate goal(s) of this Program

1. To address national and state issues with the science of the highest quality and greatest potential to have an effect in addressing the issues relevant to the formula grant mission.

2. Train graduate students to build the human resources needed to address current and future problems relevant to the formula grant mission.

The purpose of the integrated approach of state specialists and county-based educators is to educate Wisconsin consumers, agricultural producers, food processors and entrepreneurs and those who serve them throughout the food supply chain. The WAES and Wisconsin Cooperative Extension plans collaboration among interdisciplinary campus and county faculty and staff, colleagues, partners and trained volunteers providing research-based training and support to improve the safety of the food supply by helping youth and adult agricultural producers, meat, dairy and acidified canned food processors and entrepreneurs adopt best practices and comply with government regulations.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2015	3.0	0.0	17.0	0.0
2016	3.0	0.0	17.0	0.0
2017	3.0	0.0	17.0	0.0
2018	3.0	0.0	17.0	0.0
2019	3.0	0.0	17.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

The development and evaluation of improved technologies in food processing, and on-farm food safety practices have received increasing attention from faculty in several departments. Research is being conducted on several important food toxins and their causal organisms (e.g. Aspergillus), mastitis resistance as a component of on-farm food safety, the development of new thermal food preservation technologies, biotoxins and food safety, nanotechnology applications in food sensors, residual pesticides

in foods, symbiotic associations between antibiotic producing bacteria and honeybees, and several other areas.

The WAES and Wisconsin Cooperative Extension plan collaboration among interdisciplinary campus and county faculty and staff, colleagues, partners and trained volunteers providing research-based training and support to improve the safety of the food supply by helping youth and adult agricultural producers, meat, dairy and acidified canned food processors and entrepreneurs adopt best practices and comply with government regulations. Twenty county Extension educators and state specialists are Beef Quality Assurance trainers, two Swine Team members are certified Transport Quality Assurance trainers, and all four are Pork Quality Assurance Plus Advisors. This group also helps train certified 4-H youth and volunteer leaders in Meat Animal Quality Assurance required for participation in county and state fair swine, beef and sheep projects and auctions.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods
● Education Class	● Public Service Announcement
● Workshop	● Newsletters
● Group Discussion	● Web sites other than eXtension
● One-on-One Intervention	● Other 1 (News media releases)
● Other 1 (Train-the-trainer and on-farm)	● Other 2 (Web-based training)
● Other 2 (state, regional & national conf)	

3. Description of targeted audience

Integrated activity for our formula grant programs targets a broad group of stakeholder audiences in agricultural, natural resources, and the public. The audience includes colleagues, veterinarians and other professionals, individuals, families, 4-H and FFA youth, school-age children and preschoolers, fresh market vegetable and fruit growers and sellers, small food processors and entrepreneurs, crop, dairy and livestock producers, producer associations, dairy food processors and artisan cheesemakers, natural, organic and conventional meat processors, local and regional economic development initiatives, local and tribal governments, state and federal regulatory agencies, and others preserving food safely and keeping the food supply safe and wholesome. To help meet the growing need for food safety education, 100 trained Master Food Preserver volunteers pledged to commit an average of 20 volunteer hours per year for 3 years--a total of 6,000 hours--in service to their communities as part of the Volunteer Master Food Preserver program.

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Outcome measures for this work are both qualitative and quantitative. We will rely on feedback from stakeholder groups, advisory boards, and individual constituents, as well as from UW-Extension teams on the relevance, importance and impact of our research program. The output measures listed earlier will also serve as outcome measures in that patents, graduate degrees and publications all include an element of critical review and assessment of uniqueness, originality, contribution to the science and knowledge base, or other performance criteria.

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Improve the safety of the food supply.
2	Develop and implement behavioral interventions that improve consumer food safety practices.

Outcome # 1

1. Outcome Target

Improve the safety of the food supply.

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 501 - New and Improved Food Processing Technologies
- 502 - New and Improved Food Products
- 701 - Nutrient Composition of Food
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 2

1. Outcome Target

Develop and implement behavioral interventions that improve consumer food safety practices.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 308 - Improved Animal Products (Before Harvest)
- 501 - New and Improved Food Processing Technologies
- 502 - New and Improved Food Products
- 503 - Quality Maintenance in Storing and Marketing Food Products
- 701 - Nutrient Composition of Food
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Populations changes (immigration, new cultural groupings, etc.)

Description

A variety of factors could affect the outcomes of this project including those listed above. However, the breadth of the program makes it unlikely that the outputs would be completely disrupted unless there was some major natural, economic, or public policy disruption. A major change in federal policy or appropriation affecting the formula grant program could affect our ability to produce our outcomes.

Also, UW-Madison has implemented a policy change regarding tuition remission. Formula grants have previously been exempt from tuition charges in the UW-System, but are no longer exempt. Since these funds do not allow tuition remission, we continue to discuss alternatives to meeting our formula grant missions in order to continue training graduate students. We continue to make graduate student training the priority of our program.

Government regulations: The current situation requires educational efforts that focus on continued safety and adequacy of the food supply. As a critical infrastructure, the food and agriculture sector constitutes one-sixth of the U.S. gross domestic product (GDP) - more than a trillion dollars a year. A food and agriculture security event would have economic, social and psychological impacts. A mishandled emergency could undermine consumer confidence in the safety of the food supply. External political factors and animal diseases could threaten both the food supply and economic viability of animal agriculture industries. National efforts to monitor and detect potentially devastating diseases, identify and track potentially infected animals along marketing channels, and pinpoint the disease source and premises origin within a timeframe are of importance for all animal species. Premises and individual animal identification, combined with food quality and safety, become major programs of emphasis.

Wisconsin Cooperative Extension campus and county faculty and trained volunteer advisers address animal care and carcass quality issues through species-specific programs. Twenty county extension educators and state specialists are Beef Quality Assurance trainers. The Swine Team formed to help meet educational needs of the Wisconsin pork industry, providing quality assurance training programs for producers, transporters, youth and volunteer leaders. Two Swine Team members are certified Transport Quality Assurance trainers and all four are Pork Quality Assurance Plus Advisers who also help train certified 4-H youth and volunteer leaders in Meat Animal Quality Assurance required

for participation in county and state fair swine, beef and sheep projects and auctions. Around 4,500 4-H youth are certified in Meat Animal Quality Assurance each year. Swine Team members also play an integral role in the Wisconsin Pork Expo, Badger Pork Day, Wisconsin Farm Technology Days, the Extension Educators Conference, and livestock activities at the Wisconsin State Fair. Educational partners include Cooperative Extension county colleagues statewide, UW-Madison Department of Animal Sciences, agricultural campuses at UW-Platteville and UW-River Falls, agricultural research stations, the Wisconsin Agro-Security Resource Network (WARN), Wisconsin Pork Association, Wisconsin Animal ID Consortium, and National Pork Board.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Evaluation studies will include qualitative and quantitative methodology. We have already described a number of methods used to solicit stakeholder input. At the time input is being sought from these groups, boards, and individuals, we are also soliciting feedback on the pertinence and effectiveness of our current programs. This information is primarily qualitative, but provides important feedback on the program. Similar input will be sought from UW Extension's issue-oriented teams.

In the competitive re-application process for WAES projects, productivity (past performance) and impact are also evaluated. This occurs every two to four years and is an important factor in whether a scientist's new project will be approved. Overall project success is evaluated by monitoring the number of patents, graduate students trained, and published peer-reviewed publications.

V(A). Planned Program (Summary)

Program # 8

1. Name of the Planned Program

Education and Science Literacy

2. Brief summary about Planned Program

The research in this program will educate land managers and landowners about the development of improved grassland and natural resource models to improve decision support systems.

Education and Science Literacy reaches beyond local communities to impact regional and national communities to have an impact globally. Wisconsin 4-H STEM Literacy Program trains 4-H staff and volunteers using LEGO® Mindstorms® NXT robotic systems. The 4-H Robotic Training events have grown in popularity with the students and parents, 4-H staff and volunteers who are excited to expand their learning and experiences in STEM with the Wisconsin 4-H Robotics program.

3. Program existence : New (One year or less)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : No

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
131	Alternative Uses of Land	0%		25%	
136	Conservation of Biological Diversity	0%		25%	
213	Weeds Affecting Plants	0%		25%	
307	Animal Management Systems	0%		25%	
806	Youth Development	100%		0%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

There is a lack of support tools and prediction models for landowners and managers to use for improvement of land management and use of natural resources. The WAES incorporates research projects to address the needs of farmers and landowners and to educate them to improve agricultural, the land and use of natural resources.

For Cooperative Extension, research clearly indicates that STEM educational initiatives reach all areas of the U.S. workforce. Eighty percent of the fastest growing jobs in the U.S. require STEM literacy and science and technology jobs are projected to grow by 20.6 percent through 2018. However, U.S. high school scores in STEM topics are declining. Studies have shown that by engaging learners in science and math at an early age supports positive perceptions of science and math studies in K-12 grades. Studies specific to LEGO® Mindstorms® NXT suggest youth gain problem-solving skills, creative thinking skills and increased scientific technical knowledge. The skills gained with the LEGO® Mindstorms® Robotics programs provide experience on the platform that is the industry standard in computer-assisted data collection and experiment design. Wisconsin Cooperative Extension 4-H Youth Programs is well positioned to provide out-of-school robotics programs throughout the state.

2. Scope of the Program

- In-State Extension
- In-State Research
- Multistate Research
- Multistate Extension
- Integrated Research and Extension
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

1. The greatest advances in addressing national, regional, and state needs can be made by competitively soliciting the best science and research.

2. Graduate training efforts supported through the UW-Madison competitive Formula Grant opportunity will provide a sound basis for the future of the Formula Grant related sciences and issues.

3. Funding of the program will continue in a stable manner.

4. Resources are and will continue to be available in a timely manner.

5. Education can and will lead to the desired expected change.

6. The research base is accurate and relevant, and participants attend and engage.

7. Motivation exists and can be generated.

8. Projected timeline for program implementation is realistic.

9. Interest and mandates remain consistent and stable.

2. Ultimate goal(s) of this Program

1. To address national and state issues with the science of the highest quality and greatest potential

to have an effect in addressing the issues relevant to the Formula Grant mission.

2. Train graduate students to build the human resources needed to address current and future problems relevant to the Formula Grant mission.

The WAES faculty and Wisconsin Cooperative Extension 4-H Youth development staff and volunteers will continue to train landowners and volunteers and provide training opportunities for youth to gain knowledge in Education and Science Literacy through land planning and robotics curriculum.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2015	1.0	0.0	2.0	0.0
2016	1.0	0.0	2.0	0.0
2017	1.0	0.0	2.0	0.0
2018	1.0	0.0	2.0	0.0
2019	1.0	0.0	2.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

The WAES will incorporate research projects to address the needs of farmers and landowners and to educate them to improve agricultural, the land and use of natural resources. Cooperative Extension 4-H STEM specialists will build capacity in 4-H educators and volunteers to provide LEGO® Mindstorms® Robotics programs across Wisconsin.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods
● Education Class ● Workshop ● One-on-One Intervention ● Demonstrations ● Other 1 (farmer surveys)	● Newsletters ● eXtension web sites ● Other 1 (news media releases)

3. Description of targeted audience

The audience includes farmers, landowners, 4-H youth, parents, staff, teachers, community leaders, business owners, school districts, economic development practitioners, the news media, and families.

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Outcome measures for this work are both qualitative and quantitative. We will rely on feedback from stakeholder groups, advisory boards, and individual constituents, as well as from UW-Extension teams on the relevance, importance and impact of our research program. The output measures listed earlier will also serve as outcome measures in that patents, graduate degrees and publications all include an element of critical review and assessment of uniqueness, originality, contribution to the science and knowledge base, or other performance criteria.

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	To increase the knowledge and implement decision-making tools for farmers and landowners.
2	To increase the knowledge of youth and teachers in the 4-H STEM program.

Outcome # 1

1. Outcome Target

To increase the knowledge and implement decision-making tools for farmers and landowners.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 131 - Alternative Uses of Land
- 136 - Conservation of Biological Diversity
- 213 - Weeds Affecting Plants
- 307 - Animal Management Systems
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Research

Outcome # 2

1. Outcome Target

To increase the knowledge of youth and teachers in the 4-H STEM program.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Populations changes (immigration, new cultural groupings, etc.)

Description

A variety of factors could affect the outcomes of this project including those previously listed. However, the breadth of the program makes it unlikely that the outputs would be completely disrupted without a major natural, economic, or public policy disruption. A major change in federal policy or appropriation affecting the Formula Grant program could affect our ability to produce our proposed outcomes. UW-Madison has implemented a policy change regarding tuition remission. Formula grants have previously been exempt from tuition remission charges in the UW-System, but are no longer exempt. Since these funds do not allow tuition remission, we continue to discuss alternatives to meeting our F=formula grant mission in order to continue training graduate students. Graduate student training remains a priority of our program.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Evaluation studies include qualitative and quantitative methodology. We have previously described a number of methods used to solicit stakeholder input. At the time input is being sought from these groups, boards, and individuals, we will also solicit feedback on the pertinence and effectiveness of our current programs. This information is primarily qualitative, but provides important feedback on the program. Similar input will be sought from the CES issue-oriented teams.

In the competitive re-application process for WAES projects, project productivity (past performance) and impact are also evaluated. This occurs every two-to-four years and is an important factor in whether a scientist's new project will be approved. We will monitor the number of patents, graduate students trained, and peer-reviewed publications. While this is an indicator of our overall CALS research program, we believe that it is also representative of our Formula Grant research component.

With the STEM program, evaluation data will show that attending the day-long workshops increases educators and volunteer's understanding of the LEGO® Mindstorms® Robotics program, and their abilities to train other volunteers. Surveys of students will answer the questions related to increased understanding of robotics programming, thinking skills, and literacy in the areas of science and technology.

V(A). Planned Program (Summary)

Program # 9

1. Name of the Planned Program

Rural Prosperity

2. Brief summary about Planned Program

Rural Prosperity depends on attracting, retaining and informing young people through community development efforts that build upon a community's assets, while improving agricultural development and marketing. The Wisconsin Agricultural Experiment Station (WAES) and Wisconsin Cooperative Extension are uniquely positioned to play a key role in supporting local community and landowner planning efforts.

In addition, Rural Prosperity reaches beyond local economies to impact local, regional and national communities. While half of Wisconsin farmers are nearing retirement, most do not discuss farm succession plans with anyone. Wisconsin Cooperative Extension county agriculture agents and campus specialists will continue to deliver comprehensive regional farm succession trainings.

3. Program existence : New (One year or less)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : No

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
131	Alternative Uses of Land	0%		17%	
136	Conservation of Biological Diversity	0%		16%	
213	Weeds Affecting Plants	0%		17%	
307	Animal Management Systems	0%		16%	
601	Economics of Agricultural Production and Farm Management	60%		17%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	40%		0%	
902	Administration of Projects and Programs	0%		17%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

The Wisconsin CALS Leadership Group and faculty meet regularly with college and departmental advisory groups, commodity organizations, state agencies, consumer groups, and private citizens. Input from these stakeholders and from those performing the research helps highlight research needs. The faculty from the CALS's departments of agronomy and forestry and wildlife have seen the need to establish new grazing strategies to promote better land management for land managers.

Based on these needs, and in addition to increasing regulatory pressures, Wisconsin farmers must plan for the succession of their farm operations. Unfortunately, more than half of all Wisconsin farmers are nearing retirement and the vast majority has not discussed this extremely important topic with anyone. Wisconsin Cooperative Extension county agriculture agents and campus specialists conduct comprehensive regional workshops like "Transferring the Farm in a High-Stakes Era" that provide tips and tools for hundreds of farmers each year. In addition, "Heart of the Farm" and "Annie's Project" trainings reach hundreds more women farm owners with farm succession planning. Providing education to assist with the succession of farm businesses and retaining on-farm jobs is extremely important in rural Wisconsin.

Wisconsin Cooperative Extension research has shown that specific quality of life factors are important community characteristics for people who want to live in small towns and rural communities. An asset-based community development effort was conducted in Northern Wisconsin and the Upper Peninsula of Michigan (Gogebic Area) to attract and retain young people in an effort to reverse the area's decades long population decline. Following a survey of young people's perceptions against what the area offered, a map of the area's assets was created. From this asset-based approach, the community development efforts were launched to attract young people to the area.

2. Scope of the Program

- In-State Extension
- In-State Research
- Multistate Research
- Multistate Extension
- Integrated Research and Extension
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

1. The greatest advances in addressing national, regional, and state needs can be made by competitively soliciting the best science and research.

2. Graduate training efforts supported through the UW-Madison competitive formula grant opportunity will provide a sound basis for the future of the formula grant related sciences and issues.

3. Funding of the program will continue in a stable manner.

4. Resources are and will continue to be available in a timely manner.

5. Education can and will lead to the desired expected change.

6. The research base is accurate and relevant, and participants attend and engage.

7. Motivation exists and can be generated.

8. Projected timeline for program implementation is realistic.

9. Interest and mandates remain consistent and stable.

2. Ultimate goal(s) of this Program

1. To address national and state issues with the science of the highest quality and greatest potential to have an effect in addressing the issues relevant to the formula grant mission.

2. Train graduate students to build the human resources needed to address current and future problems relevant to the formula grant mission.

The WAES faculty and Wisconsin Cooperative Extension county agriculture agents, along with campus specialists will continue to provide timely education and assistance for rural prosperity. The asset-based approach to community development shows promise for communities of all sizes.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2015	1.0	0.0	3.0	0.0
2016	1.0	0.0	3.0	0.0
2017	1.0	0.0	3.0	0.0
2018	1.0	0.0	3.0	0.0
2019	1.0	0.0	3.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

The 2007 Census of Agriculture reported that half of Wisconsin farmers identified as principal operators were 55 years old or older. Recent research in Wisconsin, Iowa, Pennsylvania, New Jersey, North Carolina, Tennessee, Virginia, and California shows that few farmers have identified a successor or developed farm business succession plans, nor have most discussed their retirement or succession plans with anyone. Further, farmers can no longer just draft a simple will to transfer ownership to their children. Successfully transferring the farm business to the next generation takes place over a number of years, requiring trust, a sound financial footing, good planning and communication as families face an

increasingly volatile agriculture economy. The WAES and Cooperative Extension will continue to educate Wisconsin farmer and landowners of the importance of farm succession and land use planning.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods
● Education Class ● Group Discussion ● One-on-One Intervention ● Demonstrations ● Other 1 (farmer surveys)	● Public Service Announcement ● Newsletters ● Web sites other than eXtension

3. Description of targeted audience

Integrated activity for our formula grant programs targets a broad group of stakeholder audiences in agricultural, natural resources, and the public. The audience includes colleagues and other professionals growers and grower associations, land owners, policy makers, Certified Crop Advisors, agricultural service providers, coalitions and cooperatives, community leaders, business owners, local elected officials, town, city, county and tribal governments, state and federal agencies, local planning departments and regional planning commissions, utilities, school districts, economic development practitioners, the news media, and families.

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Outcome measures for this work are both qualitative and quantitative. We will rely on feedback from stakeholder groups, advisory boards, and individual constituents, as well as from UW-Extension teams on the relevance, importance and impact of our research program. The output measures listed earlier will also serve as outcome measures in that patents, graduate degrees and publications all include an element of critical review and assessment of uniqueness, originality, contribution to the science and knowledge base, or other performance criteria.

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	To develop and implement programs to improve succession planning, grazing strategies and land management.

Outcome # 1

1. Outcome Target

To develop and implement programs to improve succession planning, grazing strategies and land management.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 131 - Alternative Uses of Land
- 601 - Economics of Agricultural Production and Farm Management
- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities
- 902 - Administration of Projects and Programs

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Populations changes (immigration, new cultural groupings, etc.)

Description

A variety of factors could affect the outcomes of this project including those previously listed. However, the breadth of the program makes it unlikely that the outputs would be completely disrupted without a major natural, economic, or public policy disruption. A major change in federal policy or appropriation affecting the Formula Grant program could affect our ability to produce our proposed outcomes. UW-Madison has implemented a policy change regarding tuition remission. Formula grants have previously been exempt from tuition remission charges in the UW-System, but are no longer exempt. Since these funds do not allow tuition remission, we continue to discuss alternatives to meeting our formula grant missions in order to continue training graduate students. Graduate student training remains a priority of our program.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Evaluation studies include qualitative and quantitative methodology. We have previously described a number of methods used to solicit stakeholder input. At the time input is being sought from these groups, boards, and individuals, we will also solicit feedback on the pertinence and effectiveness of our current programs. This information is primarily qualitative, but provides important feedback on the program. Similar input will be sought from the CES issue-oriented teams.

In the competitive re-application process for WAES projects, project productivity (past performance) and impact are also evaluated. This occurs every two-to-four years and is an important factor in whether a scientist's new project will be approved.

Purpose of the evaluation: Early outcome measures document short- and mid-term changes in learning and action at the community level. Continued evaluation will be conducted to determine if the intended long-term outcome of reversing a community's population decline will occur. While additional research is necessary, the asset-based approach shows promise for communities of all sizes.

V(A). Planned Program (Summary)

Program # 10

1. Name of the Planned Program

Wisconsin Competitive Research Program

2. Brief summary about Planned Program

Formula funds are being used to address a number of state priority research activities that cannot be classified in the nine priorities. We have grouped these ongoing projects under the rubric of the "Wisconsin Competitive Research Program", but funds supporting these projects will be redirected to the new national priorities in the future. These projects do contribute to a variety of important state needs and are focused in several areas, including water resource issues, animal health, including wildlife and non-farm animals, applied statistics in support of agricultural research, policy analysis for use in land use planning and commodity programs, immigrant farm labor issues, management of invasive exotic organisms and bio-waste management.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : No

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	0%		3%	
112	Watershed Protection and Management	0%		5%	
123	Management and Sustainability of Forest Resources	0%		5%	
131	Alternative Uses of Land	0%		5%	
135	Aquatic and Terrestrial Wildlife	0%		9%	
136	Conservation of Biological Diversity	0%		11%	
205	Plant Management Systems	0%		3%	
301	Reproductive Performance of Animals	0%		5%	
302	Nutrient Utilization in Animals	0%		5%	
303	Genetic Improvement of Animals	0%		5%	
305	Animal Physiological Processes	0%		5%	
403	Waste Disposal, Recycling, and Reuse	0%		3%	
502	New and Improved Food Products	0%		3%	
601	Economics of Agricultural Production and Farm Management	0%		5%	
608	Community Resource Planning and Development	0%		3%	
610	Domestic Policy Analysis	0%		5%	
701	Nutrient Composition of Food	0%		3%	
702	Requirements and Function of Nutrients and Other Food Components	0%		11%	
805	Community Institutions, Health, and Social Services	0%		3%	
901	Program and Project Design, and Statistics	0%		3%	
	Total	0%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Research projects frequently do not fit neatly and exclusively into one and only one USDA national goal. Research projects are frequently at the intersecting points of disciplines and interests. We view this interdisciplinary nature of our research efforts as a strength.

2. Scope of the Program

- In-State Research
- Multistate Research
- Integrated Research and Extension
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

1. The greatest advances in addressing national, regional, and state needs can be made by competitively soliciting the best science and research.

2. Graduate training efforts supported through the UW-Madison competitive formula grant opportunity will provide a sound basis for the future of the formula grant related sciences and issues.

3. Funding of the program will continue in a stable manner.

2. Ultimate goal(s) of this Program

1. To address national and state issues with the science of the highest quality and greatest potential to have an effect in addressing the issues relevant to the formula grant mission.

2. Train graduate students to build the human resources needed to address current and future problems relevant to the formula grant mission.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2015	0.0	0.0	7.3	0.0
2016	0.0	0.0	7.3	0.0
2017	0.0	0.0	7.3	0.0
2018	0.0	0.0	7.3	0.0
2019	0.0	0.0	7.3	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Formula funds are being used to address a number of state priority research activities that cannot be classified in the nine priorities. We have grouped these ongoing projects under the rubric of the "Wisconsin Competitive Research Program", but funds supporting these projects will be redirected to the new national

priorities in the future. These projects do contribute to a variety of important state needs and are focused in several areas, including water resource issues, animal health, including wildlife and non-farm animals, applied statistics in support of agricultural research, policy analysis for use in land use planning and commodity programs, immigrant farm labor issues, management of invasive exotic organisms and bio-waste management.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods
● Workshop ● Group Discussion ● One-on-One Intervention ● Demonstrations ● Other 1 (Field days)	● Web sites other than eXtension ● Other 1 (Press Releases)

3. Description of targeted audience

Integrated activity for our formula grant programs targets a broad group of stakeholder audiences in agricultural, natural resources, and the public. Examples can be seen in our stakeholder information section provided elsewhere in this report.

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Outcome measures for this work are both qualitative and quantitative. We will rely on feedback from stakeholder groups, advisory boards, and individual constituents, as well as from UW-Extension teams on the relevance, importance and impact of our research program. The output measures listed earlier will also serve as outcome measures in that patents, graduate degrees and publications all include an element of critical review and assessment of uniqueness, originality, contribution to the science and knowledge base, or other performance criteria.

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Outcome measures for this work are both qualitative and quantitative. We will rely on feedback from stakeholder groups, advisory boards, and individual constituents, as well as from UW Extension teams on the relevance, importance and impact of our research program. The output measures listed earlier will also serve as outcome measures in that patents graduate degrees and publications all include an element of critical review and assessment of uniqueness, originality, contribution to the science and knowledge base, or other performance criteria.

Outcome # 1

1. Outcome Target

Outcome measures for this work are both qualitative and quantitative. We will rely on feedback from stakeholder groups, advisory boards, and individual constituents, as well as from UW Extension teams on the relevance, importance and impact of our research program. The output measures listed earlier will also serve as outcome measures in that patents graduate degrees and publications all include an element of critical review and assessment of uniqueness, originality, contribution to the science and knowledge base, or other performance criteria.

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 112 - Watershed Protection and Management
- 123 - Management and Sustainability of Forest Resources
- 131 - Alternative Uses of Land
- 135 - Aquatic and Terrestrial Wildlife
- 136 - Conservation of Biological Diversity
- 205 - Plant Management Systems
- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 303 - Genetic Improvement of Animals
- 305 - Animal Physiological Processes
- 403 - Waste Disposal, Recycling, and Reuse
- 502 - New and Improved Food Products
- 601 - Economics of Agricultural Production and Farm Management
- 608 - Community Resource Planning and Development
- 610 - Domestic Policy Analysis
- 701 - Nutrient Composition of Food
- 702 - Requirements and Function of Nutrients and Other Food Components
- 805 - Community Institutions, Health, and Social Services
- 901 - Program and Project Design, and Statistics

4. Associated Institute Type(s)

- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities

Description

A variety of factors could affect the outcomes of this project including those listed above. However, the breadth of the program makes it unlikely that the outputs would be completely disrupted unless there was some major natural, economic, or public policy disruption. A major change in federal policy or appropriation affecting the formula grant program could affect our ability to produce our outcomes. UW-Madison has implemented a policy change regarding tuition remission. Formula grants have previously been exempt from tuition remission charges in the UW-System, but are no longer exempt. Since these funds do not allow tuition remission, we continue to discuss alternatives to meeting our formula grant mission in order to continue training graduate students. We continue to make graduate student training the priority of our program.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Evaluation studies planned include qualitative and quantitative methodology. We have already described a number of methods used to solicit stakeholder input. At the time input is being sought from these groups, boards, and individuals, we are also soliciting feedback on the pertinence and effectiveness of our current programs. This information is primarily qualitative, but provides important feedback on the program. Similar input will be sought from UW Extension's issue oriented teams. In the competitive re-application process for WAES projects, project productivity (past performance) and impact are also evaluated. This occurs every 2-4 years and is an important factor in whether a scientist's new project will be approved. Overall project success will be evaluated by monitoring the number of patents, graduate students trained, and published peer reviewed publications. While this is an indicator of our overall CALS research program, we believe that it is also representative of our formula grant research component.