

2012 University of Wisconsin Extension Annual Report of Accomplishments and Results

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I. Report Overview

1. Executive Summary

Wisconsin agriculture is a \$59.16 billion industry and provides 354,000 jobs. Agriculture remains a vital part of the economy in nearly all 72 Wisconsin counties, contributing both jobs and income. About one in ten state residents works in a job related to agriculture, including farmers, farm employees, veterinarians, crop and livestock consultants, feed, fuel and crop input suppliers, machinery and equipment manufacturers and dealers, barn builders, agricultural lenders, employees in food processing businesses and all of the businesses needed to support the processing of products produced on the farm. Every job in agriculture supports another 0.89 job elsewhere in Wisconsin. The Economic Impacts of Agriculture in Wisconsin Counties by Steven C. Deller and David Williams March 2011, and 68 county Agriculture Value and Economic Impact brochures are online at: <http://www.uwex.edu/ces/ag/wisag>.

A new study shows that in partnering with agricultural professionals, University of Wisconsin-Extension Cooperative Extension's unique education network is strengthening Wisconsin's agricultural economy. The statewide agricultural extension network - 96 state specialists on University of Wisconsin campuses, 85 agriculture educators in 68 of Wisconsin's 72 counties, public and private educational partners, agricultural professionals and farmers - fosters collaboration, innovation and economic development, and bridges local, state and federal levels to improve farm management and scientific understanding of agriculture. The study involved surveys of agricultural service providers (935 respondents for a 52% response rate), county extension agents (72 respondents for an 85% response rate) and state extension specialists (59 respondents for a 64% response rate) plus 18 key informant interviews. The full evaluation report of results from these four groups is titled Impact of the University of Wisconsin-Extension Cooperative Extension's work and partnerships with Agricultural Service Providers in Wisconsin, from UW-Extension Cooperative Extension and UW-River Falls, April 2012.

Intense heat and severe drought rivaling that of 1988 lingered through most of Wisconsin and the Midwest through 2012, compounded by widespread late spring frost and even flooding in Northwest Wisconsin. Extension campus and county faculty and staff responded quickly to immediate issues of the drought. Planning for, coordinating and leading a longer-term response effort that focuses on the human/family, production and financial aspects of this challenge is one of Cooperative Extension's primary purposes - to respond proactively initially and as drought impacts unfold, making sure programs and resources are in place to continue responding appropriately. An extension point person has been designated to work with state specialists, county agriculture and family living educators and partners to coordinate the longer-term response needed.

The 2012 UW-Extension Cooperative Extension Annual Report of Accomplishments describes how interdisciplinary colleagues and partners provide research-based education and assistance to sustain and grow the state's vital agricultural economy - and the \$26.5 billion dairy industry supporting more than 146,000 jobs at its heart - across seven planned programs including results from the agricultural service providers evaluation study, as well as responding to severe drought during 2012:

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. Food Safety

5. Childhood Obesity
6. Climate Change
7. Sustainable Energy
8. Wisconsin Cooperative Extension Response to the Drought

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

For 2012, University of Wisconsin-Extension Cooperative Extension reports collaboration among North Central Region colleagues and partners providing timely research-based education and assistance to improve food availability through managing and minimizing losses due to plant pests and diseases by prolonging the valuable pest management tool transgenic Bt corn hybrids, enhancing economic and environmental sustainability of agribusinesses by providing local land rental data and teaching how to make fair cropland rental contracts, and strengthening the agricultural economy through partnerships with agricultural service providers as described in the evaluation section of this report.

Strengthening pest management: Researchers warn that Corn Belt farmers may lose a valuable pest management tool - transgenic Bt corn hybrids that produce insect-killing proteins from the soil bacterium *Bacillus thuringiensis* (Bt). Bt-resistant Western corn rootworms (WCR) have been confirmed in Iowa, are suspected in Illinois, Minnesota and Nebraska, and more rootworm feeding than expected with Bt hybrids appears in parts of Wisconsin. As the threat of insect resistance grows, farmers and their advisors need to plant proper refuges and choose seeds based on actual insect pest conditions on their farm. If use of Bt hybrids can be prolonged, transgenic seeds allow farmers to avoid costly insecticides, producing an environmental benefit. WCR Bt-resistance bioassay data from problem cornfields enabled extension educators and partners to deliver information and IPM recommendations in response to farmer questions about unexpected damage and WCR resistance. Pest Management Update meeting survey respondents (375 respondents, a 72% response rate) reported that the extension information they received affected 8,114,670 acres, which they valued at an average \$28.34 per acre - more than \$114 million of value that extension information provided, improving grower management decisions and consultant recommendations.

Valuing fair cropland contracts: Having a written lease has become an important part of any farm business, and interest is growing among both grain farmers and landowners in flex leases that allow the owner to share higher profits but also to assume some of the crop production risks. Local farmland rent survey results became the most frequently requested information from county extension offices in 2012, as well as a vital teaching aid to help rural non-farm landowners and farmers understand variables that can affect the rental rate for each field. Landlords and tenants trained in 2012 reported they gained both valuable information as well as confidence in selecting and drafting the proper lease contract. Just as important is the value of a well-written lease agreement. Farmers who calculate their cost of production to formulate rental rates help ensure that their farm businesses remain economically sustainable. For example, in Pierce County, 65,000 acres of farmland are rented out to tenants, the impact of the decisions associated with rental rates exceeds \$6.6 million in Pierce County, and \$6.1 million on 83,000 rented acres representing 37% of total farmland in St. Croix County.

2. Global Food Security Food Availability: Dairy and Livestock

University of Wisconsin-Extension Cooperative Extension statewide interdisciplinary teams provide research-based education and assistance to sustain and grow the state's vital agricultural economy and the \$26.5 billion dairy industry supporting more than 146,000 jobs at its heart. To increase profitability, productivity and quality of life among farmers and rural communities, the Dairy Team, Livestock Team, Farm and Risk Management Team and Team Forage, colleagues and partners provide timely education and technical assistance for minimizing losses due to animal diseases and enhancing the economic and

environmental sustainability of agribusinesses through on-farm management teams, making OSHA rules meaningful and practical for dairy farms, Spanish-speaking workers and youth by building the capacity of the agriculture service and support industry, and training the next generation.

On-farm management teams improve viability: The average dairy cow generates more than \$20,000 a year in economic activity, which circulates throughout local communities (Deller and Williams, 2011). More than 11,600 dairy farms maintain 1.27 million milk cows, producing 26.1 billion pounds of milk in 2011 (DATCP, 2012). Volatile milk prices and record high feed costs have forced dairy farmers to scrutinize their input costs, along with other production practices that reduce costs, improve labor efficiency, increase production and profitability. Statewide in 2012, 20 county extension agriculture agents facilitated 98 on-farm management teams impacting 9,024 cows, and 8 facilitated Grow Wisconsin Dairy Farm Management Teams on 17 farms with 2,833 cows. Team suggestions led to changes such as increased milk production, decreased somatic cell count (SCC) and higher premiums, decreased feed and labor costs, barn renovation, and 3 successful farm transfers that kept 375 cows on Manitowoc County farms (\$20,000 each) keeping \$7.5 million per year flowing into the local economy.

Making OSHA rules meaningful and practical for dairy farms, Spanish-speaking workers and youth: Agriculture is the most hazardous industry, especially for inexperienced youth and Hispanic workers. After investigating the death of a Hispanic worker, the Occupational Safety and Health Administration (OSHA) issued a statewide local emphasis program (LEP) that dairy farm compliance inspections would start in 2012, focusing on ensuring the safety of Spanish-speaking and youth workers. Every dollar spent on safety nets \$3 to \$6 in savings. Working with many extension colleagues, agricultural safety and health specialist Cheryl Skjolaas trained educational partners including OSHA inspectors who had never been on a dairy farm, conducted dairy farm safety reviews, built on existing youth and bilingual Dairy Worker Trainings on animal handling and skid steer safety, pilot tested a comprehensive Dairy Farm Safety Short Course in English and Spanish with UW-River Falls, and developed educational programs and resources to help producers and industry representatives learn about OSHA compliance and on-farm safety: <http://fyi.uwex.edu/agsafety>

3. Global Food Security and Hunger: Food Accessibility

Wisconsin is a top agriculturally productive state, yet nearly 12% of households are food insecure - lacking access to enough food. For 2012, all four program areas of UW-Extension Cooperative Extension report efforts providing timely research-based education and assistance to increase the food supply for vulnerable populations. Partnerships improve food access for Food Stamp-eligible learners through community food assistance resources, hunger coalitions, community gardens and school breakfast access; build community capacity to increase access to healthy foods for vulnerable populations by gleaning excess crops and improving urban cropland to feed the hungry; and have led to the development of the new interdisciplinary Community Food Systems Team as described in the external factors and evaluation sections of this report. Impacts include:

Food Stamp-eligible learners access more food: Family Living and 852 agency partners reached 17,530 adults and 4,908 children with SNAP-Ed lessons on planning, buying and preparing affordable food. Most adults (86%) said they would plan meals more often, and 80% learned new ways to save money on food. SNAP-Ed made 3,908 educational contacts with adults on accessing community food assistance resources.

Hunger coalitions: Cooperative Extension played key roles in 25 active hunger prevention coalitions in 30 counties. In Winnebago County, a food pantry committee served more than 24,000 households and distributed 1 million pounds of food, while the county expanded a backpack program bringing food home for the weekend.

Improving food access with community gardens: As one of 92 community gardens reached in 45 counties, Waukesha County extension works with Huber Work Release inmates who cannot afford fresh produce for their families. After extension staff taught 180 inmates during the growing season in a large garden plot, 87% said they would eat more vegetables, and 77% said they would eat good sources of fiber often.

Breakfast in the Classroom Toolkit: The Department of Public Instruction (DPI) offered a \$50,000 breakfast in the classroom grant for schools to improve or start a breakfast program in 2013. Extension staff and partners will train 150 school nutrition professionals at the annual School Nutrition Association meeting, and DPI will reach another 450 at its annual school nutrition professionals conference.

New approaches to feeding the hungry: In 2012, an extensive array of extension-led Field to Foodbank partners successfully gleaned more than 450,000 pounds of nutritious excess vegetables - getting snap beans, sweet corn, potatoes and a very large amount of carrots from the farm to those in need - extending shelf life by canning. In addition, improved soil fertility on 150 acres of former prison farm cropland helped supply more than 350,000 pounds of 26 kinds of fresh fruit and vegetables to more than 80 food pantries and meal programs in the Milwaukee area. Together, these donations value \$800,000 and add healthy food to the emergency food system for hunger prevention - easing poverty and food insecurity and strengthening community nutritional sustainability by providing support for more food for poor families.

4. Food Safety

With nearly 500 licensed meat processing facilities creating around \$12.3 billion of economic impact and more than 20,000 jobs, the Wisconsin meat industry consistently ranks in the top 5 for economic output among state manufacturing industries. Wisconsin also has a vibrant "buy local" economy. The need to strengthen and evaluate food safety from farm to table is critical. For 2012, University of Wisconsin-Extension Cooperative Extension reports efforts of interdisciplinary campus and county faculty and staff, colleagues and partners providing timely research-based education and assistance to improve the safety of the food supply by training and supporting the next generation of meat processors and small processors of acidified foods, as well as developing and implementing behavioral interventions to improve consumer food safety practices. Impacts include:

Master Meat Crafters: Within a small margin of error, meat processors must thoroughly understand what pathogens must be controlled and how most effectively to control them. Initiated and directed by extension meat specialist Jeff Sindelar in partnership with the Department of Agriculture, Trade and Consumer Protection, the Master Meat Crafter Training Program addresses food safety education and practical application throughout the program's 2 years. In 2012, 17 graduates earned status as a Master Meat Crafter and 25 are on track to do so in 2014. Graduates apply and share skills needed to improve the safety, consistency, quality and profitability of specialty meats - pleasing customers while expanding sales. Their communities gain good jobs and other economic benefits.

Improving consumer food safety practices: During 2012, UW-Extension Cooperative Extension Supplemental Nutrition Assistance Program Nutrition Education (SNAP-Ed) was offered in 68 of Wisconsin's 72 counties with 852 community partners. SNAP-Ed made 24,303 food safety educational contacts - 7,404 with adults and 17,099 with children:

- After lessons on hand washing, 76% of parents said their children were more willing to wash their hands.
- After a lesson on handling food safely, 28% of adults said they would wash their hands more often.

Preserving food safely: Training and supporting small food processors increases the availability of safe,

wholesome local food, and 100 trained Master Food Preserver volunteers help meet the growing need for food safety education:

- Since 2009, 573 small business owners have completed the Wisconsin Acidified Canned Foods School. Top foods processed were salsas, tomato sauce, pickles and relishes. Extension training helped develop new products, supporting local economies as well.
- More than 30 Winnebago County residents attended the Food Preservation webinar series. The extension educator worked with Oshkosh Community Media Services (OCMS) to air an 8-part series from University of Georgia Extension on cable. OCMS reaches 43,470 potential viewers.
- More than 100 Barron County residents attended food preservation classes. A local Master Food Preservers club also meets monthly to promote food safety with media releases.

5. Childhood Obesity

For 2012, Wisconsin Cooperative Extension reports efforts of Family Living Programs campus and county faculty and staff, colleagues and partners providing timely 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 community partners to address issues related to nutrition and childhood obesity. Diverse participants make informed, science-based decisions regarding nutrition, childhood obesity, health and physical activity and the inter-relationships that exist.

Improving nutrition and physical activity: Extension educators combine healthy eating and physical activity in programs that improve nutrition, increase activity and help create environments to support healthy lifestyles. Get Moving! Walworth County reached 688 participants, 50% children. Families took part in up to 9 different activities during the summer. Rural Crawford County Healthy Living day camps reached 37 youth, and extension developed an interactive series for child care staff on healthy food choices and nutrition policy based on Rethinking Nutrition: Connecting Science and Practice in Early Childhood Settings.

Building community capacity to prevent childhood obesity: Extension educators work with community partners to assess, plan and conduct programs that improve the environment for healthy eating and physical activity, leading and serving in key roles in county coalitions. A unique 7-state project looks at rural communities' ability to provide environments that sustain healthy eating and promote physical activity for 4-year-old low-income children. Researchers and extension specialists from multiple disciplines are developing community readiness, needs assessment and online distance learning tools to document best practices to prevent childhood obesity. The two Wisconsin counties participating, Iron and Crawford, have some of the highest health risk factors in the state, such as high poverty, high food insecurity, small population, lack of transportation and inadequate opportunities for physical activity. In both counties, 12% of county preschoolers are overweight, as are 27% of adults. In 2012, county extension educators reported 24 community-level changes made to support healthy eating (two at the state level), including Farm to School changes in the Clinton and Parkview School districts. Iron County school district's snack policy changed to include only healthy foods, bike lanes were developed and more school community gardens started.

6. Climate Change

For 2012, University of Wisconsin-Extension Cooperative Extension reports collaboration among interdisciplinary colleagues and partners providing timely research-based education and assistance to adapt to and mitigate climate change impacts through developing, implementing and evaluating outreach programs to reduce carbon, nitrogen, energy and water footprints in their communities. As described in the

audience section, 57 trained tribal members learned to recognize climate impacts and adaptation strategies, and the Climate Adaptation Planning Workshop with the Oneida Nation resulted in 21 representatives of 12 tribal nations building capacity to develop plans leading to climate adaptation and mitigation by the tribes. Supporting this work are the Great Lakes National Visitor Center and interagency Wisconsin Initiative on Climate Change Impacts: <http://www.wicci.wisc.edu>

Reducing the nitrogen footprint improves sustainability: Even as agricultural lenders are looking harder at farm financial performance, Wisconsin farmers face increasing regulatory pressures due to agricultural nutrient contributions producing non-point source pollution to all water resources. Dairy and livestock owners increasingly need nutrient management plans for environmental and cost-sharing compliance, as well as for farmland preservation tax credits. The Nutrient Management Farmer Education (NMFE) curriculum combines classroom instruction, individual consultation, and on-farm field trials to engage farmers in designing nutrient management plans they can understand and follow. As of 2012, 4,156 NMFE-trained producers in 53 counties farm at least 1,033,000 acres of cropland and grazing land under nutrient management plans that meet all local, state and federal regulations. The farmer benefit values \$7.2 million for NM plans, and nearly another \$2.6 million for farmland preservation tax credits.

See the external factors section of this report for a description of how corn growers can adjust the N rate for their location using the new Soil Nitrate Monitoring Network web site: <http://uwlab.soils.wisc.edu/soilnitratemonitoring>

Coastal hazards planning: Great Lakes coastal communities must address and plan for many possible impacts of climate change. Online tools are being developed to assist local officials in addressing existing threats and effects of climate change on Great Lakes communities. The resources were piloted at the Online Tools for Coastal Hazards Planning: Working with Great Lakes Communities workshop held at UW-Green Bay in June 2012. Of participants who completed a post-workshop, online evaluation survey for the event (77%):

- 85% indicated that the workshop increased their knowledge of online tools and information for coastal hazards planning.
- 85% believed the workshop was a good use of their time.
- 60% said they learned something new at the workshop that they will apply in their work. At the time of the workshop, only 26% of respondents said they were currently including projected climate changes in their work or planning.

7. Sustainable Energy

University of Wisconsin-Extension Cooperative Extension BioEnergy and the BioEconomy Team cross-program members and partners are conducting integrated research and extension programs, building capacity for developing sustainable energy and scalable conversion technologies among extension colleagues, communities, farmers and industry partners. Curriculum development teams are working on three courses: BioEnergy and Sustainability, On-Farm Energy Conservation and Efficiency, and Anaerobic Digestion - a proven waste-to-energy technology. While multi-million dollar anaerobic digestion systems only run economically on the waste from 500 or more cows, hundreds of thousands of farms worldwide use inexpensive ultra small-scale biodigesters as described in the external factors section of this report.

Anaerobic digestion research and outreach: Wisconsin is the leading state for on-farm anaerobic digestion with more than 30 operational systems. Since large-scale implementation is relatively recent, training is needed for safe production and use of biogas. Maintaining the economic viability of large-scale anaerobic digestion systems requires optimizing operation and assessing feedstocks. Feedstocks are identified and evaluated in extension biowaste specialist Rebecca Larson's lab, then implemented in the field. As a result, facilities are increasing biogas production and more importantly, avoiding highly toxic

feedstocks that cause catastrophic failures. Her recommendations have led to more efficient systems with greater economic sustainability.

Anaerobic Digester Operator Training: Trained large-scale operators now have a greater understanding of their systems, can implement strategies outlined in the training, and are connected with their peers. Collaboration continues - to develop materials on hydrogen sulfide mitigation and removal, record-keeping procedures for evaluation and system optimization, and a biogas network to strengthen communications among researchers, educators, industry partners, producers and operators.

Building capacity for developing sustainable energy: From 2008 to 2010, Wisconsin communities, businesses and tribes undertook energy initiatives in response to external factors and the state "Energy Independence" program. UW-Extension Cooperative Extension educators took part in more than 30 of these efforts - until the state program ended in 2011, along with grants to communities for sustainable energy efforts. Wisconsin Cooperative Extension obtained a 2-year grant from the U.S. Department of Energy, forming a partnership with the State Energy Office to boost energy efficiency, renewable energy and bioenergy progress. Extension educators in each county and 140 Energy Independent Communities were surveyed to form a list of local officials, school districts and others interested in being part of a statewide energy network. Results were used to design the new program Energy On Wisconsin. In 2012, the first 3 of 7 face-to-face meetings were held on topics from the survey. Much effort went into building relationships with local officials, experts, businesses, nonprofits and state groups who are already sharing and acting on what they learned.

8. Wisconsin Cooperative Extension Response to the Drought

Southern Wisconsin was on the northern boundary of what USDA-ERS termed the "most severe and extensive drought in at least 25 years." On July 25, USDA declared 23 Southern Wisconsin counties as natural disaster areas. UW-Extension Cooperative Extension specialists and agents had already met via conference call on July 6 to discuss how the dry spell was affecting the nearly \$60 billion agriculture industry - drought posed challenges for both urban and rural residents, and farmers needed information to make decisions about crops and livestock. Within hours, the Extension Responds-Drought 2012 web site was delivering timely, research-based information, receiving 17,094 page views by August 12: <http://fyi.uwex.edu/drought2012>

Timely information improves decisions: Campus and county faculty and staff addressed urgent needs. They walked fields, discussed management for specific cropping situations, advised on livestock feed and animal comfort, provided tips for human heat-related safety and comfort, gave advice for gardens, turfgrass and landscape plants, and worked with partners to provide educational programs, disseminate information and facilitate emergency response. The ANRE program director serves on the Wisconsin Drought Task Force. An extension point person has been designated to work with state specialists, county agriculture and family living educators and partners to coordinate the longer-term response needed. The extension Farmer to Farmer web site connects farmers with each other for buying and selling forage and corn, and with available pastures: <http://farmertofarmer.uwex.edu>

Improving drought-stricken crop yield: Statewide, producers and agricultural professionals were assisted on forage management and feeding practices to minimize drought impacts. Twenty county agents and state specialists held 48 meetings and field days to address drought-related forage management and feeding issues, reaching 4,198 producers and agricultural professionals, and 26 agents and specialists reported 2,438 individual contacts through on-farm and phone calls, etc. on drought-related forage management and feeding issues. For example, Green County family living and agriculture educators working with local partners coordinated 3 meetings reaching 350 farmers and agricultural professionals on plant mortality, spider mites in soybeans, nitrates in corn silage, pricing drought-stressed corn silage,

alfalfa cutting management, alternative forage options, corn smut and aflatoxins. Specialists addressed crop insurance, mental health and stress issues, and tested 38 samples of corn silage for nitrate levels - 11% tested higher than 1,000 ppm for nitrates, which could have been toxic to cattle. These actions prevented more than 4,000 acres of drought-stressed corn silage from being harvested prematurely. Rain in late July and August improved the moisture levels in plants and ensured that remaining feed fermented properly in storage.

Total Actual Amount of professional FTEs/SYs for this State

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	82.0	0.0	0.0	0.0
Actual	111.0	0.0	0.0	0.0

II. Merit Review Process

1. The Merit Review Process that was Employed for this year

- 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

Merit review is ongoing as statewide self-directed teams develop specifics for the duration of 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, and report progress toward planned outcomes.

Merit reviews are conducted jointly by team leaders, program directors, and multi-state and regional partners. 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.

University of Wisconsin-Extension 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 and reading level. Scholarly peer review and cultural review assure the quality and relevance of educational materials and outreach scholarship.

At the county level, local programming addresses priority issues identified through strategic program planning and on-going needs assessment. Local elected officials review county programs as part of their oversight of extension programming.

III. Stakeholder Input

1. Actions taken to seek stakeholder input that encouraged 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

Brief explanation.

Extension's program development model 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.

Cooperative Extension campus and county faculty and staff participate in regular grower, producer, consumer, network, agency, school, local, state and tribal government, business and community coalition meetings to stay informed of key stakeholders' changing needs. Extension colleagues are connected by email ListServ, blogs and online newsletters, and shared resources such as teleconferences and webinars, eXtension Communities of Practice, and the national Extension Disaster Education Network (EDEN) to quickly address critical and emerging issues.

2(A). A brief statement of the process that was 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
- Use External Focus Groups
- Open Listening Sessions
- Needs Assessments
- Use Surveys

Brief explanation.

Stakeholder identification and involvement are key components of UW-Extension Cooperative Extension's program development process. While county offices have latitude in tailoring their planning process to their unique needs, they strongly encouraged to use methods that solicit feedback from their communities' diverse populations and from both internal and external stakeholders of extension. Ongoing county civil rights reviews examine the methods used during the stakeholder identification phase and formulate recommendations intended to strengthen this aspect in future planning initiatives.

2(B). A brief statement of the process that was 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.

Input has been gathered from diverse and under-represented audiences statewide through focus groups, interviews, listening sessions and case studies. When appropriate, teams develop culturally sensitive educational strategies; translate or interpret materials into appropriate languages; and partner with agencies and groups representing the needs of under-served and under-represented populations. In addition, statewide team efforts must be viewed in relation to the local context, where all 72 of Wisconsin Cooperative Extension county offices have civil rights plans designed to reach those traditionally under-served.

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 which inform the work of statewide program area teams and are incorporated in budget and staffing decisions.

Brief Explanation of what you learned from your Stakeholders

Stakeholders from three American Indian tribes and Wisconsin's 72 counties identified more than 400 issues. An analysis of these issues identified the following themes:

Economic and Financial Capital: Improve individual/family financial security; Increase business profitability; Improve conditions that support local economy.

Human and Cultural Capital: Life skills development; Optimal conditions for child development created; Family relationships enhanced; Physical needs met; Diverse populations gain social, economic power; Diverse perspectives positively influence community.

Natural Capital: Individual actions conserve, protect, and enhance natural environment; Healthier natural environment results from community action.

Social and Organizational Capital: Skills developed for community benefit; Organizations developed to benefit community; Citizens act to improve community.

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
8774280	0	0	0

2. Totaled Actual dollars from Planned Programs Inputs				
Extension			Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	5300095	0	0	0
Actual Matching	5300095	0	0	0
Actual All Other	0	0	0	0
Total Actual Expended	10600190	0	0	0

3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous				
Carryover	0	0	0	0

V. Planned Program Table of Content

S. No.	PROGRAM NAME
1	Global Food Security, Food Availability: Crops and Agronomic Plants
2	Global Food Security, Food Availability: Dairy and Livestock
3	Global Food Security, Food Accessibility: Hunger
4	Food Safety
5	Childhood Obesity
6	Climate Change
7	Sustainable Energy
8	Wisconsin Cooperative Extension Response to the Drought

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Global Food Security, Food Availability: Crops and Agronomic Plants

Reporting on this Program

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%			
133	Pollution Prevention and Mitigation	10%			
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	10%			
205	Plant Management Systems	10%			
216	Integrated Pest Management Systems	20%			
601	Economics of Agricultural Production and Farm Management	25%			
608	Community Resource Planning and Development	5%			
	Total	100%			

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	13.0	0.0	0.0	0.0
Actual Paid Professional	24.3	0.0	0.0	0.0
Actual Volunteer	344.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
1140849	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
1140849	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

For 2012, University of Wisconsin-Extension Cooperative Extension reports collaboration among North Central Region colleagues and partners providing timely research-based education and assistance to improve food availability through managing and minimizing losses due to plant pests and diseases by prolonging the valuable pest management tool transgenic Bt corn hybrids, enhancing economic and environmental sustainability of agribusinesses by providing local land rental data and teaching how to make fair cropland rental contracts, and strengthening the agricultural economy through partnerships with agricultural service providers as described in the evaluation section of this report.

Strengthening pest management: Researchers warn that Corn Belt farmers may lose a valuable pest management tool - transgenic Bt corn hybrids that produce insect-killing proteins from the soil bacterium *Bacillus thuringiensis* (Bt). Bt-resistant Western corn rootworms (WCR) have been confirmed in Iowa, are suspected in Illinois, Minnesota and Nebraska, and more rootworm feeding than expected with Bt hybrids appears in parts of Wisconsin. As the threat of insect resistance grows, farmers and their advisors need to plant proper refuges and choose seeds based on actual insect pest conditions on their farm. If use of Bt hybrids can be prolonged, transgenic seeds allow farmers to avoid costly insecticides, producing an environmental benefit. WCR Bt-resistance bioassay data from problem cornfields enabled extension educators and partners to deliver information and IPM recommendations in response to farmer questions about unexpected damage and WCR resistance. Pest Management Update meeting survey respondents (375 respondents, a 72% response rate) reported that the extension information they received affected 8,114,670 acres, which they valued at an average \$28.34 per acre - more than \$114 million of value that extension information provided, improving grower management decisions and consultant recommendations.

Valuing fair cropland contracts: Having a written lease has become an important part of any farm business, and interest is growing among both grain farmers and landowners in flex leases that allow the owner to share higher profits but also to assume some of the crop production risks. Local farmland rent survey results became the most frequently requested information from county extension offices in 2012, as well as a vital teaching aid to help rural non-farm landowners and farmers understand variables that can affect the rental rate for each field. Landlords and tenants trained in 2012 reported they gained both valuable information as well as confidence in selecting and drafting the proper lease contract. Just as important is the value of a well-written lease agreement. Farmers who calculate their cost of production to formulate rental rates help ensure that their farm businesses remain economically sustainable. For example, in Pierce County, 65,000 acres of farmland are rented out to tenants, the impact of the decisions associated with rental rates exceeds \$6.6 million in Pierce County, and \$6.1 million on 83,000 rented acres representing 37% of total farmland in St. Croix County.

2. Brief description of the target audience

Cooperative Extension reached an estimated 54,861 adults and 3,457 youth through direct teaching methods. The audience includes North Central Region colleagues, agency scientists, agricultural professionals and other educational partners, grains, commercial vegetable and fruit crop growers and workers, 4-H youth and trained volunteer leaders, grower associations, food processors and entrepreneurs, food coalitions and cooperatives, seed dealers, agricultural service providers, agronomic retail and wholesale suppliers, farm lenders, rural insurance, local and tribal officials, planning commissions, state and federal rural development and regulatory agencies, and others.

Simply counting educational contacts doesn't capture the extent of a program's reach. For example, the 1,525 agricultural professionals who attended the 2012 Wisconsin Crop Management Conference from Wisconsin, Minnesota, Iowa, Illinois, Indiana and Michigan produce a large multiplier effect as Wisconsin Cooperative Extension research-based recommendations ultimately reach an increasing portion of the Great Lakes Region crop production sector including farmers. Extension Integrated Pest Management and other specialists reinforce this work through regional professional development trainings for Wisconsin's 620 Certified Crop Advisors who earn 40 hours of continuing education units every 2 years to remain certified.

3. How was eXtension used?

Wisconsin Cooperative Extension campus and county faculty and staff participate in various communities of practice, engaging with colleagues around the country to improve the educational content of research-based programs and assistance delivered to residents across the state and region. Extension colleagues are connected by email ListServ, blogs and online newsletters, and shared resources such as teleconferences and webinars, eXtension Communities of Practice, and the national Extension Disaster Education Network (EDEN) to quickly address critical and emerging issues such as responding to extreme weather and Western corn rootworm resistance to Bt corn during 2012. Interdisciplinary colleagues and other professionals in this network include University of Wisconsin researchers on the Madison, Platteville, River Falls and Stevens Point campuses, working with 3 tribes, and at 11 agricultural research stations.

In 2012, extension field and forage crops entomology specialist Eileen Cullen chaired the North Central Coordinating Committee NCCC-46 - Development, Optimization, and Delivery of Management Strategies for Corn Rootworm and Other Below-ground Insect Pests - a multi-state group of independent university scientists working on aspects of corn rootworm biology and management. The 22 NCCC-46 entomologists working on corn rootworm suggested changes needed to prolong use of transgenic Bt corn in a letter to the Environmental Protection Agency posted March 7, 2012:<http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OPP-2011-0922-0013>

North Central Farm Management Extension Committee Ag Lease 101 Team members include Wisconsin extension farm management specialist Arlin Brannstrom and farm law specialist Phil Harris (Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin):
<http://ohioagmanager.osu.edu/farm-rents/ag-lease-101-new-website-housing-north-central-lease-bulletins-and-sample-leases>

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	54861	0	3457	0

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

Patent Applications Submitted

Year: 2012

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	61	60	121

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- {No Data Entered}

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	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 Measures

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	114000000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Researchers warn that Corn Belt farmers may lose a valuable pest management tool - transgenic Bt corn hybrids that produce insect-killing proteins from the soil bacterium *Bacillus thuringiensis* (Bt). Widespread planting of Bt corn creates selection pressure for target insects to develop resistance. To minimize Bt resistance, the Environmental Protection Agency (EPA) requires farmers to plant refuges of corn that lack the Bt toxin, where susceptible rootworms can pass on their genes to the population. Yet Bt-resistant Western corn rootworms (WCR) have been confirmed in Iowa, are suspected in Illinois, Minnesota and Nebraska, and more rootworm feeding than expected with Bt hybrids appears in parts of Wisconsin. As the threat of insect resistance grows, farmers and their advisors need to plant proper refuges and choose seeds based on actual insect pest conditions on their farm.

What has been done

In 2012, University of Wisconsin-Extension Cooperative Extension field and forage crops entomology specialist Eileen Cullen led colleagues in 6 neighboring states and the NCCC-46 multi-state committee of 22 independent university scientists researching, documenting and mapping clear information on WCR Bt resistance to increase capacity to respond with IPM recommended practices among extension educators, IPM specialists and center directors, 523 crop consultants, agribusiness professionals and growers, 35 independent seed dealers and growers, and other stakeholders through professional networks, EPA, extension publications and local, state and national news media.

During the 2012 growing season, Cullen coordinated efforts of extension entomology specialists at Land Grant universities throughout the North Central Region to identify Bt corn rootworm-protected cornfields with unexpected rootworm feeding damage. Around 45 WCR populations were collected across 6 states from Bt rootworm-protected cornfields with higher than expected root damage - Illinois, Iowa, Michigan, Minnesota, Nebraska and South Dakota. UW-Madison

extension entomology received at least three field reports, but beetles were not collected due to 2012 drought - soil was baked and corn was chopped for silage. Bioassays take 6 to 9 months and results are expected by fall 2013.

Results

Strengthening pest management: More corn hybrids contain multiple transgenic traits, and refuge requirements are changing for multi-trait corn. If use of Bt hybrids can be prolonged, transgenic seeds allow farmers to avoid buying and applying costly insecticides, producing an environmental benefit. Resistance bioassay data from problem fields (higher than expected damage to Bt rootworm-protected corn) enabled extension educators and partners to deliver information and IPM recommendations in response to farmer questions about unexpected damage and WCR resistance to Bt corn. Pest Management Update meeting survey respondents (375 respondents, a 72% response rate) reported that the extension information they received affected 8,114,670 acres, which they valued at an average \$28.34 per acre - more than \$114 million of value that extension information provided, improving grower management decisions and consultant recommendations.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
205	Plant Management Systems
216	Integrated Pest Management Systems
601	Economics of Agricultural Production and Farm Management

Outcome #2

1. Outcome Measures

Enhance the economic and environmental sustainability of agribusiness.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Record crop production and high grain prices contributed to a 38% rise in cash rents in Wisconsin and other Corn Belt states. High commodity prices, low interest rates, and high farm incomes also drove farmland prices 25% higher. Renting cropland is an important transaction for both landowners and farmers - providing needed income for rural elderly owners living on fixed incomes, yet a major expense for farmers without any assurance of return on their investment due to variables such as weather, market price and competition for farmland. As a result, landowners and farmers are increasingly asking their county extension offices: "What is cropland renting for in my area?" This sparked a need for local-level survey information on farmland rental rates, leasing options and negotiating skills for writing fair rental contracts.

What has been done

In 2011, Dunn County agriculture agent Katie Wantoch led Western Wisconsin colleagues conducting local farmland rate surveys of 5,000 farmers and non-operating landowners in 10 counties. Results were compiled and summarized with extension farm management specialist Arlin Brannstrom, Center for Dairy Profitability. In 2012, survey results reached more than 300 landowners and renters through Renting Farm Assets Workshops in the Chippewa Valley, and 169 attended 9 workshops in 7 western counties. The Farm and Risk Management Team reached 223 through a statewide Renting Farm Assets webinar, 120 farm lenders and professionals at the Western Wisconsin Ag Lenders Conference, colleagues at the annual Agriculture and Natural Resources Extension Conference, plus insurance company and USDA Farm Service Agency staff. Participants learned about legal issues, landlord-tenant relationships, written contract templates and alternative methods for determining fair rental rates. The Western Wisconsin Farmland Rental Rate Survey Summary is published at: <http://fyi.uwex.edu/farmteam>

Results

Valuing fair cropland contracts: Having a written lease has become an important part of any farm business, and interest is growing among both grain farmers and landowners in flex leases that allow the owner to share higher profits but also to assume some of the crop production risks. Local farmland rent survey results became the most frequently requested information from county extension offices in 2012, as well as a vital teaching aid to help rural non-farm landowners and farmers understand variables that can affect the rental rate for each field. Landlords and tenants trained in 2012 reported they gained both valuable information as well as confidence in selecting and drafting the proper lease contract. Just as important is the value of a well-written lease agreement. Farmers who calculate their cost of production to formulate rental rates help ensure that their farm businesses remain economically sustainable. For example, in Pierce County, 65,000 acres of farmland are rented out to tenants, the impact of the decisions associated with rental rates exceeds \$6.6 million in Pierce County, and \$6.1 million on 83,000 rented acres representing 37% of total farmland in St. Croix County.

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management
608	Community Resource Planning and Development

Outcome #3

1. Outcome Measures

Build the capacity of the agriculture service and support industry.

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

Innovations and increased efficiencies in production.

Not Reporting on this Outcome Measure

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

Database development: UW-Extension Cooperative Extension is in the midst of replacing the legacy planning and reporting database, which was closed in 2012. For this report: The 2012 direct contacts for adults reported are the 4-year average of past performance of relevant statewide teams in 2008-2011.

The 2012 program participation is in alignment with previous years. The 2012 direct contacts for youth reported are 4-H enrollments in relevant projects reported on the ES-237 form for 2011-2012.

Government regulations: In 2012, extension field and forage crops entomology specialist Eileen Cullen chaired the North Central Coordinating Committee NCCC-46 -Development, Optimization, and Delivery of Management Strategies for Corn Rootworm and Other Below-ground Insect Pests - a multi-state group of independent university scientists working on aspects of corn rootworm biology and management. The 22 NCCC-46 entomologists working on corn rootworm suggested changes needed to prolong use of transgenic Bt corn in a letter to the Environmental Protection Agency posted March 7, 2012: <http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OPP-2011-0922-0013>

Natural disasters: Intense heat and severe drought rivaling that of 1988 lingered through most of Wisconsin and the Midwest through 2012, compounded by widespread late frost and even some flooding. University of Wisconsin-Extension Cooperative Extension campus and county faculty and staff responded quickly to immediate issues of the drought such as management alternatives for highly stressed corn, dealing with futures contracts and crop insurance, alternative crops that could be planted if the corn crop were lost, securing hay and other feed from alternative sources, family financial stress and more. Planning for, coordinating and leading a longer-term response effort that focuses on the human/family, production and financial aspects of this challenge is one of Cooperative Extension's primary purposes - to respond proactively now so that as drought impacts unfold, programs and resources are in place to continue responding appropriately.

UW-Extension Cooperative Extension has devoted resources to work collaboratively with partner agencies to address challenges involving production, financial, and humans responding to stressful situations. An extension point person has been designated to work with state specialists, county agriculture and family living educators and partners to coordinate the longer-term response needed. See the report added for 2012 Wisconsin Cooperative Extension Response to the Drought.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Strengthening the agricultural economy through partnerships with agricultural service providers: In partnering with agricultural professionals, University of Wisconsin-Extension Cooperative Extension's unique education network is strengthening Wisconsin's agricultural economy, a new study shows. The statewide extension network - 96 state specialists on University of Wisconsin campuses, 85 agriculture educators in 68 of Wisconsin's 72 counties, public and private educational partners and growers - fosters collaboration, innovation and economic development, and bridges local, state and federal levels to improve farm management and scientific understanding of agriculture.

For the 3-year study, a 12-member evaluation team examined a question raised by funders: "Why do we need a county agricultural agent when we have private sector agricultural consultants?" While agricultural extension has traditionally served farmers, agricultural service providers such as crop consultants, cooperative or private business sales staff, veterinarians, dairy nutritionists, lenders and others are increasingly turning to extension for professional development training and support, and validation of best management advice they share with customers. Partnerships with trained agricultural service providers help Cooperative Extension state specialists and county agricultural agents bolster Wisconsin's \$59.16 billion agriculture industry employing 354,000 people.

The study team reports that nearly all 935 agricultural service providers responding to the evaluation survey agreed that Cooperative Extension has contributed to better farm management practices and better scientific understanding of agriculture. Many credited extension personnel with facilitating networks and collaborations and building bridges among government agencies. Impacts include:

- 95% agreed that Cooperative Extension has contributed to both better farm management practices as well as better scientific understanding of agriculture.
- 85% agreed that Cooperative Extension has helped them improve their services to their customers.
- 79% said extension personnel are important in facilitating networks and collaboration in

Wisconsin's agricultural sector.

- 78% said extension recommendations have improved their own or their clients' profitability.
- Half to three-quarters credited Cooperative Extension information and assistance with being research-based, trustworthy, consumer-friendly, accessible, timely and responsive, and providing an acceptable return for time and money invested.
- 71% said extension plays a key role in bridging government agencies at the local, state and federal levels, strengthening relationships and use of research findings.
- Around two-thirds said their professional networks have expanded and they have seen benefits such as improving their own or their clients' environmental impact.

Key Items of Evaluation

Strengthening the agricultural economy through partnerships with agricultural service providers: Researchers describe these impacts in terms of agricultural innovation, setting extension within a complex innovation system as one of many actors contributing to development, diffusion and use of agricultural information by farmers and other decision makers. In this context, extension is not just a conduit transferring information from scientists to farmers. Rather, extension plays a key role as an innovation intermediary and boundary organization in bridging and facilitating relationships among actors in the innovation system, strengthening these relationships and enhancing capacity to access, adapt and apply new knowledge, tools and technology.

Actors in the agricultural innovation system include agricultural entrepreneurs, farmers, farm organizations, researchers and extension personnel, consultants, policy makers, suppliers, processing industries, retailers, customers, institutions, local, state, tribal and federal agencies. Multiple actors form networks to engage in a process of joint learning and negotiation that shapes agricultural innovation. Here are some ways county agricultural educators carry out their innovation intermediary and boundary organization roles to achieve these impacts:

- Extension county agriculture agents help negotiate the boundary between science and decision makers by facilitating dialogue among farmers, scientists and agricultural service providers, both encouraging research agendas rooted in farmers' needs and interests as well as identifying the right problems to address.
- These local educators translate scientific information into site-specific practical language and guidance they share through electronic and social networks.
- They manage demonstration projects and collaborate with state specialists to integrate farmers into applied research projects conducted on their farms. Based on what they discover, county agents and state specialists then share best practice recommendations with farmers, grower associations, colleagues and other agricultural professionals.

The study involved surveys of agricultural service providers (935 respondents for a 52% response rate), county extension agents (72 respondents for an 85% response rate) and state extension specialists (59 respondents for a 64% response rate) plus 18 key informant interviews. The full evaluation report of results from these four groups is titled Impact of the University of Wisconsin-Extension Cooperative Extension's work and partnerships with Agricultural Service Providers in Wisconsin, from UW-Extension Cooperative Extension and UW-River Falls, April 2012.

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Global Food Security, Food Availability: Dairy and Livestock

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
301	Reproductive Performance of Animals	10%			
307	Animal Management Systems	20%			
308	Improved Animal Products (Before Harvest)	5%			
311	Animal Diseases	5%			
315	Animal Welfare/Well-Being and Protection	5%			
601	Economics of Agricultural Production and Farm Management	20%			
602	Business Management, Finance, and Taxation	15%			
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	10%			
806	Youth Development	10%			
	Total	100%			

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	36.0	0.0	0.0	0.0
Actual Paid Professional	35.4	0.0	0.0	0.0
Actual Volunteer	4002.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
1813290	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
1813290	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

University of Wisconsin-Extension Cooperative Extension statewide interdisciplinary teams provide research-based education and assistance to sustain and grow the state's vital agricultural economy and the \$26.5 billion dairy industry supporting more than 146,000 jobs at its heart. To increase profitability, productivity and quality of life among farmers and rural communities, the Dairy Team, Livestock Team, Farm and Risk Management Team and Team Forage, colleagues and partners provide timely education and technical assistance for minimizing losses due to animal diseases and enhancing the economic and environmental sustainability of agribusinesses through on-farm management teams, making OSHA rules meaningful and practical for dairy farms, Spanish-speaking workers and youth by building the capacity of the agriculture service and support industry, and training the next generation.

On-farm management teams improve viability: The average dairy cow generates more than \$20,000 a year in economic activity, which circulates throughout local communities (Deller and Williams, 2011). More than 11,600 dairy farms maintain 1.27 million milk cows, producing 26.1 billion pounds of milk in 2011 (DATCP, 2012). Volatile milk prices and record high feed costs have forced dairy farmers to scrutinize their input costs, along with other production practices that reduce costs, improve labor efficiency, increase production and profitability. Statewide in 2012, 20 county extension agriculture agents facilitated 98 on-farm management teams impacting 9,024 cows, and 8 facilitated Grow Wisconsin Dairy Farm Management Teams on 17 farms with 2,833 cows. Team suggestions led to changes such as increased milk production, decreased somatic cell count (SCC) and higher premiums, decreased feed and labor costs, barn renovation, and 3 successful farm transfers that kept 375 cows on Manitowoc County farms (\$20,000 each) keeping \$7.5 million per year flowing into the local economy.

Making OSHA rules meaningful and practical for dairy farms, Spanish-speaking workers and youth: Agriculture is the most hazardous industry, especially for inexperienced youth and Hispanic workers. After investigating the death of a Hispanic worker, the Occupational Safety and Health Administration (OSHA) issued a statewide local emphasis program (LEP) that dairy farm compliance inspections would start in 2012, focusing on ensuring the safety of Spanish-speaking and youth workers. Every dollar spent on safety nets \$3 to \$6 in savings. Working with many extension colleagues, agricultural safety and health specialist Cheryl Skjolaas trained educational partners including OSHA inspectors who had never been on a dairy farm, conducted dairy farm safety reviews, built on existing youth and bilingual Dairy Worker Trainings on animal handling and skid steer safety, pilot tested a comprehensive Dairy Farm Safety Short Course in English and Spanish with UW-River Falls, and developed educational programs and resources to help producers and industry representatives learn about OSHA compliance and on-farm safety: <http://fyi.uwex.edu/agsafety>

2. Brief description of the target audience

Cooperative Extension reached an estimated 163,887 adults and 24,240 youth through direct teaching methods. The audience includes extension colleagues, veterinarians, agricultural professionals and other educational partners, youth and adult dairy and livestock producers and workers, 4-H youth and trained volunteer leaders, forage growers and grazing networks, producer associations, cheesemakers, meat and dairy food processors and entrepreneurs, cooperatives, agricultural service providers and industry field representatives, insurance agents, farm safety and health professionals, farm safety and design consultants, farm lenders, local and tribal officials, and state and federal regulatory agencies. Integrated faculty and county extension agents are engaged in international and multi-state collaborations to increase sustainability of the food supply by developing new and updated research-based recommendations for farm owners and managers nationwide.

Reaching under-served audiences: Bilingual Dairy Worker Trainings are developed in English and Spanish with the UW-Madison Babcock Institute for International Dairy Research and Development, so more dairy workers are learning calf care, reproductive care, milking, feeding and herdsmanship skills, standard best management and disease-prevention practices, animal handling and farm safety. The Dairy Partner/El Compañero newsletter reinforces trainings including OSHA safety rules at their 5th Grade reading level for more than 2,500 Spanish-speaking dairy workers on 1,200 Wisconsin farms and online: <http://fyi.uwex.edu/dairypartnerelcompanero>

3. How was eXtension used?

Wisconsin Cooperative Extension campus and county faculty and staff participate in various communities of practice, engaging with colleagues around the country to improve the educational content of research-based programs and assistance delivered to residents across the state and region. Extension colleagues are connected by email ListServ, blogs and online newsletters, and shared resources such as teleconferences and webinars, eXtension Communities of Practice, and the national Extension Disaster Education Network (EDEN) to quickly address critical and emerging issues such as responding to extreme weather during 2012. In 2012, extension farm safety and health specialist Cheryl Skjolaas contributed to the eXtension FRESH Community of Practice (COP). Interdisciplinary colleagues and other professionals in this network include University of Wisconsin researchers on the Madison, Platteville, River Falls and Stevens Point campuses, at 11 agricultural research stations and the USDA Dairy Forage Research Center.

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	163887	0	24240	0

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

Patent Applications Submitted

Year: 2012
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	25	23	48

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- {No Data Entered}

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	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 Measures

Manage and minimize the loss due to animal disease.

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Enhance the economic and environmental sustainability of agribusinesses.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	7500000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The dairy industry is critically important to the state economy, accounting for \$26.5 billion of Wisconsin's industrial output and more than 146,000 jobs. The average dairy cow generates more than \$20,000 a year in economic activity, which circulates throughout local communities (Deller and Williams, 2011). More than 11,600 dairy farms maintain 1.27 million milk cows, producing 26.1 billion pounds of milk in 2011 (DATCP, 2012). Volatile milk prices and record high feed costs have forced dairy farmers to scrutinize their input costs, along with other production practices that reduce costs, improve labor efficiency, increase production and profitability.

What has been done

University of Wisconsin-Extension Cooperative Extension county agriculture agents have facilitated on-farm management teams for decades. These include Milk Money, Repro Money, dairy modernization, herd health, business and succession planning. Most recent are the Grow Wisconsin Dairy Farm Management Team and Dairy 30x20 programs partnership among the Cooperative Extension Center for Dairy Profitability and county offices, the Wisconsin Department of Agriculture, Trade and Consumer Protection, Wisconsin Technical Colleges and others. Management teams include farm owners and managers, veterinarians, nutrition and crop consultants, milking equipment and dairy plant field representatives, farm lenders, accountants,

technical college instructors, and a county extension agent as team facilitator. Together, they assess and address needs such as expansion, new or appropriate technology, financial success, long-term sustainability, and production-enhancing measures focusing on herd health, nutrition, milk production, resources for operational efficiencies and training, managed grazing, transition to organic production and other goals they identify.

Results

On-farm management teams improve viability: Statewide in 2012, 20 county agriculture agents reported facilitating 98 on-farm management teams impacting 9,024 cows, and 8 facilitated Grow Wisconsin Dairy Farm Management Teams on 17 farms with 2,833 cows. Team suggestions led to changes such as increased milk production, decreased somatic cell count (SCC) and higher premiums, decreased feed and labor costs, barn renovation, and successful transfer to the next generation. For example:

In Manitowoc County: Scott Gunderson facilitates 135 members of management teams on 19 farms. Of farms with dairy management teams: All 9 farmers with milk quality teams met their goals, reducing SCC around 120,000 resulting in higher milk quality premiums, improved milk production, fewer veterinary costs, and less antibiotic use.

74% increased milk production per cow by an average 2.5 pounds per day, or 450 pounds per day based on an average dairy farm with 180 cows. This increased milk production added an extra \$2,400 of gross income per month per farm (2.5 pounds per day times 30 days per month times 180 cows per farm times \$18 per hundredweight of milk equals \$2,400 per month).

Three farm succession transfers that kept 375 cows on Manitowoc County farms (each \$20,000) keep \$7.5 million per year flowing into the local economy.

4. Associated Knowledge Areas

KA Code	Knowledge Area
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

Outcome #3

1. Outcome Measures

Build the capacity of the agriculture service and support industry.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Agriculture is the most hazardous industry, especially for inexperienced youth and Hispanic workers (NSC, 2009). In 2009, a Hispanic dairy worker drowned while operating a skid steer to push manure into a manure storage lagoon, prompting inspection by the Occupational Safety and Health Administration (OSHA). OSHA then issued a statewide local emphasis program (LEP) that Wisconsin dairy farm compliance inspections would start in 2012, focusing on ensuring the safety of Spanish-speaking and youth workers. This resulted in urgent need for resources and training to help dairy producers identify safety risks and develop an on-farm OSHA-compliant safety and health program.

What has been done

The OSHA Dairy Farm LEP applies to around 13,000 dairy cow and dairy goat milk producers licensed by the Department of Agriculture, Trade and Consumer Protection, and 150 Concentrated Animal Feeding Operations (CAFO) under Department of Natural Resources water protection permits. Of 12,551 immigrant dairy workers - 40% of the workforce - 89% are from Mexico. Working with many extension colleagues, agricultural safety and health specialist Cheryl Skjolaas trained educational and agency partners, conducted dairy farm safety reviews, built on existing youth and bilingual Dairy Worker Trainings on animal handling and skid steer safety, pilot tested a comprehensive Dairy Farm Safety Short Course in English and Spanish with UW-River Falls, and developed educational programs and resources to help producers and industry representatives learn about OSHA compliance and on-farm safety:
<http://fyi.uwex.edu/agsafety>

Results

Building capacity to make OSHA rules meaningful and practical for dairy farms, Spanish-speaking workers and youth: Two OSHA area directors, 4 compliance safety officers and 8 compliance inspectors found their on-farm training valuable as they better understand modern dairy facilities, operations, work tasks, safe handling of dairy cattle and what to consider a safe versus hazardous work situation. Most had never been on or had limited exposure to dairy farms. The Dairy Worker Roundtable III informed educational partners, insurance industry and government agency staff, safety and design consultants, dairy producers and professionals. Safety reviews on 36 dairy farms covered around 400 workers handling 40,000 cows. CAFO Update meetings reached 350 producers and industry representatives.

Through the pilot bilingual Dairy Farm Safety Short Course, 9 producers with 75 workers learned how to create a safe workplace, properly train workers and meet OSHA requirements. Ten counties held safety programs training more than 280 dairy workers. Spanish-speaking workers learned proper cattle handling and skid steer safety. Proper cattle handling decreases injury to both cattle and dairy workers, decreases dairy cow stress and increases milk production. In 2012,

70 high school agricultural education and technical college instructors learned OSHA rules for training youth. Safe Operation of Tractor and Machinery training certified 421 youth working on their family farm or dairy farms. The Liberty Mutual Research Institute for Safety estimates that \$3 to \$6 are saved for each dollar invested in safety.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems
315	Animal Welfare/Well-Being and Protection
803	Sociological and Technological Change Affecting Individuals, Families, and Communities
806	Youth Development

Outcome #4

1. Outcome Measures

Innovations and increased efficiencies in production.

Not Reporting on this Outcome Measure

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

Government regulations and population changes: Agriculture is the most hazardous industry, especially for inexperienced youth and Hispanic workers (NSC, 2009). While family members are exempt from OSHA rules, expanding dairy farms hiring more Hispanic workers enabled the Occupational Safety and Health Administration (OSHA) to spend funds for compliance inspections in Wisconsin. In 2009, a Hispanic dairy worker drowned while operating a skid steer to push manure into a manure storage lagoon, prompting OSHA inspection. OSHA then issued a statewide local emphasis program (LEP) that dairy farm compliance inspections would start in 2012, focusing on ensuring the safety of Spanish-speaking and youth workers. This resulted in urgent need for resources and training to help dairy producers identify safety risks and develop an on-farm OSHA-compliant safety and health program. The OSHA Dairy Farm LEP applies to around 13,000 milk producers licensed by the Department of Agriculture, Trade and Consumer Protection, and 150 Concentrated Animal Feeding Operations (CAFO) under Department of Natural Resources water protection permits. Of 12,551 immigrant workers on Wisconsin dairy

farms - 40% of the workforce - 89% are from Mexico.

Natural disasters: Intense heat and severe drought rivaling that of 1988 lingered through most of Wisconsin and the Midwest through 2012, compounded by widespread late frost and even some flooding. University of Wisconsin-Extension Cooperative Extension campus and county faculty and staff responded quickly to immediate issues of the drought such as dealing with heat stress to maintain dairy cow productivity and health, securing hay and other feed from alternative sources, easing family financial stress and more. Planning for, coordinating and leading a longer-term response effort that focuses on the human/family, production and financial aspects of this challenge is one of Cooperative Extension's primary purposes - to respond proactively now so that as drought impacts unfold, programs and resources are in place to continue responding appropriately.

UW-Extension Cooperative Extension has devoted resources to work collaboratively with partner agencies to address challenges involving production, financial, and humans responding to stressful situations. An extension point person has been designated to work with state specialists, county agriculture and family living educators and partners to coordinate the longer-term response needed. See the report added for 2012 Wisconsin Cooperative Extension Response to the Drought.

Database development: UW-Extension Cooperative Extension is in the midst of replacing the legacy planning and reporting database, which was closed in 2012. For this report: The 2012 direct contacts for adults reported are the 4-year average of past performance of relevant statewide teams in 2008-2011. The 2012 program participation is in alignment with previous years. The 2012 direct contacts for youth reported are 4-H enrollments in relevant projects reported on the ES-237 form for 2011-2012.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Global Food Security, Food Accessibility: Hunger

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
205	Plant Management Systems	5%			
601	Economics of Agricultural Production and Farm Management	5%			
602	Business Management, Finance, and Taxation	5%			
604	Marketing and Distribution Practices	15%			
607	Consumer Economics	10%			
608	Community Resource Planning and Development	30%			
703	Nutrition Education and Behavior	15%			
704	Nutrition and Hunger in the Population	15%			
	Total	100%			

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	11.0	0.0	0.0	0.0
Actual Paid Professional	17.0	0.0	0.0	0.0
Actual Volunteer	10621.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
720145	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
720145	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Wisconsin is a top agriculturally productive state, yet nearly 12% of households are food insecure - lacking access to enough food. For 2012, all four program areas of UW-Extension Cooperative Extension report efforts providing timely research-based education and assistance to increase the food supply for vulnerable populations. Partnerships improve food access for Food Stamp-eligible learners through community food assistance resources, hunger coalitions, community gardens and school breakfast access; build community capacity to increase access to healthy foods for vulnerable populations by gleaning excess crops and improving urban cropland to feed the hungry; and are developing the new interdisciplinary Community Food Systems Team as described in the external factors and evaluation sections of this report. Impacts include:

Food Stamp-eligible learners access more food: Family Living and 852 agency partners reached 17,530 adults and 4,908 children with SNAP-Ed lessons on planning, buying and preparing affordable food. Most adults (86%) said they would plan meals more often, and 80% learned new ways to save money on food. SNAP-Ed made 3,908 educational contacts with adults on accessing community food assistance resources.

Hunger coalitions: Cooperative Extension played key roles in 25 active hunger prevention coalitions in 30 counties. In Winnebago County, a food pantry committee served more than 24,000 households and distributed 1 million pounds of food, while the county expanded a backpack program bringing food home for the weekend.

Improving food access with community gardens: As one of 92 community gardens reached in 45 counties, Waukesha County extension works with Huber Work Release inmates who cannot afford fresh produce for their families. After extension staff taught 180 inmates during the growing season in a large garden plot, 87% said they would eat more vegetables, and 77% said they would eat good sources of fiber often.

Breakfast in the Classroom Toolkit: The Department of Public Instruction (DPI) offered a \$50,000 breakfast in the classroom grant for schools to improve or start a breakfast program in 2013. Extension staff and partners will train 150 school nutrition professionals at the annual School Nutrition Association meeting, and DPI will reach another 450 at its annual school nutrition professionals conference.

New approaches to feeding the hungry: In 2012, an extensive array of extension-led Field to Foodbank partners successfully gleaned more than 450,000 pounds of nutritious excess vegetables - getting snap beans, sweet corn, potatoes and a very large amount of carrots from the farm to those in need - extending

shelf life by canning. In addition, improved soil fertility on 150 acres of former prison farm cropland helped supply more than 350,000 pounds of 26 kinds of fresh fruit and vegetables to more than 80 food pantries and meal programs in the Milwaukee area. Together, these donations value \$800,000 and add healthy food to the emergency food system for hunger prevention - easing poverty and food insecurity and strengthening community nutritional sustainability by providing support for more food for poor families.

2. Brief description of the target audience

Cooperative Extension reached an estimated 101,808 adults and 9,971 youth through direct teaching methods. The audience includes colleagues and partners, growers and grower associations, small-scale producers, producer associations, Midwest food processors, 4-H youth and trained volunteer leaders, urban farmers, their employees and community volunteers, gardeners and Master Gardener volunteers, community gardens and farmers' markets, food coalitions and cooperatives, hunger coalitions and task forces, food pantries and other community service providers, 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, state and federal agency personnel, and others.

Reaching under-served audiences: During 2012, UW-Extension Cooperative Extension Supplemental Nutrition Assistance Program Nutrition Education (SNAP-Ed) was offered in 68 of Wisconsin's 72 counties with 852 community partners. SNAP-Ed continues to achieve significant outreach to growing minority populations with relevant educational programming including oral and written resources in Hmong and Spanish.

School breakfasts increase food access: Two of every 5 school-age children in Wisconsin (42%) live in families whose incomes are below the level to qualify for free or reduced-price lunch and breakfast programs. Children who eat breakfast demonstrate both an increased ability to learn as well as improved behavior in the classroom.

3. How was eXtension used?

Wisconsin Cooperative Extension campus and county faculty and staff participate in various communities of practice, engaging with colleagues around the country to improve the educational content of research-based programs and assistance delivered to residents across the state and region. Extension colleagues are connected by email ListServ, blogs and online newsletters, and shared resources such as teleconferences and webinars, eXtension Communities of Practice, and the national Extension Disaster Education Network (EDEN) to quickly address critical and emerging issues such as responding to extreme weather and developing the cross-program Community Foods Systems Team during 2012. Interdisciplinary colleagues and other professionals in this network include University of Wisconsin researchers on the Madison, Platteville, River Falls and Stevens Point campuses, working with 3 tribes, and at 11 agricultural research stations.

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	101808	0	9971	0

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

Patent Applications Submitted

Year: 2012

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	8	16	24

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- {No Data Entered}

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Strengthen local food markets and systems.
2	Increase household access to food for vulnerable populations.
3	Build community capacity to increase access to healthy foods for vulnerable populations.

Outcome #1

1. Outcome Measures

Strengthen local food markets and systems.

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Increase household access to food for vulnerable populations.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Hunger and food insecurity are growing among Wisconsin families. In 2008-2011, nearly 12% of state households were food insecure - lacking access to enough food - about one-third higher than 3 years earlier and echoing national poverty and unemployment trends. Need for food assistance has also grown. In 2010, 17% of Wisconsin households received FoodShare compared to 10% in 2005. From 2005-2009, the average number of children getting free or reduced-price school breakfasts increased by 67%.

What has been done

To reduce food insecurity and hunger for Wisconsin's low-income and vulnerable populations in 2012, University of Wisconsin-Extension Cooperative Extension Family Living Programs:

- Reached Food Stamp-eligible learners through the SNAP-Ed program.
- Collaborated with the Department of Health Services and community agencies on the Wisconsin Food Security Consortium: <http://endhungerwi.org>
- Enhanced underserved populations' access to fresh produce by teaching at 92 community, school and food pantry gardens in 45 counties.
- Worked with the Department of Public Instruction, Wisconsin Milk Marketing Board, school nutrition directors and others on a Breakfast in the Classroom Toolkit for schools considering a breakfast program.

Results

Helping Food Stamp-eligible learners access food: UW-Extension Cooperative Extension Family Living Programs collaborated with 852 agency partners to reach learners. SNAP-Ed made 22,438 educational contacts with 17,530 adults and 4,908 youth/children with lessons on meal planning, buying and preparing affordable food. Following lessons, 86% of 740 adults said they would plan meals more often, and 80% of 1,070 said they learned at least one new way to save money on food. SNAP-Ed made 3,908 educational contacts with adults on accessing community food assistance resources. SNAP-Ed educators routinely and consistently offer participants information about how to access their local SNAP (Food Share) Agency.

Hunger coalitions: Cooperative Extension played key roles in 25 active hunger prevention coalitions in 30 counties. In Winnebago County, a food pantry committee served more than 24,000 households and distributed 1 million pounds of food, while the county expanded a backpack program bringing food home for the weekend.

Improving food access with community gardens: As one of 92 community gardens reached in 45 counties, Waukesha County extension works with Huber Work Release inmates who cannot afford fresh produce for their families. In summer 2012, extension staff taught 180 inmates during the growing season in a large garden plot. After lessons on eating more vegetables and fiber and increasing physical activity, 87% said they would eat more vegetables; 77% said they would eat good sources of fiber often; and 84% said they would try to increase physical activity.

Breakfast in the Classroom Toolkit: In response to toolkit development, the Department of Public Instruction (DPI) offered a \$50,000 breakfast in the classroom grant for schools to improve or start a breakfast program in 2013. Wisconsin Cooperative Extension and partners will train 150 school nutrition professionals on using the toolkit at the annual School Nutrition Association meeting, and DPI will reach another 450 at its annual school nutrition professionals conference.

4. Associated Knowledge Areas

KA Code	Knowledge Area
607	Consumer Economics
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population

Outcome #3

1. Outcome Measures

Build community capacity to increase access to healthy foods for vulnerable populations.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	800000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Wisconsin is a top agriculturally productive state, yet nearly 12% of households are food insecure - lacking access to enough food. Wisconsin is second nationwide in acreage and production of processed vegetables, and third in the value of goods produced. In the past, many acres of vegetable crops were left in the field when those grown exceeded processing capacity. Gleaning food from fields requires harvesting perishable vegetables, handling them safely, getting large volumes processed into cans so they no longer need freezing or refrigeration, then delivering truckloads to where the food can be stored and distributed to hungry families. Meanwhile, new urban farmers welcome integrated research and extension support to get the most from 150 acres of reclaimed cropland to feed the hungry.

What has been done

The Field to Foodbank program developed a unique logistical and communications system to capture excess vegetable production across the food value chain for distribution to those in need. This project is a collaboration among Midwest foodbanks such as Second Harvest of Southern Wisconsin, vegetable growers and grower associations, UW-Madison and UW-Extension Cooperative Extension and private companies. Led by extension horticulture specialist Jed Colquhoun, director of the Institute for Sustainable Agriculture, they developed an electronic logistics system for timely tracking of perishability, food safety, communications and distribution across an array of partners. Neighbors step in to harvest, a manufacturer supplies cans to the processor, and another company sends many trucks to deliver canned vegetables to local food pantries.

Colquhoun, extension soils scientist Matt Ruark and other integrated extension specialists in agronomy, entomology, horticulture and plant pathology also support a large diversified hunger relief effort with hands-on, in-the-field advice from weed control to irrigation and orchard management. To correct nutrient deficiency, the specialists reviewed and adjusted the fertilizer program, adding cover cropping to improve soil fertility on about 150 acres on the grounds of the Milwaukee County House of Corrections. The nonprofit Hunger Task Force leases this cropland to feed the hungry, hundreds of community volunteers and dozens of employees in their job training program work the fields, and everything they harvest supplies nearby food relief sites.

Results

New approaches to feeding the hungry: In 2012, Field to Foodbank partners tested their logistical system by successfully moving more than 450,000 pounds of nutritious excess vegetables - getting snap beans, sweet corn, potatoes and a very large amount of carrots from the farm to those in need - extending shelf life by canning. In addition, improved soil fertility on 150 acres of reclaimed prison farm cropland helped supply more than 350,000 pounds of 26 kinds of fresh fruit and vegetables from apples to zucchini to more than 80 food pantries and meal programs in the

Milwaukee area. Together, these donations value \$800,000 and add healthy food to the emergency food system for hunger prevention - easing poverty and food insecurity by providing support for more food for poor families.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
607	Consumer Economics
608	Community Resource Planning and Development
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Competing Public priorities
- Populations changes (immigration, new cultural groupings, etc.)
- Other (Developing an interdisciplinary Community Food Systems Team; Database development)

Brief Explanation

Database development: UW-Extension Cooperative Extension is in the midst of replacing the legacy planning and reporting database, which was closed in 2012. For this report: The 2012 direct contacts for adults reported are the 4-year average of past performance of relevant statewide teams in 2008-2011. The 2012 program participation is in alignment with previous years. The 2012 direct contacts for youth reported include 4-H enrollments in relevant projects reported on the ES-237 form for 2011-2012. SNAP-Ed 2012 food accessibility teaching contacts for children and youth are added to 4-H youth enrollments for the 2012 Food Accessibility federal report.

Building interdisciplinary collaboration among Wisconsin Cooperative Extension educators working in community food systems: The concept for an interdisciplinary Community Food Systems Team emerged in 2011, and received formal recognition by program directors in 2012 to support multi and interdisciplinary programming approaches. In 2012, rural development outreach specialist Erin Peot was hired at the Center for Community and Economic Development (CCED) to assess statewide need for resources in food systems and address the needs of the emerging Community Food Systems Team.

Capacity-building professional development supported by Program Development and Evaluation included training 19 team members on Whole Measures for Community Food Systems as well as creating an interdisciplinary professional development learning community that will continue through 2013. An evaluation plan based on a developmental evaluation approach was established and is being implemented, see the following Planned Program Evaluation section of this report.

A top priority was to include diverse representation of county educators and campus specialists from all program areas. The coordinating committee includes Andrew Bernhardt, Steve Brachman, Laura Brown, Amber Canto, Carrie Edgar, Kathleen Haas, Greg Lawless, Mike Maddox, Diane Mayerfeld, Samuel Pratsch and Jonathan Rivin, supported by Erin Peot. Work groups supported by Jennifer Blazek and Katie (Sternweis) Wantoch include Farm to Institution, School and Community Gardens, Food Access, Food Waste Management, Agriculture and Food Entrepreneurship, and Evaluation.

By winter 2012, the new Community Food Systems Team partnered with People + Plants in developing the community gardens review series highlighting strategies and successes of garden efforts statewide, reaching 60 attendees plus 22 YouTube viewers of two presentations posted. Another 13 educators and specialists support the coordinating committee, 135 educators have joined the team SharePoint site, 159 members subscribe to the ListServ, and 41 participated in a face-to-face meeting. Lunchtime learning webinars reached more than 100 extension educators and external partners.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Evaluating development of an interdisciplinary Community Food Systems Team:

Implementation of the developmental evaluation approach has fostered and created space for co-learning about the process of developing the multidisciplinary Community Food Systems Team described in the External Factors section of this report. This learning is being captured and shared with the team's coordinating committee, who use evaluation results to inform decision making. The team has also used other evaluation strategies to collect information on specific areas of programming.

For example, in post-program surveys 66% agreed or strongly agreed that lunchtime learning webinars met their expectations. While the webinar series appeared to be most effective in helping more than 100 participants identify resources, strategies, or tools to use in programming, many also responded that they were unsure of how they would apply the information in their work. Providing specific examples and tools for applying information presented will be a focus for future lunchtime learning webinars. Lunchtime learning evaluation results also highlighted opportunities to improve upon use of technology in presenting content, including providing participants with more information on use of web-based software.

The post-program survey of the face-to-face meeting showed that the majority of 41 participants rated the meeting on a whole as excellent (4 on a 4 point scale). Many reported that the new connections and networks they created as a result of the meeting will help them in their work. To this point, participants were asked to map their connection to all the other participants at the beginning of the meeting and then again at the end. An increase in connections was demonstrated in everyone's post-meeting map.

Rural development outreach specialist Erin Peot is working with program development specialist Samuel Pratsch to develop an evaluation plan for 2013 based on the developmental evaluation approach.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Food Safety

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	50%			
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	50%			
Total		100%			

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	6.0	0.0	0.0	0.0
Actual Paid Professional	3.5	0.0	0.0	0.0
Actual Volunteer	153.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
172430	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
172430	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

With nearly 500 licensed meat processing facilities creating around \$12.3 billion of economic impact and more than 20,000 jobs, the Wisconsin meat industry consistently ranks in the top 5 for economic output among state manufacturing industries. Wisconsin also has a vibrant "buy local" economy. The need to strengthen and evaluate food safety from farm to table is critical. For 2012, University of Wisconsin-Extension Cooperative Extension reports efforts of interdisciplinary campus and county faculty and staff, colleagues and partners providing timely research-based education and assistance to improve the safety of the food supply by training and supporting the next generation of meat processors and small processors of acidified foods, as well as developing and implementing behavioral interventions to improve consumer food safety practices. Impacts include:

Master Meat Crafters: Within a small margin of error, meat processors must thoroughly understand what pathogens must be controlled and how most effectively to control them. Initiated and directed by extension meat specialist Jeff Sindelar in partnership with the Department of Agriculture, Trade and Consumer Protection, the Master Meat Crafter Training Program addresses food safety education and practical application throughout the program's 2 years. In 2012, 17 graduates earned status as a Master Meat Crafter and 25 are on track to do so in 2014. Graduates apply and share skills needed to improve the safety, consistency, quality and profitability of specialty meats - pleasing customers while expanding sales. Their communities gain good jobs and other economic benefits.

Improving consumer food safety practices: During 2012, UW-Extension Cooperative Extension Supplemental Nutrition Assistance Program Nutrition Education (SNAP-Ed) was offered in 68 of Wisconsin's 72 counties with 852 community partners. SNAP-Ed made 24,303 food safety educational contacts - 7,404 with adults and 17,099 with children:

- After lessons on hand washing, 76% of parents said their children were more willing to wash their hands.
- After a lesson on handling food safely, 28% of adults said they would wash their hands more often.

Preserving food safely: Training and supporting small food processors increases the availability of safe, wholesome local food, and 100 trained Master Food Preserver volunteers help meet the growing need for food safety education:

- Since 2009, 573 small business owners have completed the Wisconsin Acidified Canned Foods School. Top foods processed were salsas, tomato sauce, pickles and relishes. Extension training helped develop new products, supporting local economies as well.
- More than 30 Winnebago County residents attended the Food Preservation webinar series. The extension educator worked with Oshkosh Community Media Services (OCMS) to air an 8-part series from University of Georgia Extension on cable. OCMS reaches 43,470 potential viewers.
- More than 100 Barron County residents attended food preservation classes. A local Master Food Preservers club also meets monthly to promote food safety with media releases.

2. Brief description of the target audience

Cooperative Extension reached an estimated 10,102 adults and 23,186 youth through direct teaching methods. The audience includes interdisciplinary colleagues and partners, trained Master Food Preserver volunteers, individuals, family decision-makers, 4-H youth and trained volunteer leaders, school-age children and preschoolers, low-income women with infants and young children, fresh market vegetable and fruit growers, sellers and entrepreneurs, crop, dairy and livestock producers, producer associations, artisan cheesemakers, meat processors and Master Meat Crafters, small processors of acidified foods, farmers' markets, local and tribal governments, state and federal regulatory agencies, and others preserving food safely and keeping local food supplies safe and wholesome.

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, 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.

Reaching under-served audiences: During 2012, UW-Extension Cooperative Extension Supplemental Nutrition Assistance Program Nutrition Education (SNAP-Ed) was offered in 68 of Wisconsin's 72 counties with 852 community partners. SNAP-Ed continues to achieve significant outreach to growing minority populations with relevant educational programming including oral and written resources in Hmong and Spanish. In 2012, SNAP-Ed made 24,303 food safety educational contacts - 7,404 with adults and 17,099 with children.

3. How was eXtension used?

Wisconsin Cooperative Extension campus and county faculty and staff participate in various communities of practice, engaging with colleagues around the country to improve the educational content of research-based programs and assistance delivered to residents across the state and region. Extension colleagues are connected by email ListServ, blogs and online newsletters, and shared resources such as teleconferences and webinars, eXtension Communities of Practice, and the national Extension Disaster Education Network (EDEN) to quickly address critical and emerging issues such as responding to extreme weather during 2012. Interdisciplinary colleagues and other professionals in this network include University of Wisconsin researchers on the Madison, Platteville, River Falls and Stevens Point campuses, working with 3 tribes, and at 11 agricultural research stations.

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	10102	0	23186	0

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

Patent Applications Submitted

Year: 2012
 Actual: 1

Patents listed

Rankin, Scott: Patent Issued (P08339US02), March 2011. Intramammary Teat Sealant Formulation and method of using same to reduce or eliminate visual defects in aged cheeses.

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
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Actual	2	18	20
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V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- {No Data Entered}

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

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

Outcome #1

1. Outcome Measures

Improve the safety of the food supply.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The meat industry is a major contributor to Wisconsin's economy. With nearly 500 licensed meat processing facilities creating around \$12.3 billion of economic impact and more than 20,000 jobs, the Wisconsin meat industry consistently ranks in the top 5 for economic output among state manufacturing industries. The Wisconsin meat industry is both diverse and dynamic, resulting in a wide array of needs and requests. From small family businesses to very large multi-plant facilities, all are tasked with the daily challenge of producing safe, high-quality nutritious foods. Within a small margin of error, meat processors must thoroughly understand what pathogens must be controlled and how most effectively to control them. And to ensure that the industry remains sustainable and viable, an extension researcher identified the need for successful inter-generational transfer of expertise.

What has been done

Initiated and directed by extension meat specialist Jeff Sindelar in partnership with the Wisconsin Department of Agriculture, Trade and Consumer Protection, the one-of-a-kind, 2-year Master Meat Crafter Training Program at the University of Wisconsin-Madison Meat Science Laboratory certified its first 17 graduates in 2012, and enrolled 25 candidates for graduation in 2014. Training addresses food safety education and practical application throughout the program's 2 years. While food safety is significantly integrated into five of the program's short courses, the sixth titled Food Safety and Meat Microbiology School is fully food safety-focused - covering all facets of food safety taught by industry experts, coupled with hands-on microbiology laboratories. Graduates learned food safety from micro lab to meat plant, taking home a thorough and comprehensive understanding of pathogenic bacteria with the skills and tools to further develop and improve their own food safety programs:
<http://www.uwex.edu/ces/animalscience/meats/index.cfm>

Results

New Master Meat Crafters strengthen the industry: In 2012, 17 graduates earned status as a Master Meat Crafter and 25 are on track to do so in 2014. Of the first class to graduate, half are the next generation in a family business - 6 trained to take over the family business, and 3 started a business. Each is tasked with producing every pound of product safely every day. Thus, the food safety elements of the Master Meat Crafter Training Program are critical to providing graduates the knowledge, skills and proper tools to process 100% safe food all the time. One third-generation owner and 2012 certified Master Meat Crafter graduate entered products for the first time in a national-level meat product competition, winning awards in four categories including a first place. New Master Meat Crafter graduates apply and share skills needed to improve the safety, consistency, quality and profitability of specialty meats made in Wisconsin - pleasing customers while expanding sales. Their communities gain jobs and other economic benefits. Long-term industry viability is ensured as plants grow, add on, and pass along the business for future generations.

4. Associated Knowledge Areas

KA Code	Knowledge Area
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

Outcome #2

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The World Health Organization and U.S. Centers for Disease Control and Prevention state that foodborne illness is a serious public health problem. The need to strengthen and evaluate food safety from farm to table is critical. Most foodborne illness is due to improper storage, handling and home preparation. Food safety education gives people the knowledge to practice safe food handling behaviors. Wisconsin also has a vibrant "buy local" economy. Farmers wishing to add

value to their crops sell canned pickles, salsas and other products. Processed incorrectly, acidified canned foods may cause illness. The government now requires training before issuing a license. For small food processors, finding training that fits their needs is often a challenge. Evidence-based educational programs conducted by UW-Extension Cooperative Extension address these needs.

What has been done

Extension Family Living educators work with community partners to help create environments with healthy, affordable and safe food. Throughout Wisconsin, Cooperative Extension provides food safety education directly to youth and adult consumers with a special emphasis on reaching limited-resource families. Committed to providing small food processors with food safety training and support, food science extension specialist Barbara Ingham partnered with the Department of Agriculture, Trade and Consumer Protection on a training program for small processors of acidified canned foods. In 2012, she trained 240 new businesses and provided ongoing one-on-one assistance to 194 businesses in Wisconsin, 27 other states and Canada. She also trained 86 employees under the FDA's Better Process Control School to supervise critical functions in the Upper Midwest's vibrant canning industries.

Results

Improving consumer food safety practices: UW-Extension Cooperative Extension SNAP-Ed made 24,303 food safety educational contacts with adults and children:

- 809 adults took part in a lesson on handling food safely. Afterward, 28% said they would wash their hands more often.
- After lessons on hand washing, 1,666 surveys were sent home to parents of participating children: 76% of 516 parents said their children were more willing to wash their hands.

Preserving food safely: Training and supporting small food processors increases the availability of safe, wholesome local food, and 100 trained Master Food Preserver volunteers help meet the growing need for food safety education:

- Since 2009, 573 small business owners have completed the Wisconsin Acidified Canned Foods School. Top foods processed were salsas, tomato sauce, pickles and relishes. Extension training helped develop new products, supporting local economies as well.
- More than 30 Winnebago County residents attended the Food Preservation webinar series. The extension educator worked with Oshkosh Community Media Services (OCMS) to air an 8-part series from University of Georgia Extension on cable. OCMS reaches 43,470 potential viewers.
- More than 100 Barron County residents attended food preservation classes. A local Master Food Preservers club also meets monthly to promote food safety with media releases.

4. Associated Knowledge Areas

KA Code	Knowledge Area
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

V(H). Planned Program (External Factors)

External factors which affected 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.)
- Other (Database development)

Brief Explanation

Natural disasters: Intense heat and severe drought rivaling that of 1988 lingered through most of Wisconsin and the Midwest through 2012, compounded by widespread late frost and even some flooding. University of Wisconsin-Extension Cooperative Extension campus and county faculty and staff responded quickly to immediate issues of the drought. Planning for, coordinating and leading a longer-term response effort that focuses on the human/family, production and financial aspects of this challenge is one of Cooperative Extension's primary purposes - to respond proactively now so that as drought impacts unfold, programs and resources are in place to continue responding appropriately. UW-Extension Cooperative Extension has devoted resources to work collaboratively with partner agencies to address challenges involving production, financial, and humans responding to stressful situations. An extension point person has been designated to work with state specialists, county agriculture and family living educators and partners to coordinate the longer-term response needed. See the report added for 2012 Wisconsin Cooperative Extension Response to the Drought.

Database development: UW-Extension Cooperative Extension is in the midst of replacing the legacy planning and reporting database, which was closed in 2012. For this report: The 2012 direct contacts for adults reported are the 4-year average of past performance of relevant statewide teams in 2008-2011. The 212 program participation is in alignment with previous years. The 2012 direct contacts for youth reported include 4-H enrollments in relevant projects reported on the ES-237 form 2011-2012. SNAP-Ed 2012 food safety teaching contacts for children and youth are added to 4-H youth food safety enrollments for the 2012 Food Safety federal report.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Childhood Obesity

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
703	Nutrition Education and Behavior	75%			
704	Nutrition and Hunger in the Population	10%			
724	Healthy Lifestyle	15%			
	Total	100%			

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	6.0	0.0	0.0	0.0
Actual Paid Professional	2.1	0.0	0.0	0.0
Actual Volunteer	812.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
82621	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
82621	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

For 2012, Wisconsin Cooperative Extension reports efforts of Family Living Programs campus and county faculty and staff, colleagues and partners providing timely 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 community partners to address issues related to nutrition and childhood obesity. Diverse participants make informed, science-based decisions regarding nutrition, childhood obesity, health and physical activity and the inter-relationships that exist.

Improving nutrition and physical activity: Extension educators combine healthy eating and physical activity in programs that improve nutrition, increase activity and help create environments to support healthy lifestyles. Get Moving! Walworth County reached 688 participants, 50% children. Families took part in up to 9 different activities during the summer. Rural Crawford County Healthy Living day camps reached 37 youth, and extension developed an interactive series for child care staff on healthy food choices and nutrition policy based on Rethinking Nutrition: Connecting Science and Practice in Early Childhood Settings.

Building community capacity to prevent childhood obesity: Extension educators work with community partners to assess, plan and conduct programs that improve the environment for healthy eating and physical activity, leading and serving in key roles in county coalitions. A unique 7-state project looks at rural communities' ability to provide environments that sustain healthy eating and promote physical activity for 4-year-old low-income children. Researchers and extension specialists from multiple disciplines are developing community readiness, needs assessment and online distance learning tools to document best practices to prevent childhood obesity. The two Wisconsin counties participating, Iron and Crawford, have some of the highest health risk factors in the state, such as high poverty, high food insecurity, small population, lack of transportation and inadequate opportunities for physical activity. In both counties, 12% of county preschoolers are overweight, as are 27% of adults. In 2012, county extension educators reported 24 community-level changes made to support healthy eating (two at the state level), including Farm to School changes in the Clinton and Parkview School districts. Iron County school district's snack policy changed to include only healthy foods, bike lanes were developed and more school community gardens started.

2. Brief description of the target audience

Cooperative Extension reached an estimated 86,337 adults and 291,493 youth through direct teaching methods. University of Wisconsin-Extension Cooperative Extension Family Living Programs and 4-H Youth Development campus and county faculty and staff provide research-based education directed at preventing childhood obesity for diverse children and youth, caregivers, parents and family members, public and private collaborating and community agencies and others in a variety of educational settings. Primary emphasis is placed on reaching under-represented audiences including low-income; Latino/a, African American, American Indian and Hmong families and youth.

Reaching under-served audiences: During 2012, UW-Extension Cooperative Extension Supplemental Nutrition Assistance Program Nutrition Education (SNAP-Ed) was offered in 68 of Wisconsin's 72 counties with 852 community partners. SNAP-Ed continues to achieve significant outreach to growing minority populations with relevant educational programming including oral and written resources in Hmong and Spanish.

In 2012, 86,337 nutrition educational contacts were recorded with parents of children and 282,178 were recorded with youth. Demographics for the total low-income youth and adults reached by direct teaching methods in 2012, 81% were white, 8% were African American, 3% were Asian American, 3% were American Indian and 5% were of other identity. Of these, 13% identified as Latino/a, who may be of any race.

In 2012, 812 trained extension volunteer leaders provided direct instruction for 9,315 youth ages 8 to 19 in the following food science/nutrition, health and fitness projects: Food science and nutrition: 7,709 Health and fitness: 1,606

3. How was eXtension used?

Wisconsin Cooperative Extension campus and county faculty and staff participate in various communities of practice, engaging with colleagues around the country to improve the educational content of research-based programs and assistance delivered to residents across the state and region. Extension colleagues are connected by email ListServ, blogs and online newsletters, and shared resources such as teleconferences, webinars and eXtension Communities of Practice to efficiently and effectively address critical and emerging issues.

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	86337	0	291493	0

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

Patent Applications Submitted

Year: 2012
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- {No Data Entered}

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Develop and implement behavioral interventions that improve nutrition and increase physical activity.
2	Build capacity among community partners to address issues related to nutrition and childhood obesity.
3	Develop community strategies to address factors influencing excessive weight gain.

Outcome #1

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Wisconsin mirrors national trends showing increased child obesity. UW-Extension educators combine healthy eating and physical activity in programs that improve nutrition, increase activity and help create environments to support healthy lifestyles.

School, childcare, neighborhoods and families all affect people's food and activity choices; childhood obesity prevention efforts will more likely succeed if embedded in social activities.

What has been done

Walworth County UW-Extension planned and conducted family-based activities encouraging children's activity. Get Moving! Walworth County had 688 participants; 50% children. Families took part in up to 9 different activities during the summer, using Facebook to promote the program.

Extension developed an interactive series for child care staff on healthy food choices and nutrition policy based on Rethinking Nutrition: Connecting Science and Practice in Early Childhood Settings (<http://blogs.ces.uwex.edu/ece-nutrition/>)

Crawford County 4-H, Family Living and Nutrition Educators held Healthy Living day camps with physical activities and nutrition education for 37 youth.

Results

Extension educators reached 1241 families/caregivers to encourage healthy eating and physical activity. Participants said they learned about healthy eating (966); intended to eat more healthy foods (542); and said they had eaten more healthy foods (245).

Extension educators reached 1008 families/caregivers to encourage healthy activity levels in

- children. In all, 597 said they understood the benefits of family physical activity; 747 intended to spend time on such activities; and 702 reported that they had done so.
- 67% said they would encourage their family to eat healthy.
 - 67% said they would help their family be more active.
 - 78% reported increased exercise time.

UW-Extension SNAP-Ed staff made:

- 51,612 educational contacts with adults and children to encourage eating whole grains, low-fat meats and beans.
 - After a lesson, 1491 children were offered samples of dried beans; 85% of the children tried the sample and 53% said they would eat beans again; 8% of the children ate beans the next week.
 - After a lesson, 84% of 607 adults asked if they were more likely to eat whole grain foods said yes.
- 32,653 educational contacts with adults and children on consuming recommended amounts of low-fat milk and dairy.
- 6277 educational contacts with adults and children on consuming foods with less fat.
- 14,792 educational contacts with adults and children encouraging physical activity and balancing it with food intake.
 - Following a lesson, 92% of 213 adults said they would try to be more active each day.
- 8938 educational contacts with adults on age-appropriate meals for family members, including infants.
 - 171 parents participated in lessons on feeding their young children. Before the lessons, 53% thought the parent decided how much a child should eat; afterwards, 82% knew the child should decide how much to eat.
- 97,297 educational contacts with adults and children on choosing healthful foods based on Dietary Guidelines.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle

Outcome #2

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Nearly \$150 billion per year is spent on 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, lays out an action plan to prevent childhood obesity that: 1) empowers parents and caregivers; 2) provides healthy food in schools; 3) improves access to healthy, affordable foods; and 4) increases physical activity. A comprehensive, socio-ecological model with multi-level collaborations should be used.

What has been done

Wisconsin Extension educators work with community partners to assess, plan and conduct programs that improve the environment for healthy eating and physical activity. Extension educators lead and serve in key roles in county coalitions focused on childhood obesity.

Mobilizing Rural Communities to Prevent Childhood Obesity is a unique 7-state AFRI-funded project. It looks at rural communities' ability to provide environments that sustain healthy eating and promote physical activity for 4-year-old low-income children. Researchers and Extension specialists from multiple disciplines are developing community readiness, needs assessment and online distance learning tools to document best practices for Extension staff working to prevent childhood obesity. The goals are to create a socio-ecological model for community response to childhood obesity prevention; enhance effectiveness of community coalitions in assessing the environment; and develop effective multi-level strategies to prevent childhood obesity. The two participating counties, Iron and Crawford, have some of the highest health risk factors in the state, such as high poverty, high food insecurity, small population, lack of transportation and inadequate opportunities for physical activity. In both Crawford and Iron County, 12% of county preschoolers are overweight, as are 27% of adults.

Results

County educators reported 24 community-level changes made to support healthy eating (two at the state level), including Farm to School changes in the Clinton and Parkview School districts; Iron County school district's snack policy changed to include only healthy foods; bike lanes developed in Marinette; more school community gardens started.

Extension educators reported 22 community and environmental changes to support physical activity, one at the state level. Examples included working with the public health department to create, publish and distribute a community "Get Active" booklet (Waushara County); and the "Get Moving Program" (Walworth County) that encouraged low-cost local and county park and recreation opportunities. In Waupaca County, Extension educators worked with every school district in the county to create a "Walk to School" day in the fall and a "Bike to School" day every spring to encourage daily physical activity. New bike lanes were built on the main thoroughfare in

Marinette County.

UW-Extension SNAP-Ed made 3908 educational contacts with adults focused on accessing helpful, relevant community programs and resources.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle

Outcome #3

1. Outcome Measures

Develop community strategies to address factors influencing excessive weight gain.

Not Reporting on this Outcome Measure

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

Appropriations changes: In response to growing concerns about childhood obesity, 4-H National Headquarters made healthy living a national priority. Wisconsin extension youth development specialist JulieAnn Stawicki, educators and staff in 10 counties received a National 4-H Council grant to mobilize youth to take action and promote healthy food choices in under-served communities. Programs engaged youth and adult volunteers in afterschool, summer camps and community garden programs that promoted healthier life choices in low-resourced and minority communities. Counties engaged school districts, community coalitions, non-profit agencies and colleagues in new partnerships, such as with American Indian tribes, Hmong community gardens and an urban, predominately African American high school. Programs addressed the importance of diet, exercise and safety on healthy youth development. In addition to nutrition and physical activity, more than 900 youth engaged in meaningful service to their communities, such as garden improvement and partnerships with local food pantries that will continue to serve local residents long after the end of the funding.

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: (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 percent by 2030: http://www.letsmove.gov/tfco_fullreport_may2010.pdf

Natural disasters: Intense heat and severe drought lingered through 2012. UW-Extension Cooperative Extension responded quickly to immediate issues of the drought. Planning for, coordinating and leading a longer-term response effort that focuses on the human/family, production and financial aspects of this challenge is one of Cooperative Extension's primary purposes - to respond proactively now so that as drought impacts unfold, programs and resources are in place to continue responding appropriately. An extension point person has been designated to work with state specialists, county agriculture and family living educators and partners to coordinate the longer-term response needed. See the report added for 2012 Wisconsin Cooperative Extension Response to the Drought.

Database development: UW-Extension Cooperative Extension is in the midst of replacing the legacy planning and reporting database, which was closed in 2012. For the 2012 Childhood Obesity report:

The direct contacts for adults reported are relevant 2012 SNAP-Ed teaching contacts. The 2012 direct contacts for youth reported include 4-H enrollments in relevant projects reported on the ES-237 form for 2011-2012. Relevant SNAP-Ed 2012 teaching contacts for youth are added to 4-H youth food science/nutrition, health and fitness enrollments for the 2012 Childhood Obesity federal report.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Climate Change

Reporting on this Program

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%			
133	Pollution Prevention and Mitigation	20%			
205	Plant Management Systems	10%			
601	Economics of Agricultural Production and Farm Management	10%			
605	Natural Resource and Environmental Economics	20%			
608	Community Resource Planning and Development	30%			
	Total	100%			

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	7.0	0.0	0.0	0.0
Actual Paid Professional	17.0	0.0	0.0	0.0
Actual Volunteer	498.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
791338	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
791338	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

For 2012, University of Wisconsin-Extension Cooperative Extension reports collaboration among interdisciplinary colleagues and partners providing timely research-based education and assistance to adapt to and mitigate climate change impacts through developing, implementing and evaluating outreach programs to reduce carbon, nitrogen, energy and water footprints in their communities. As described in the audience section, 57 trained tribal members learned to recognize climate impacts and adaptation strategies, and the Climate Adaptation Planning Workshop with the Oneida Nation resulted in 21 representatives of 12 tribal nations building capacity to develop plans leading to climate adaptation and mitigation by the tribes. Supporting this work are the Great Lakes National Visitor Center and interagency Wisconsin Initiative on Climate Change Impacts: <http://www.wicci.wisc.edu>

Reducing the nitrogen footprint improves sustainability: Even as agricultural lenders are looking harder at farm financial performance, Wisconsin farmers face increasing regulatory pressures due to agricultural nutrient contributions producing non-point source pollution to all water resources. Dairy and livestock owners increasingly need nutrient management plans for environmental and cost-sharing compliance, as well as for farmland preservation tax credits. The Nutrient Management Farmer Education (NMFE) curriculum combines classroom instruction, individual consultation, and on-farm field trials to engage farmers in designing nutrient management plans they can understand and follow. As of 2012, 4,156 NMFE-trained producers in 53 counties farm at least 1,033,000 acres of cropland and grazing land under nutrient management plans that meet all local, state and federal regulations. The farmer benefit values \$7.2 million for NM plans, and nearly another \$2.6 million for farmland preservation tax credits.

See the external factors section of this report for a description of how corn growers can adjust the N rate for their location using the new Soil Nitrate Monitoring Network web site: <http://uwlab.soils.wisc.edu/soilnitratemonitoring>

Coastal hazards planning: Great Lakes coastal communities must address and plan for many possible impacts of climate change. Online tools are being developed to assist local officials in addressing existing threats and effects of climate change on Great Lakes communities. The resources were piloted at the Online Tools for Coastal Hazards Planning: Working with Great Lakes Communities workshop held at UW-Green Bay in June 2012. Of participants who completed a post-workshop, online evaluation survey for the event (77%):

- 85% indicated that the workshop increased their knowledge of online tools and information for coastal hazards planning.
- 85% believed the workshop was a good use of their time.
- 60% said they learned something new at the workshop that they will apply in their work. At the time of

the workshop, only 26% of respondents said they were currently including projected climate changes in their work or planning.

2. Brief description of the target audience

Cooperative Extension reached an estimated 46,953 adults and 1,593 youth through direct teaching methods. The audience includes Great Lakes Region colleagues and partners, youth and adult dairy and livestock producers and workers, producer associations, growers and grower associations, agronomists, crop consultants, professional nutrient applicators, coalitions and cooperatives, composters and recyclers, coastal and other community leaders, business owners, town, city, county and tribal governments, elected officials, planning and emergency management departments, planning commissions, economic development practitioners, school districts, 4-H youth and trained volunteer leaders, and others.

Serving under-represented communities: As climate changes, tribal place-based culture and economies must adapt to changing conditions. The Changing Climate, Changing Culture Teacher Institute and the Gikinoowizhiwe Onji Wabaan (G-WOW, Guiding for Tomorrow) educational exhibit at the Great Lakes National Visitor Center trained 57 tribal members to recognize climate impacts and adaptation strategies, and raised the awareness of around 3,300 other visitors about the effects of climate change on tribal lifeways. UW-Extension Cooperative Extension's role in planning and delivering the Institute for Tribal Environmental Professionals Climate Adaptation Planning Workshop in Oneida, Wisconsin, resulted in 21 representatives of 12 tribal nations building capacity to develop plans leading to climate adaptation and mitigation by the tribes: <http://www.g-wow.org/en-us/default.aspx>

Wisconsin Initiative on Climate Change Impacts (WICCI): This statewide collaboration brings scientists and stakeholders together to find adaptation strategies to reduce potential negative impacts of climate change in Wisconsin. WICCI issued its first comprehensive report in February 2011, Wisconsin's Changing Climate: Impacts and Adaptation. Wisconsin Cooperative Extension statewide climate specialist David S. Liebl leads the WICCI outreach effort, chairing the WICCI Outreach Committee and serving on the WICCI Science Council. WICCI's outreach program focuses on building capacity among Wisconsin decision makers to integrate climate projections into resource management decisions: <http://www.wicci.wisc.edu>

3. How was eXtension used?

Wisconsin Cooperative Extension campus and county faculty and staff participate in various communities of practice, engaging with colleagues around the country to improve the educational content of research-based programs and assistance delivered to residents across the state and region. Extension colleagues are connected by email ListServ, blogs and online newsletters, and shared resources such as teleconferences and webinars, eXtension Communities of Practice, and the national Extension Disaster Education Network (EDEN) to quickly address critical and emerging issues such as responding to extreme weather during 2012. Interdisciplinary colleagues and other professionals in this network include University of Wisconsin researchers on the Madison, Platteville, River Falls, Stevens Point and Superior campuses and centers, working with 3 tribes, and at 11 agricultural research stations.

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	46953	0	1593	0

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

Patent Applications Submitted

Year: 2012

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	13	13

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- {No Data Entered}

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Develop, implement and evaluate outreach programs that reduce carbon, nitrogen, energy and water footprints in their communities.
2	Reduce atmospheric greenhouse gas emissions.
3	Maximize carbon sequestration potential in agriculture and forests.
4	Develop outreach programs that reduce carbon, nitrogen, energy and water footprints in communities - Coastal hazards planning.

Outcome #1

1. Outcome Measures

Develop, implement and evaluate outreach programs that reduce carbon, nitrogen, energy and water footprints in their communities.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	9800000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Even as agricultural lenders are looking harder at farm financial performance, Wisconsin farmers face increasing regulatory pressures due to agricultural nutrient contributions producing non-point source pollution to all water resources. Dairy and livestock owners increasingly need nutrient management plans for environmental and cost-sharing compliance. 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 can also improve farm profitability and water quality.

What has been done

The Wisconsin Cooperative Extension Nutrient Management Team researches and updates guidelines and software to help farmers credit nitrogen from legumes and manure to save fertilizer cost and prevent loss of nutrients from fertilizers and manure to groundwater, lakes, streams, the Gulf of Mexico and the atmosphere. The Nutrient Management Farmer Education (NMFE) curriculum combines classroom instruction, individual consultation, and on-farm field trials to engage farmers in designing nutrient management plans they can understand and follow. Funding, local delivery and collaboration among extension faculty and staff, agency partners, trained agricultural educators and consultants reach farmers most at risk who can benefit the most.

See the external factors section of this report for a description of how corn growers can adjust the N rate for their location using the new Soil Nitrate Monitoring Network web site:
<http://uwlab.soils.wisc.edu/soilnitratemonitoring>

Results

Reducing the nitrogen footprint improves sustainability: Since 2000, an estimated 85% of the total 1,215,300 acres farmed in 53 counties by the 4,156 producers trained by Wisconsin Cooperative

Extension Nutrient Management Farmer Education (NMFE) are now covered by a qualified nutrient management (NM) plan. So as of 2012, at least 1,033,000 acres of cropland and grazing land are covered under an NM plan that meets all local, state and federal regulations. NM plans cost about \$7 per acre for farmer time and effort. Thus, with 1,033,000 acres under NM plans as of 2012 due to NMFE, the farmer benefit values at least \$7.2 million. As an added benefit, farmland preservation tax credits starting in 2010 range from \$5 to \$10 per acre and require compliance with state soil and water conservation standards, including filing NM plans. Conservatively assuming only half of the acres under NM plans as of 2012 due to NMFE claim this tax credit at the minimum \$5 per acre, the farmer benefit values nearly another \$2.6 million.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
133	Pollution Prevention and Mitigation
601	Economics of Agricultural Production and Farm Management
608	Community Resource Planning and Development

Outcome #2

1. Outcome Measures

Reduce atmospheric greenhouse gas emissions.

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

Maximize carbon sequestration potential in agriculture and forests.

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

Develop outreach programs that reduce carbon, nitrogen, energy and water footprints in communities - Coastal hazards planning.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Great Lakes coastal communities must address and plan for many possible impacts of climate change. This is a complex issue with potential to worsen existing hazards and create new ones. Despite the challenging nature of climate change and lack of precedent to deal with impacts, communities and agencies find themselves facing immediate effects and planning for future scenarios. Moving forward, individuals and decision-makers need locally relevant, science-based data to make informed decisions. Help is also needed to understand new information as it becomes available and build it into the planning process.

What has been done

Online tools are being developed to assist local officials in addressing existing threats and effects of climate change on Great Lakes communities. The tools incorporate geospatial data, science-based information, and visualizations. The Association of State Floodplain Managers and National Oceanic and Atmospheric Administration Coastal Services Center are providing leadership with the Digital Coast partnership. Outputs are intended to help decision-makers understand and document the effects of various activities in terms of community risks and liabilities. Training and outreach strategies are also being developed to bring the online tools to more coastal communities.

The resources were piloted at the Online Tools for Coastal Hazards Planning: Working with Great Lakes Communities workshop held at the UW-Green Bay in June 2012. UW-Extension Cooperative Extension Environmental Resources Center staff led planning efforts for the workshop, working closely with project partners. The workshop shared the resources with attendees and gathered important user feedback for the design process. Workshop planning engaged a team from a variety of organizations with local, regional and national expertise. The target audience included professionals involved in local, state and tribal planning and decision-making on land use, public health, community and economic development, emergency preparedness and natural resource management.

Results

Coastal hazards planning: Of 37 people from various organizations who attended the workshop, most were county government employees. Many indicated that the online tools had great potential. They suggested having information in one location and being able to apply it to real life scenarios. Suggestions for additional data to be included were legal cases or project studies; pictures or videos from recent events such as floods, and bluff failure, and legal standards or requirements. Of participants who completed a post-workshop, online evaluation survey for the event (77%):

- 85% indicated that the workshop increased their knowledge of online tools and information for coastal hazards planning.

- 85% believed the workshop was a good use of their time.
- 60% said they learned something new at the workshop that they will apply in their work. At the time of the workshop, only 26% of respondents said they were currently including projected climate changes in their work or planning.

4. Associated Knowledge Areas

KA Code	Knowledge Area
133	Pollution Prevention and Mitigation
605	Natural Resource and Environmental Economics
608	Community Resource Planning and Development

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

Natural disasters: Intense heat and severe drought lingered through 2012. University of Wisconsin-Extension Cooperative Extension responded quickly to immediate issues. Planning for, coordinating and leading a longer-term response that focuses on production, financial and human/family aspects of this challenge is critical - to respond proactively now so that as drought impacts unfold, programs and resources are in place to continue responding appropriately.

For example, where drought reduced corn yields, the crop used less nitrogen (N) than applied. This excess N is mostly nitrate, which can be lost to the environment and impair water quality. If excess nitrate remains in the soil, spring nitrogen rates may need adjusting. Producers aware of potentially high-nitrate areas can test for it and reduce N applications if needed. Doing so will both increase farm profitability by applying the right amount of N as well as reduce excess nitrate to maintain water quality.

Extension soil scientist Carrie Laboski developed and coordinated a soil nitrate monitoring network to collect data and educate producers and agronomist about the potential for N to carryover from the 2012 crop to the 2013 crop. Fourteen county agriculture agents assisted Laboski by taking profile soil samples (0 to 2 feet) in 60 locations throughout the state in November 2012, analyzed by the Soil and Forage Analysis Laboratory at the UW Marshfield Agricultural Research Station.

Analysis revealed that nitrate in the soil profile remaining after the 2012 corn crop is quite variable. In some cases, the nitrate content is low enough that 2013 N management does not need to be altered. In other cases, the nitrate content is quite high. If most of this nitrate remains in the soil through winter, then reduced spring N applications will improve profitability and reduce the potential for water quality impairment by having too much N on the 2013 crop. Network members will sample soils again in spring, and producers can find

how to adjust the N rate for their location using the new Soil Nitrate Monitoring Network web site:
<http://uwlab.soils.wisc.edu/soilnitratemonitoring>

UW-Extension Cooperative Extension has devoted resources to work collaboratively with partner agencies to address such challenges of the drought, including production, financial, and humans responding to stressful situations. An extension point person has been designated to work with state specialists, county agriculture and family living educators and partners to coordinate the longer-term response needed. See the report added for 2012 Wisconsin Cooperative Extension Response to the Drought.

Database development: UW-Extension Cooperative Extension is in the midst of replacing the legacy planning and reporting database, which was closed in 2012. For this report: The 2012 direct contacts for adults reported are the 4-year average of past performance of relevant statewide teams in 2008-2011.

The 2012 program participation is in alignment with previous years. The 2012 direct contacts for youth reported are 4-H enrollments in relevant projects reported on the ES-237 form for 2011-2012.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 7

1. Name of the Planned Program

Sustainable Energy

Reporting on this Program

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%			
133	Pollution Prevention and Mitigation	10%			
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	10%			
403	Waste Disposal, Recycling, and Reuse	10%			
601	Economics of Agricultural Production and Farm Management	10%			
602	Business Management, Finance, and Taxation	10%			
605	Natural Resource and Environmental Economics	20%			
608	Community Resource Planning and Development	20%			
	Total	100%			

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	3.0	0.0	0.0	0.0
Actual Paid Professional	4.3	0.0	0.0	0.0
Actual Volunteer	1.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
209450	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
209450	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

University of Wisconsin-Extension Cooperative Extension BioEnergy and the BioEconomy Team cross-program members and partners are conducting integrated research and extension programs, building capacity for developing sustainable energy and scalable conversion technologies among extension colleagues, communities, farmers and industry partners. Curriculum development teams are working on three courses: BioEnergy and Sustainability, On-Farm Energy Conservation and Efficiency, and Anaerobic Digestion - a proven waste-to-energy technology. While multi-million dollar anaerobic digestion systems only run economically on the waste from 500 or more cows, hundreds of thousands of farms worldwide use inexpensive ultra small-scale biodigesters as described in the external factors section of this report.

Anaerobic digestion research and outreach: Wisconsin is the leading state for on-farm anaerobic digestion with more than 30 operational systems. Since large-scale implementation is relatively recent, training is needed for safe production and use of biogas. Maintaining the economic viability of large-scale anaerobic digestion systems requires optimizing operation and assessing feedstocks. Feedstocks are identified and evaluated in extension biowaste specialist Rebecca Larson's lab, then implemented in the field. As a result, facilities are increasing biogas production and more importantly, avoiding highly toxic feedstocks that cause catastrophic failures. Her recommendations have led to more efficient systems with greater economic sustainability.

Anaerobic Digester Operator Training: Trained large-scale operators now have a greater understanding of their systems, can implement strategies outlined in the training, and are connected with their peers. Collaboration continues - to develop materials on hydrogen sulfide mitigation and removal, record-keeping procedures for evaluation and system optimization, and a biogas network to strengthen communications among researchers, educators, industry partners, producers and operators.

Building capacity for developing sustainable energy: From 2008 to 2010, Wisconsin communities, businesses and tribes undertook energy initiatives in response to external factors and the state "Energy Independence" program. UW-Extension Cooperative Extension educators took part in more than 30 of these efforts - until the state program ended in 2011, along with grants to communities for sustainable energy efforts. Wisconsin Cooperative Extension obtained a 2-year grant from the U.S. Department of Energy, forming a partnership with the State Energy Office to boost energy efficiency, renewable energy and bioenergy progress. Extension educators in each county and 140 Energy Independent Communities were surveyed to form a list of local officials, school districts and others interested in being part of a statewide energy network. Results were used to design the new program Energy On Wisconsin. In 2012, the first 3 of 7 face-to-face meetings were held on topics from the survey. Much effort went into building

relationships with local officials, experts, businesses, nonprofits and state groups who are already sharing and acting on what they learned.

2. Brief description of the target audience

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. Given Wisconsin's wealth of resources in forests and agricultural production, there is interest among state businesses and communities in producing alternative fuels and feedstocks from biomass. The audience includes municipalities, regional planning commissions, regulated and unregulated utilities, liquid biofuels, anaerobic digester and biomass conversion technology firms, biomass producers and aggregators, food processors, food services, school districts, loggers, procurement foresters, wood products professionals, haulers, farmers and their advisors, business owners, woodland owners, recycling volunteers, public and private agencies, local and tribal government officials, and others.

Reaching under-served communities: Crawford County agriculture agent Vance Haugen has worked around the globe helping small producers (1 to 150 cows) construct affordable ultra small-scale biodigesters. When his neighbors read about his global work, they asked for the same for Wisconsin. In 2012, Haugen provided an overview of biogas production, physical properties of animal manure as it relates to biogas production, practical examples of low-cost production methods for small-scale biogas digesters from India, China, Nicaragua, Cuba, Vietnam, the Philippines and the United States, and small-scale digester designs for the Midwest - reaching 85 U.S. National Guard troops attending the Babcock Agriculture 101 session at the Arlington Agricultural Research Station and 34 attendees of the Oneida Bioenergy Update at the Oneida Tribal Headquarters. The Wisconsin National Guard troops have constructed a small-scale biodigester, and the Oneida Nation Bioenergy committee continues to gather information for theirs. Haugen's biogas introduction resources are housed with others on the Wisconsin Chapter of the American Society of Farm Managers and Rural Appraisers web site: <http://www.wcasfmra.org/biogas.htm>

3. How was eXtension used?

Wisconsin Cooperative Extension campus and county faculty and staff participate in various communities of practice, engaging with colleagues around the country to improve the educational content of research-based programs and assistance delivered to residents across the state and region. Extension colleagues are connected by email ListServ, blogs and online newsletters, and shared resources such as teleconferences and webinars, eXtension Communities of Practice, and the national Extension Disaster Education Network (EDEN) to quickly address critical and emerging issues such as responding to extreme weather during 2012. Interdisciplinary colleagues and other professionals in this network include University of Wisconsin researchers on the Madison, Platteville, River Falls, Stevens Point and Superior campuses and centers, working with 3 tribes, the Institute for Environmentally Integrated Dairy Management at the UW-Madison Marshfield Agricultural Research Station, 10 other agricultural research stations and the USDA Dairy Forage Research Center.

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	4341	0	0	0

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

Patent Applications Submitted

Year: 2012

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	2	0	2

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- {No Data Entered}

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Develop biomass use for biofuels.
2	Build capacity to create, refine and implement scalable conversion technologies.
3	Design forestry and crops for bioenergy production.
4	Building capacity for developing sustainable energy.

Outcome #1

1. Outcome Measures

Develop biomass use for biofuels.

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Build capacity to create, refine and implement scalable conversion technologies.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Anaerobic digestion is a proven waste-to-energy technology. Wisconsin is the leading state for on-farm anaerobic digestion with more than 30 operational systems. The last decade created demand for knowledge of system components, processes and mechanisms, operation skills, safe production and use of biogas. Maintaining the economic viability of large-scale anaerobic digestion systems requires optimizing operation, assessing feedstocks, and managing manure streams in accordance with nutrient management plans.

What has been done

UW-Extension Cooperative Extension biowaste specialist Rebecca Larson works with USDA, OSHA, campus, county, Michigan State University and national colleagues, industry partners and farmers developing and sustaining safe, practical and economical anaerobic digestion. After training 40 large-scale dairy producers, operators and agency staff in 2011, Larson is conducting further research to evaluate operation choices to improve system efficiency using life cycle assessment methodologies. She will share results with digester operators and update the Anaerobic Digester Operator Training Program curriculum. Throughout 2012, research on operational trouble-shooting was conducted at 10 on-farm anaerobic digesters. Anaerobic digestion systems were investigated for biogas production optimization, feedstock degradation, co-digestates, use of end products, and other operational issues.

Results

Anaerobic digestion research and outreach: Research results are critical to providing guidance to operators, system owners and the industry on decreasing system failures and downtime, increasing biogas production and profitability, and reducing environmental impacts. Feedstocks are identified and various blends evaluated in Rebecca Larson's lab, then implemented in the field. As a result, many facilities are increasing biogas production and more importantly, avoiding feedstocks with high toxicity that cause catastrophic failures. Her recommendations have led to more efficient systems with greater economic sustainability. For example, when a scalable system constructed for 200 milking cows was producing much lower biogas than predicted, she worked with the operator and company owner to double biogas production. The industrial provider also changed the engineering design to increase biogas production in future installations.

Anaerobic Digester Operator Training: Trained large-scale operators now have a greater understanding of their systems, can implement strategies outlined in the training, and are connected with their peers. Collaboration continues - to develop materials on hydrogen sulfide mitigation and removal, record-keeping procedures for evaluation and system optimization, and a biogas network to strengthen communications among researchers, educators, industry partners, producers and operators.

Digestion and solid-liquid separation: Tracking nutrients and pathogens through anaerobic digestion systems including solid-liquid separation has improved manure management, allowing producers to better manage manure streams in accordance with their nutrient management plans, reducing spreading costs and environmental impacts.

4. Associated Knowledge Areas

KA Code	Knowledge Area
403	Waste Disposal, Recycling, and Reuse
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation
608	Community Resource Planning and Development

Outcome #3

1. Outcome Measures

Design forestry and crops for bioenergy production.

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

Building capacity for developing sustainable energy.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Wisconsin imports almost all its energy (most from fossil fuels), spending \$24 billion per year. Efficient, renewable energy reduces fossil fuels' impacts, mitigates carbon emissions and creates jobs. Wisconsin needs resources, assistance, funding approaches and technology to reduce carbon-based energy use and assess and install renewable energy systems. From 2008 to 2010, Wisconsin communities, businesses and tribes undertook energy initiatives in response to external factors and the state "Energy Independence" program. University of Wisconsin-Extension Cooperative Extension educators took part in more than 30 of these efforts. In 2011, the state program ended, along with grants to communities for sustainable energy efforts.

What has been done

With fewer resources for communities, UW-Extension Cooperative Extension obtained a 2-year grant from the US Dept. of Energy, forming a partnership with the State Energy Office to boost energy efficiency, renewable energy and bioenergy progress. Extension educators in each county and 140 Energy Independent Communities were surveyed to form a list of local officials, school districts and others interested in being part of a statewide energy network. The survey gauged interest, needs, challenges and preferred methods of information delivery. Results were used to design a new program called Energy On Wisconsin. In 2012, the first 3 of 7 face-to-face meetings were held on topics from the survey. Much effort went into building relationships with local officials, experts, businesses, nonprofits and state groups.

Results

Building capacity for developing sustainable energy: Attendees' follow-up surveys identified actions taken within 8 months after Energy on Wisconsin meetings.

- As a result of the meeting on education and outreach, 100% of respondents planned and conducted an energy education event; wrote and distributed an energy education piece; and applied for funding with another partner. Half applied an educational approach that they learned at the meeting.
- 93% are likely to contact UW-Extension for sustainable energy information and assistance.
- 93% are likely to seek information about sustainable energy from Energy On Wisconsin.
- 88% talked with others in their communities about the need for clean energy; two-thirds identified grant opportunities; and 50% used and shared the online resources presented. Tours to renewable energy installations provided ideas that two-thirds of respondents are trying to use in their communities.
- 87% are likely to take part in programs from Energy On Wisconsin.
- 87% said representatives of other communities should attend Energy On Wisconsin meetings.

- 80% looked into approaches described in the energy efficiency meeting. Half followed up with other attendees on their initiatives; 40% contacted or planned to contact the Wis. Board of Commissioners of Public Lands who discussed funding; 40% planned to apply for funding from the Board.
- 71% are likely to contact the State Energy Office.
- Half of respondents contacted another attendee to follow up on energy information; half shared meeting notes with others; 41% shared meeting information with influential community members.

4. Associated Knowledge Areas

KA Code	Knowledge Area
602	Business Management, Finance, and Taxation
605	Natural Resource and Environmental Economics
608	Community Resource Planning and Development

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Other (Developing low-cost, ultra small-scale biodigesters; Database development)

Brief Explanation

Developing ultra small-scale biodigesters for under-served communities: While multi-million dollar anaerobic digestion systems only run economically on the waste from 500 or more cows, hundreds of thousands of farms worldwide use ultra small-scale biodigesters costing only a few hundred dollars in climates as harsh as Wisconsin's. University of Wisconsin-Extension Cooperative Extension biowaste specialist Rebecca Larson works with USDA, OSHA, campus, county, Michigan State University and national colleagues, industry partners and farmers assessing on-farm economic and environmental benefits of small-scale anaerobic digesters - building a mobile dry biodigester to compare with wet biodigestion, and comparing 9 on-farm solid-liquid separation systems coupled with digesters.

In 2011, UW-Extension Cooperative Extension presented the nation's first Small-Scale Anaerobic Digester Conference for more than 60 dairy producers and agency staff on technology processes and value-added products. As a result of the conference, the only small-scale operator in Wisconsin has begun to make changes to his operation, and a second producer is installing a small-scale digester. Since the conference, Larson and colleagues are addressing areas that require attention for small-scale adoption through small-scale anaerobic digester research at the Institute for Environmentally Integrated Dairy Management at the UW-Madison Marshfield Agricultural Research Station.

Increased efficiencies can decrease system size, increase biogas production and the value

of asset streams to produce an economically viable option reducing costs and increasing revenues for smaller operations. Separated liquids can be land applied as fertilizer, improving nutrient management. Solids are used on-farm as bedding or sold as a value-added product. With detailed herd management, milk quality and pathogen data, best practice recommendations can improve herd health in dairies using recovered manure solids as bedding.

Crawford County agriculture agent Vance Haugen has worked around the globe helping very small producers (1 to 150 cows) construct affordable ultra small-scale digesters. When his neighbors read about his global work, they asked for the same for Western Wisconsin. In 2012, Haugen provided an overview of biogas production, physical properties of animal manure as it relates to biogas production, practical examples of low-cost production methods for small-scale biogas digesters from India, China, Nicaragua, Cuba, Vietnam, the Philippines and the United States, and small-scale digester designs for the Midwest - reaching 85 U.S. National Guard troops attending the Babcock Agriculture 101 session at the Arlington Agricultural Research Station and 34 attendees of the Oneida Bioenergy Update at the Oneida Tribal Headquarters. The Wisconsin National Guard troops have constructed a small-scale biodigester, and the Oneida Nation Bioenergy Committee continues to gather information for theirs. Haugen's biogas introduction resources are housed with others on the Wisconsin Chapter of the American Society of Farm Managers and Rural Appraisers web site: <http://www.wcasfmra.org/biogas.htm>

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 8

1. Name of the Planned Program

Wisconsin Cooperative Extension Response to the Drought

Reporting on this Program

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%			
133	Pollution Prevention and Mitigation	5%			
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	20%			
205	Plant Management Systems	15%			
216	Integrated Pest Management Systems	10%			
301	Reproductive Performance of Animals	5%			
307	Animal Management Systems	10%			
601	Economics of Agricultural Production and Farm Management	10%			
608	Community Resource Planning and Development	5%			
	Total	100%			

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890

Actual Paid Professional	7.7	0.0	0.0	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
369972	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
369972	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Southern Wisconsin was on the northern boundary of what USDA-ERS termed the "most severe and extensive drought in at least 25 years." On July 25, USDA declared 23 Southern Wisconsin counties as natural disaster areas. UW-Extension Cooperative Extension specialists and agents had already met via conference call on July 6 to discuss how the dry spell was affecting the nearly \$60 billion agriculture industry - drought posed challenges for both urban and rural residents, and farmers needed information to make decisions about crops and livestock. Within hours, the Extension Responds-Drought 2012 web site was delivering timely, research-based information, receiving 17,094 page views by August 12: <http://fyi.uwex.edu/drought2012>

Timely information improves decisions: Campus and county faculty and staff addressed urgent needs. They walked fields, discussed management for specific cropping situations, advised on livestock feed and animal comfort, provided tips for human heat-related safety and comfort, gave advice for gardens, turfgrass and landscape plants, and worked with partners to provide educational programs, disseminate information and facilitate emergency response. The ANRE program director serves on the Wisconsin Drought Task Force. An extension point person has been designated to work with state specialists, county agriculture and family living educators and partners to coordinate the longer-term response needed. The extension Farmer to Farmer web site connects farmers with each other for buying and selling forage and corn, and with available pastures: <http://farmertofarmer.uwex.edu>

Improving drought-stricken crop yield: Statewide, producers and agricultural professionals were assisted on forage management and feeding practices to minimize drought impacts. Twenty county agents and state specialists held 48 meetings and field days to address drought-related forage management and feeding issues reaching 4,198 producers and agricultural professionals, and 26 agents and specialists reported 2,438 individual contacts through on-farm and phone calls, etc. on drought-related forage management and feeding issues. For example, Green County family living and agriculture educators working with local partners coordinated 3 meetings reaching 350 farmers and agricultural professionals on plant mortality, spider mites in soybeans, nitrates in corn silage, pricing drought-stressed corn silage, alfalfa cutting management, alternative forage options, corn smut and aflatoxins. Specialists addressed crop insurance, mental health and stress issues, and tested 38 samples of corn silage for nitrate levels - 11% tested higher than 1,000 ppm for nitrates, which could have been toxic to cattle. These actions prevented more than 4,000 acres of drought-stressed corn silage from being harvested prematurely. Rain in late July and August improved the moisture levels in plants and ensured that remaining feed fermented properly in storage.

2. Brief description of the target audience

The audience includes North Central Region colleagues, agricultural professionals and other educational partners, grains, commercial vegetable and fruit 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 tribal officials, planning commissions, state and federal rural development and regulatory agencies, and homeowners.

The 6,636 drought-related direct contacts with adults were reported in the 2012 ANRE CE Network Qualtrics survey: Twenty county agents and state specialists held 48 meetings and field days to address drought-related forage management and feeding issues reaching 4,198 producers and agricultural professionals, and 26 agents and specialists reported 2,438 individual contacts through on-farm and phone calls, etc. on drought-related forage management and feeding issues.

3. How was eXtension used?

Wisconsin Cooperative Extension campus and county faculty and staff participate in various communities of practice, engaging with colleagues around the country to improve the educational content of research-based programs and assistance delivered to residents across the state and region. Extension colleagues are connected by email ListServ, blogs and online newsletters, and shared resources such as teleconferences and webinars, eXtension Communities of Practice, and the national Extension Disaster Education Network (EDEN) to quickly address critical and emerging issues such as responding to extreme weather during 2012. Interdisciplinary colleagues and other professionals in this network include University of Wisconsin researchers on the Madison, Platteville, River Falls and Stevens Point campuses and at 11 agricultural research stations.

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	6636	0	0	0

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

Patent Applications Submitted

Year: 2012
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- {No Data Entered}

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Agricultural producers are able to respond optimally to drought through provision of timely, accurate information and assistance.
2	Agricultural producers are able to respond optimally to harvesting drought-stricken crops.

Outcome #1

1. Outcome Measures

Agricultural producers are able to respond optimally to drought through provision of timely, accurate information and assistance.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

In 2012, the southern half of Wisconsin was on the northernmost boundary of what USDA-ERS termed the "most severe and extensive drought in at least 25 years." About 20% of the nation's cropland was affected by the drought in mid-June; by mid-August, that figure had expanded to about 57%. Wisconsin was not in the heart of this historic drought, but we were full participants. A very dry June across southern and much of central Wisconsin brought the full weight of drought to bear. On July 6, UW-Extension Cooperative Extension specialists and agents met via conference call to discuss how the recent and ongoing dry spell was affecting Wisconsin's \$60 billion annual agriculture industry. Reports varied from around the state, but it was clear that drought conditions posed challenges for all Wisconsin residents - both urban and rural - and farmers needed information to help them make decisions about crops and livestock.

What has been done

Within hours of the conference call, the Extension Responds-Drought 2012 web site found at <http://fyi.uwex.edu/drought2012> was up and running as one resource to deliver timely, research-based information; the site was publicized through traditional and social media. Specialists quickly produced resources for farmers such as assessing feed inventory, crop insurance, and livestock comfort during hot weather; information for homeowners on lawn and garden care; and human health issues during hot weather. The Farmer to Farmer Hay, Forage and Corn List web site <http://farmertofarmer.uwex.edu/> that puts farmers in touch with one another for the purpose of buying and/or selling corn and forage was also publicized through traditional and social media. Links to the Extension Responds-Drought 2012 web site were posted on elected officials' and many partners' web sites including Wisconsin Department of Agriculture, Trade and Consumer Protection and Wisconsin Public Television, which also interviewed extension specialists for a special program on the state's severe drought conditions.

Results

Timely information improves decisions: Google analytics of the Extension Responds-Drought 2012 web site was set up on July 13. Through August 12, the site had more than 8,000 visits - about 5,000 new visitors with 3,000 returning visitors - and received 17,094 page views. Agricultural producers learned to delay prematurely harvesting crops, where to find feed for their livestock, and steps to take to file for crop insurance. Cooperative Extension contributions also helped producers make informed decisions on crop and field management, fertilizer, pesticide and herbicide use, and financial management.

Looking forward, the ANRE program director serves on the Wisconsin Drought Task Force. An extension point person has been designated to work with state specialists, county agriculture and family living educators and partners including the Department of Agriculture, Trade and Consumer Protection and Wisconsin Technical Colleges to coordinate the longer-term response needed. For spring 2013 planting, corn growers can adjust the N rate for their location using the new Soil Nitrate Monitoring Network web site: <http://uwlab.soils.wisc.edu/soilnitratemonitoring>

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
205	Plant Management Systems
301	Reproductive Performance of Animals
307	Animal Management Systems
601	Economics of Agricultural Production and Farm Management

Outcome #2

1. Outcome Measures

Agricultural producers are able to respond optimally to harvesting drought-stricken crops.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	6636

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Green County was classified as a Moderate Drought area in June and elevated to an Extreme Drought area from July through October. The county remained listed as a Severe Drought area through the end of 2012. In mid-July, corn plants looked like they were dying and many farmers panicked and started to chop them for silage. However, the plants were still alive and too high in moisture to properly ferment - resulting in the loss of both yield and quality of the silage.

What has been done

The Green County agriculture agent helped organize three drought-related informational meetings addressing concerns about plant mortality, spider mites in soybeans, nitrates in corn silage, pricing drought-stressed corn silage, alfalfa cutting management, alternative forage options, corn smut and aflatoxins. Extension specialists were brought in to address crop insurance, mental health and stress issues being faced by farmers as a result of the drought. Free nitrate and dry matter testing for fresh corn plants was available to farmers at this meeting through an arrangement with Agri-King Labs and by securing the portable NIR forage testing unit from the Arlington Research Station. This unit was used in Green County for several weeks starting on July 12 and testing was done while farmers waited.

Results

Improving drought-stricken crop yield: Statewide, producers and agricultural professionals were assisted on forage management and feeding practices to minimize drought impacts. Twenty county agents and state specialists held 48 meetings and field days to address drought-related forage management and feeding issues reaching 4,198 producers and agricultural professionals, and 26 agents and specialists reported 2,438 individual contacts through on-farm and phone calls, etc. on drought-related forage management and feeding issues. Among these were more than 350 Green County farmers and agribusiness representatives including veterinarians, lenders, agronomists and nutritionists. The Green County extension partnership tested 38 samples of corn silage for nitrate levels - 11% tested higher than 1,000 ppm for nitrates, which could have been toxic to cattle if not fed correctly. Results were quickly shared with farmers and nutritionists, and on the radio and a web site to help everyone better gauge plant nitrate and moisture levels in cornfields. These actions prevented more than 4,000 acres of drought-stressed corn silage from being harvested prematurely. Rain in late July and August improved the moisture levels in plants and ensured that remaining feed fermented properly in storage.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
205	Plant Management Systems

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)

Brief Explanation

The 2012 adverse weather and especially the drought was the worst experienced in many years. The impacts and consequences of the drought will be mild for some, perhaps devastating for others. Extension did a good job of responding to the immediate issues of

the drought. Planning for, coordinating and leading a longer term response effort that focuses on the human/family, production and financial aspects of this challenge is one of Cooperative Extension's primary purposes - to respond proactively now so that as the impacts unfold we can continue to respond appropriately.

The actual impacts, challenges and consequences of the drought won't be known for some time. However, because farmers are often reluctant to discuss problems they are having, we won't know the impacts on individual farm balance sheets and 2012 profitability until early 2013 and we won't know a lot about how lenders will react to potentially much worse financial conditions until the spring of 2013.

Several potential longer term impacts and consequences have been identified including:

- * Anticipatory anxiety and stress for farm owners/managers and their families as they anticipate inadequate feed supplies, need to purchase high cost feed, potential inadequate feed availability, inability to make loan payments (repay loans), etc.
- * Farm families under extreme stress - communication breakdowns, family conflict, depression, perhaps thoughts of suicide, etc.
- * Challenges feeding dairy and livestock - low energy/low quality home grown feeds, high cost purchased feeds, problems associated with different feeds used in rations, etc. etc.
- * Older farm owners (farm families) giving up on dairying - rather than purchasing feed, deciding to leave dairying - possible rushed succession planning, etc.
- * Huge financial losses - loss of liquidity and equity.
- * Loan repayment problems - potential need to liquidate assets to make loan payments.
- * Dealing with and arranging new emergency loans and/or restructuring existing loans.
- * Problems covering current farm expenses (increases in accounts payable, etc.).
- * Potential problems obtaining operating loans to finance 2013 crop inputs/ongoing operations.
- * Challenges with herbicide carryover (2013 crops).
- * Challenges with nutrient management and nutrient carryover (2012 crops not using nutrients applied).
- * Potential issues of groundwater depletion.
- * Challenges of finding resources for outreach to hobby farm owners with livestock that may not have the same network of contacts to find feed for their animals and may have a more intense or different emotional bond to those animals.
- * Threat of fire because of dry timbers surrounding farmsteads.

UW-Extension Cooperative Extension has devoted resources to working collaboratively with partner agencies to address these challenges. The challenges are varied involving production, financial and humans responding to stressful situations. An extension point person has been designated to work with state specialists, county agriculture and family living educators and partners including the Department of Agriculture, Trade and Consumer Protection and Wisconsin Technical Colleges to coordinate the longer-term response needed.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}