

2011 University of Wyoming Combined Research and Extension Annual Report of Accomplishments and Results

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I. Report Overview

1. Executive Summary

Agriculture is at a crossroads and faces many challenges and opportunities in the 21st century. Agriculture, as well as land-grant institutions, is challenged to compete in a global economy while still responding to the needs of a diverse U.S. population. New demands are placed on the industry to ensure that agriculture remains profitable and sustainable, while addressing environmental concerns. Issues involving production agriculture, natural resource management, and quality of life generate diverse research and extension directives. Stakeholders play a vital role in identification and prioritization of needs at the University of Wyoming.

The College of Agriculture and Natural Resources has a mission to serve the educational and information needs of students, Wyoming citizens and communities, and the global community by providing and distributing unbiased, scientifically sound information. Research and extension programs at the University of Wyoming focus on five initiatives: 4-H and Youth Development, Community Development Education, Nutrition and Food Safety, Profitable and Sustainable Agriculture Systems, and Sustainable Management of Rangeland Resources. The five NIFA priority programs added spring 2010 Global Food Security and Hunger; Climate Change; Sustainable Energy; Childhood Obesity; and Food Safety, have been integrated with existing initiatives or have been added as stand alone plans. The University of Wyoming research and extension efforts have been addressing issues outlined in the new plans for several years. Because the NIFA software template used for reporting POW accomplishments lags behind by two years, the update submitted in 2011 is not reflected in this report. Therefore UW AES and Extension will not be reporting on Profitable and Sustainable Agriculture Systems nor Nutrition and Food Safety. Those planned programs are now reported under Global Food Security and Hunger, Food Safety stands alone, and Childhood Obesity has integrated all nutrition efforts. The University of Wyoming has also revised output and outcome measures as recommended by 2010 NIFA reviewers, thus there will be a number of non-reporting areas in this template. UW Extension added the new program areas to its reporting system to capture time and effort beginning with FY2011. Fiscal year 2011, the University of Wyoming research and extension programs reported success in all initiative areas. The College of Agriculture and Natural Resources is third at the University of Wyoming in total grant dollars brought in for research and extension. In-depth educational programs such as the Master Cattleman, the High Plains Ranch Practicum, Range 101 School, Dining with Diabetes, Wyoming Youth Leadership Education (WYLE) and Extension Volunteer Organization for Leadership, Vitality, and Enterprise (EVOLVE) institutes report strong impacts for citizens of the state. Each of the above UW Extension programs is multi-session educational classes with 8 to 70 hours of class contact time with participants. These are just a few examples of high impact educational efforts by the University of Wyoming. Research and Extension Centers at UW and across the state are producing research which is relevant and vital to agriculture, families, and communities. Being an energy rich state, UW researchers are looking at possible alternative fuels. Reclamation of mined lands is an important issue being addressed through the Department of Ecosystem Science and Management and UW Extension. The two newer planned programs on Climate Change and Sustainable Energy are not only timely, but very important to the state of Wyoming due to the energy resources which we have in abundance. In 2009, UW Extension partnered with the UW School of Energy Resources to fund an Energy Extension Coordinator; the incumbent for this position has completed two years. This position has allowed for expanded partnerships within the University and with agencies and organizations both state and federal levels.

Total Actual Amount of professional FTEs/SYs for this State

Year: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	110.0	0.0	47.6	0.0
Actual	100.0	0.0	43.8	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

The merit review process for extension programs covers all programs conducted by UW Extension. A team leadership model is utilized to review program plans and chart direction for UW Extension educational programs. Program initiative teams develop and review programs on an annual basis. Teams make decisions to maintain, modify, or create new programs to meet the needs identified through external and internal stakeholder input. Five area external advisory boards comprised of stakeholders review extension programs annually. Spring, 2007 UW Extension held a CSREES program review of the total extension program. The review report was used as a guide to move forward with the academic plan for 2009 to 2013. All projects supported with formula funds (Hatch, Multi-State, McIntire-Stennis, Animal Health) must be approved projects. The project proposal is transmitted to the department head and the head appoints a minimum of two internal scientific reviewers who are knowledgeable in the field to review the proposal. After a proposal is revised based on the above review, it is transmitted to the Experiment Station Director. The director's office assigns three external scientific reviewers who are knowledgeable in the field to review the proposal. The Wyoming Agricultural Experiment Station also administers an internal competitive grants program using a portion of federal dollars. Proposals are reviewed by a ten member university wide committee. Each proposal is also sent to a minimum of two external reviewers. During FY-2011 UW Extension implemented a competitive grants program to provide funds for innovative programs. All proposals are reviewed by a three member committee comprised of both internal and external professionals. Both AES and UW Extension require an outreach plan in proposals which demonstrates integration of research and extension.

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
- Survey specifically with non-traditional groups
- Survey specifically with non-traditional individuals
- Survey of selected individuals from the general public

Brief explanation.

During the past year stakeholder input came to the College of Agriculture and Natural Resources, UW Extension, and Agricultural Experiment Station through a variety of methods. The joint research and extension needs assessment conducted in 2004 was used as a baseline for determining efforts for this POW. As part of the UW Extension academic plan, a working group has explored methodology to gather statewide stakeholder input. This group recommended moving from traditional area advisory committees to a focus group model which will be rotated between counties in each of the five areas over a five year period. This systematic collection of data will be shared with county, area, and state initiative teams for program planning. FY 2011 training on focus group facilitation was held for all extension educators as a focus of UW Extensions' annual conference. A guide was developed to assist educators in conducting focus groups. In addition, UW Extension gathers on-going input through a variety of methods which is utilized in program planning. This input is summarized and shared statewide with both UW Extension and AES. All counties have had targeted advisory meetings to gather stakeholder input on reaching limited resource audiences in the Cent\$ible Nutrition program which includes EFNEP. County 4-H educators conducted 4-H Expansion and Review committees to specifically address outreach efforts toward underserved youth audiences. County personnel also utilize collaborative partners to learn the needs within communities of the state. In 2007 UW Extension had a CSREES program review of the total extension system. Both research and extension went through an academic planning process which was integrated into the College of Agriculture and Natural Resources plan. The College of Agriculture and Natural Resources Academic Plan was approved as part of the 2009 to 2013 University of Wyoming Academic Plan. Each of the four Research & Extension Centers held an advisory committee meeting to gather input on existing research and outreach programs and to identify new priorities in relation to research. The College of Agriculture and Natural Resources maintains a separate statewide advisory committee which meets annually.

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.

There are five geographic extension areas. The 2009 - 2013 Academic Plan recommended revision of structured advisory committees. A UW Extension working group recommended moving to area focus groups. This plan is moving forward with development of guidelines and training conducted in 2011. Selection to participate in focus groups is based on gender, geographic representation, race, national origin, and underserved audiences. In 2011, a variety of both formal and informal methods were used to gather stakeholder input. These methods ranged from written and on-line surveys to discussion groups and targeted meetings to identify program needs. The Wyoming County Commissioners Association has formed an advisory committee of county commissioners who meet with the UW Extension Director during quarterly meetings of their association. Research and Extension Center Advisory committees are represented by UW Extension educators, industry leaders, and landowners (government and private) in all counties that they service. Advisory committee members are nominated by UW Extension and or AES, and administrative personnel and meet one to two times per year. In addition to these systematic methods of gathering stakeholder input, both AES and UW Extension utilize both individuals and groups throughout the state to identify relevant issues of critical importance. Just a few examples include: commodity groups - such as Wyoming Wool Growers, Stock Growers, Wyoming Wheat Growers, the Wyoming Crop Improvement Association, local and state nutrition councils, youth organizations such as Big Brothers, Big Sisters, and school districts. These groups and individuals provide input through both formal and informal discussions with both research and extension personnel. Faculty, UW Extension specialists, and educators also gather relevant input from professional colleagues in Wyoming and across the nation.

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.

Stakeholder input is collected through a variety of methods to reach the broadest scope of individuals and groups in Wyoming. UW Extension has utilized annual area advisory meetings which involve both traditional and non-traditional stakeholders. Pilot efforts using on-line surveys, focus groups, Extension cafe' have been explored by UW Extension. Beginning 2012 focus groups will be conducted in each extension area to identify needs by initiative area. The AES also utilizes annual advisory meetings to gain input on research activities. Surveys both mail and on-line are used to assess needs. UW Extension educators and researchers target key stakeholders such as agriculture commodity groups, youth organizations, and schools through meetings where discussion is held on needs and issues. University of Wyoming educators and faculty assess needs throughout the year based on individual contact with citizens at meetings and in local communities. Faculty and extension specialists and educators gather relevant input from professional colleagues through personal contact and interaction at professional meetings.

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.

Stakeholder input is used by AES and UW Extension initiative teams to identify emerging issues. Input gathered is used in program planning, evaluation of current programs, and redirection of programs when applicable. Stakeholder input from area advisory groups, county commissioners, and area teams assist in staffing priorities. Search committees comprised of local stakeholders provide input on screening, interviewing and hiring decisions for UW Extension. Input from all sources is used in development, implementation, and evaluation of extension and research programs. Stakeholder input is collected through a variety of methods to reach the broadest scope of individuals and groups in Wyoming. The AES utilizes annual advisory meetings to gain input on research activities. Surveys, both mail and on-line are used to assess needs. UW Extension educators and researchers target key stakeholders such as agriculture commodity groups, youth organizations, and schools through meetings where discussion is held on needs and issues. University of Wyoming educators and faculty assess needs throughout the year based on individual contact with citizens at meetings and in local communities.

Brief Explanation of what you learned from your Stakeholders

4-H and Youth Development - 1) increase volunteer training, 2) increase afterschool and summer programs for non-traditional 4-H 3) develop school mentorship programs and programs that address high risk behaviors 4) initiate workforce skill training for youth including college visits; 5) increase marketing efforts to reach underserved youth and retain older youth in the program.

Community Development Education - 1) continue financial management training efforts to include youth; 2) expand efforts in leadership development including leadership institutes in rural areas, 3) expand non-profit board training; 4) municipal employee training; 5) research on economic analysis of federal land management planning is essential to the state.

Childhood Obesity, Nutrition and Health- 1) obesity continues to be identified as a priority issue for adults and youth. 3) basic nutrition and cooking skills. 4) sustainable food and agriculture systems including growing, preserving, and preparation of foods; 5) childhood obesity.

Food Safety - 1) expand efforts in food safety at both food service and consumer level. 2) Research on the safety of food is essential to consumer confidence. 3) Safe food preservation techniques. 4) Increase outreach to Spanish speaking clientele.

Global Food Security and Hunger, Crop, Livestock, and Horticulture Systems - 1) specialty crops and alternative forages; 2) increased need for educational programming for small acreage owners, 3) mediation training is needed for agriculture producers due to increased land use for energy expansion and federal land agencies; 4) new methods to deliver information are needed such as newspaper inserts, current information on Web site, and utilize the Northern Ag Network radio stations to reach producers.

Sustainable Management of Rangeland Resources - 1) hands-on range monitoring workshops, 2) water management including quality, quantity and efficient use 3) drought and ranch sustainability ;4) small acreage workshops to educate new land owners; 5) water management, livestock/wildlife interface; 6) and coalbed Methane water quality. 6) Address reclamation issues facing agriculture producers.

Sustainable Energy: 1) renewable energy - 2) energy development and reclamation; 3) energy including wind, oil, gas and the impact on agriculture.

Climate Change: 1) identify sustainable cropping systems and variety selection in the face of climate change 2) develop improved soil properties in light of rising CO2 levels.

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
1526545	0	1950691	0

2. Totalled Actual dollars from Planned Programs Inputs				
Extension			Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	1526545	0	1950691	0
Actual Matching	1526545	0	1950691	0
Actual All Other	0	0	0	0
Total Actual Expended	3053090	0	3901382	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	Community Development Education
2	Profitable and Sustainable Agriculture Systems
3	Nutrition and Health
4	4-H and Youth Development
5	Sustainable Management of Rangeland Resources (SMRR)
6	Global Food Security and Hunger, Crop, Livestock, and Horticulture Systems
7	Climate Change
8	Sustainable Energy
9	Childhood Obesity, Nutrition and Health
10	Food Safety

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Community Development Education

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
601	Economics of Agricultural Production and Farm Management	5%		5%	
602	Business Management, Finance, and Taxation	5%		5%	
604	Marketing and Distribution Practices	5%		5%	
608	Community Resource Planning and Development	50%		50%	
801	Individual and Family Resource Management	25%		25%	
802	Human Development and Family Well-Being	5%		5%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	5%		5%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	11.0	0.0	2.1	0.0
Actual Paid Professional	11.0	0.0	2.5	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
167920	0	111189	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
167920	0	111189	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

Educational and research activities and efforts of the CDE program include:

Development of models to explain the impact changes have on the ability of communities to capture and retain dollars such as the impact of eliminating snowmobiling in Yellowstone National Park or the impact of reducing grazing permits in Bridger Teton National Forest.

Family resource management programs reach out to a broad spectrum of constituents throughout Wyoming using a variety of anticipated programs. Outputs include methods such as train-the-trainer workshops, home-study courses, and such approaches as the Internet (www.uwyo.edu/CES/FRM/), and satellite. In 2011 blogs have been added to reach citizens on financial issues. Also included are publications, meetings, news releases, and feature articles.

Community-based leadership training institutes; (EVOLVE) Extension Volunteer Organization for Leadership Vitality and Education. Skill training workshops; i.e. board training. General public information and educational efforts; i.e. public media materials; information/educational meetings and workshops; books, booklets, bulletins, training materials; providing data. Facilitation of community processes. Analyses of community data and economic impact. Assessments to identify individual strengths and areas to be strengthened to guide personal development and grow talent. Media resources to promote community capital development Extension education and increase awareness of Extension resources.

Outputs for entrepreneurship programs include publications, meetings, classes, workshops, conferences, one-on-one consultations, and web sites.

Research efforts will include economic analysis of Federal land management planning. These efforts provide important information that is used to assist in the planning process to make decisions that are critical to the future of Wyoming.

2. Brief description of the target audience

The University of Wyoming College of Agriculture is committed to reaching underrepresented groups and individuals and to implementing the objectives of equal opportunity regulations relative to the consideration and treatment of clientele for participation in programs regardless of their race, national origin, gender, age, religion, or disability. The ultimate consumer of the educational products for financial

management programs will be all individuals (including youth and senior citizens), families (including low-income families), and in general people at risk of experiencing financial stress. UW Extension CDE team provides education to individuals filing bankruptcy. The group of educators, specialists, and faculty responsible for leading and delivering the outputs in the program is the smallest of the University of Wyoming's Extension initiative groups. A priority for program development is to use methods of information and instruction that make it possible for the most constituents to be assisted while minimizing face-to-face work. Thus the team will emphasize train-the-trainer courses, newsletters, and electronic delivery of information and programming.

Targeted audiences for leadership development include: Elected officials. Members and leaders of formal and informal community organizations. Faith-based leaders and members. Business owners/managers/employees. Trade/produce groups. Educational entities. Federal/state/local agency leaders/members.

Entrepreneurship programs target audiences who will manage or may develop ventures relating to food and agricultural systems, a non-farm extension of a farm business, forestry, home trades, crafts, services, etc. Other audiences through which Wyoming Extension programs may be delivered include: teachers, public and private agencies, business owners/managers/employers, trade/produce groups, educational entities, identified publics, youth groups/students, and small acreage owners.

3. How was eXtension used?

eXtension is used as a resource for programming. It is also prominently displayed as a resource on the home page of the UW Extension Web site. Professional development opportunities offered through eXtension are promoted monthly to educators and specialists. The University of Wyoming Extension eXtension contact is a member of the CDE team.

V(E). Planned Program (Outputs)

1. Standard output measures

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	3465	5000	222	1000

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

Patent Applications Submitted

Year: 2011

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	Extension	Research	Total
Actual	1	9	10

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Family Resource Management programs will ultimately benefit all families in Wyoming. Short term effects may be increased grant funding and increased involvement in regional and multi-state projects. Target is number of programs.

Year	Actual
2011	78

Output #2

Output Measure

- Number of individuals participating in programs. Target is number of individuals.

Year	Actual
2011	3687

Output #3

Output Measure

- Number of programs in group process, leadership, facilitation, and other CD topics delivered. Target is number of programs.

Year	Actual
2011	153

Output #4

Output Measure

- Entrepreneurship output targets include: number of individuals assisted.

Year	Actual
2011	416

Output #5

Output Measure

- Research efforts will include community economic analysis which includes improving efficiency of existing firms, improve efficiency to capture and retain dollars and attract new businesses. Targets show number of projects.

Year	Actual
2011	6

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Permanent changes in practices as determined by follow-up surveys with those attending meetings, events, and workshops. Target is number of participants reporting positive practice changes.
2	Financial stability and security in Wyoming households. Target is number of households reporting improved financial stability.
3	One or more management principles from educational programs on personal finance management are adopted by workshop participants. Target is number of participants reporting outcome.
4	Improved credit debt-management skills reported by participants in workshops. Target is number of participants reporting outcome.
5	Knowledge and confidence gained as measured by end of workshop evaluations. Target is number of participants reporting outcome.
6	Participants of leadership classes will develop skills and confidence necessary for community participation, find resources to enhance community capital, recognize the needs for community vision, capacity building, and direction, and strengthen inner-community relationships. Target is number of participants reporting positive outcomes through program evaluations.
7	Leadership participants will be able to utilize collaborative/coalition building practices to implement visionary community programs in order to provide the community with leaders, officials, and volunteers who are able to affect desired change or stability. Target is number of participants reporting outcome.
8	Short term outcome of research efforts include increased grant funding and increased involvement on regional and mulit-state projects. Target is number of projects reporting outcome.
9	Development of impact models which will improve community economic analysis as well as mitigate unwanted consequences. Target is number of impact models developed.

Outcome #1

1. Outcome Measures

Permanent changes in practices as determined by follow-up surveys with those attending meetings, events, and workshops. Target is number of participants reporting positive practice changes.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	758

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Many county-appointed and non-profit board members and elected officials want to complete their assigned duties yet lack the skills and training needed to perform to the best of their ability. County Commissioners and the Wyoming Association of Municipalities have identified the need to provide training to current and new board members so they might properly fulfill their duties and responsibilities. The UW Extension Community Development Education (CDE) initiative team developed materials to support training programs for county boards and Municipal treasurers.

What has been done

The CDE team developed curriculum and educational materials to support the program. Area educators used the materials to develop a four-hour educational program for county-appointed and non-profit boards in the state. The team has partnered the Wyoming Association of Municipal Clerks and Treasurers (WAMCAT). The team is seeking approval from the International Institute of Municipal Clerks and the Association of Public Treasurers for meeting certification and continuing education requirements. In 2011 758 individuals participated in training including 65 in a comprehensive Wyoming Municipal Institute and 66 in the UW Snowy Range Non-Profit Institute.

Results

Over the past four years board training has taken place. The NE Area CDE educator conducted a Web-based follow up survey administered at least 6 months following the course. Ninety one percent believe they are more effective board members, and 78 percent believe their confidence increased. Sixty eight percent increased meeting facilitation skills, and 53 percent increased skills in parliamentary law. Fifty eight percent believe they are better at fulfilling their board responsibilities while 45 percent improved in planning and organizing. 39 percent improved in handling conflict and 77 percent improved in their leadership skills.

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation
604	Marketing and Distribution Practices
608	Community Resource Planning and Development
801	Individual and Family Resource Management
802	Human Development and Family Well-Being
803	Sociological and Technological Change Affecting Individuals, Families, and Communities

Outcome #2

1. Outcome Measures

Financial stability and security in Wyoming households. Target is number of households reporting improved financial stability.

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

One or more management principles from educational programs on personal finance management are adopted by workshop participants. Target is number of participants reporting outcome.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	691

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

In the last decade Wyoming has experienced significant economic growth stemming from its natural resources of gas, oil, and coal. Jobs in the energy sector pay well, most residents hold service sector positions that are typically low paying and are often seasonal. The first critical need is the management of credit and debt. Seven out of 10 low and middle income households report

using their credit cards as a safety net. In Wyoming about 2,500 people file for bankruptcy protection each year. The second critical issue is the spending habits of adolescents. Many adolescents earn income, of which they spend 98 percent, and do not have to pay for many living expenses such as housing. Information collected from UW Extension Area Advisory Committees identified retirement planning, consumer decision making skills, estate planning and family resource management as the top issues in the state. Financial blogs were also implemented in 2011.

What has been done

Family resource management courses were taught using a variety of methods from multi-session classes meeting for 10 - 15 weeks such as the challenge course and financial literacy. One time workshops on basic finance, planning for succession with agriculture families, and starting over making the most of your money targeted to those filing for bankruptcy were held. Youth were reached through camps and specific courses on money management.

Results

End of session evaluations indicated over 90 percent of participants increased knowledge and skills in implementing financial principles. Over 60 percent reported adopting at least one financial principal as a result of the classes. These included improved credit management; financial recovery after bankruptcy; and initiating a savings plan.

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation
801	Individual and Family Resource Management
802	Human Development and Family Well-Being

Outcome #4

1. Outcome Measures

Improved credit debt-management skills reported by participants in workshops. Target is number of participants reporting outcome.

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

Knowledge and confidence gained as measured by end of workshop evaluations. Target is number of participants reporting outcome.

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

Participants of leadership classes will develop skills and confidence necessary for community participation, find resources to enhance community capital, recognize the needs for community vision, capacity building, and direction, and strengthen inner-community relationships. Target is number of participants reporting positive outcomes through program evaluations.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	88

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Leadership development was identified as a need by the Wyoming Rural Development Council's Community Assessments. The Wyoming Business Council has shared their vision of community economic development using a building block model. At the base are three blocks; leadership development, workforce development, and community capacity building. The second level has two blocks, existing business development and entrepreneur development, and one block on the top for recruiting.

What has been done

In FY 2011, four EVOLVE leadership institutes were held. Each institute meets monthly for 8 sessions ranging from 6 - 8 hours in length. Topics covered include teambuilding, communication, conflict management, a fishbowl simulation of leadership assessment, community involvement, and overall leadership. Educators also conducted assessments for Wyoming LEAD, and marketing sessions for the institutes. Additionally educators have worked with three existing community leadership programs sharing the EVOLVE model.

Results

In 2011, 88 individuals graduated from EVOLVE community leadership institutes in Wyoming. Weekly session evaluations and a end of course written evaluation indicated 100 percent of participants reported their leadership behavior (communication, conflict management, meeting organization) improved. Over 90 percent reported their participation in community events increased as a result of participation in the program. This program which began in 1995 has become a model for the country.

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being
803	Sociological and Technological Change Affecting Individuals, Families, and Communities

Outcome #7

1. Outcome Measures

Leadership participants will be able to utilize collaborative/coalition building practices to implement visionary community programs in order to provide the community with leaders, officials, and volunteers who are able to affect desired change or stability. Target is number of participants reporting outcome.

Not Reporting on this Outcome Measure

Outcome #8

1. Outcome Measures

Short term outcome of research efforts include increased grant funding and increased involvement on regional and mulit-state projects. Target is number of projects reporting outcome.

Not Reporting on this Outcome Measure

Outcome #9

1. Outcome Measures

Development of impact models which will improve community economic analysis as well as mitigate unwanted consequences. Target is number of impact models developed.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	4

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The Federal Government manages much of the land area in the Western United States. In Wyoming the U.S. Forest Service, Bureau of Land Management, National Park Service, U.S. Bureau of Reclamation, and U.S. Fish and Wildlife Service control a combined 29.8 million acres or about one-half of the surface area in the state. Due to its large land holdings, management decisions by Federal land management agencies can have significant impacts on the economies and lifestyles of communities in Wyoming.

What has been done

Economic analyses for the BLM of the Lander RMP, the Buffalo RMP, and the Big Horn RMP, and an economic impact analysis for the Shoshone National Forest.

Results

BLM will use the economic analyses of the Lander RMP, the Buffalo RMP, and the Big Horn RMP in their decisions creating a new Resource Management Plan for the Lander district. The National Forest Service will use the economic impact analysis in the development of a revised management plan for the Shoshone National Forest.

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices
608	Community Resource Planning and Development
803	Sociological and Technological Change Affecting Individuals, Families, and Communities

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)
- Other (changes in technology)

Brief Explanation

Factors external to the College of Agriculture and Natural Resources that will influence programs and results include: formation of collaborations; a shift in demographics; a shift in state and regional economic situations; shifts in local, state, university, and national policy, and changes in technology. External factors which can affect leadership activities include competing public priorities which affect participation;

competing programmatic challenges and limited resources. Many communities are under pressure to deal with multiple changes/issues. A significant portion of community members often resist such change or choose to ignore it. Resources will continue to be scarce and may diminish. The CDE team is only one of five UW Extension SIT teams. Consequently, UW Extension resources brought to bear on this objective will be limited. In the past year there has been one area educator position vacant due to failed searches for a successful candidate. Leadership training has become a popular subject of concern across the nation, which increases the opportunity and need for UW Extension programming, but also increases the competition from other sources offering leadership training and community facilitation.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

The CDE team utilizes a variety of evaluation methods to collect outcome data from programs. Board training is a major thrust of the team. A follow up survey was conducted, using a Website developed by the University of Wyoming Survey Tool. Participants of board training were invited to participate in the survey at least 6 months after attendance. Included were participants from 2008 to 2011.

Participants indicated that they have used the training on Effective Meeting Facilitation, Parliamentary Procedure, Roles and Responsibilities, Open Meetings Law, and Legal Responsibilities the most.

In the area of skill enhancement, 91% of respondents felt they were more effective as board members while 78% felt their confidence had increased. In addition, 68% increased their skills in meeting facilitation, and 53% in parliamentary law. Fifty eight percent feel they are better at fulfilling their board responsibilities, while 45% improved in planning and organizing, 39% in handling conflict, and 77% increased their leadership roles. In summary, the involvement of 70% of respondents was strengthened.

Process skills are key to building community capacity. Conflict management classes taught statewide provided the following results. Fifty participants provided feedback on knowledge and skills gained.

The results from the evaluation show that the majority of participants acquired the necessary knowledge and skills to positively manage conflict.

- 86 percent agreed that at the end of the workshop they could list up to three conflict resolution strategies.
- 94 percent agreed that they could successfully compare/contrast interests and positions.
- 88 percent agreed that they had learned how to use strategies to prevent conflict.
- 88 percent agreed that their participation in the workshop would help them to be more effective in their work/personal life.
- 90 percent of the attendees found that the workshop was a valuable or very valuable experience.

End of session evaluations on all programs showed knowledge gained and skills improved. Over half of respondents indicated they planned to make positive changes as a result of classes.

Key Items of Evaluation

Conflict management skills increase through statewide programs conducted. This is a skill necessary for individual, family, community, and business success.

Capacity for serving on governmental or non-profit boards increased as a result of educational programming by UW Extension. Over 91 percent report more confidence and skills working on boards.

Extension Volunteer Organization for Leadership, Vitality, & Enterprise (EVOLVE) the curriculum utilized for community leadership programs has become a model for the Western States. In place for over 15 years, the program has success in developing capacity of community members to serve in leadership roles.

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Profitable and Sustainable Agriculture Systems

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	100%		100%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	26.0	0.0	30.0	0.0
Actual Paid Professional	0.0	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
0	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	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

Profitable and Sustainable Agriculture Systems has been integrated into the Global Food Security and Hunger, Crop, Livestock, and Horticulture Systems program. All reporting data will

be found under that plan.

Any or all channels of the media will be used to familiarize the public with UW College of Agriculture and Natural Resources areas of research and extension programming and personnel. Media releases in local newspapers, radio spots and television advertisements will inform the public of upcoming Extension programs and research field days including contact persons. Newsletter articles distributed both electronically and through the mail by county offices, area teams, and the University of Wyoming will reach producers locally, regionally, and statewide. Reflections, a yearly publication by AES, showcases research, extension, and education programs in the College. This publication is distributed to over 6,000 households and businesses throughout the state. Public educational programs with invited speakers and Extension specialists and educators presenting research-based information will continue to be held in response to local, state, and national crop and livestock production, horticultural and small acreage issues. Demonstrations of technology and skills training will be included in education curriculum to enhance educational effectiveness. Field tours will be organized to provide producers with the opportunity to observe industry procedure (i.e., tour of an ethanol plant).

Areas of focus in livestock systems: emphasis will be placed on the four main areas; herd management and traceability, herd development, cropping systems and livestock development, risk and operation management techniques and alternatives to enhance the stability of Wyoming livestock producers. The Sustainable Agriculture Research and Extension Center (SAREC) located at Lingle, Wyoming will provide a resource base for integrating livestock/forage based programs.

From the Ground Up television news segments will continue to be developed by UW Extension field staff and aired on statewide television stations to disseminate horticulture information. Newsletter articles distributed both electronically and through the mail by county offices, Master Gardener organizations, area teams, and UW will reach producers, consumers and volunteers. UW Extension specialists will continue to develop Horticultural Train the Trainer events for the benefit of training UW Extension field staff and long term Master Gardener volunteers. Recruitment of Master Gardener, 4-H leaders, and youths as well as other volunteers will occur on an ongoing basis. With ongoing recruitment Wyoming will see an increase in the number of Master Gardeners. 4-H vegetable and forestry judging programs will provide youth with opportunities to evaluate the value of fresh produce and forest products. 4-H gardening project leaders and youth will receive training in proper gardening practices.

Development of a statewide database of defining characteristics of small acre owners. Educational programs targeted at small acreage landowners emphasizing sustainable land management practices. Individual interaction with small acreage landowners educating them on resources available to assist them with sustainable land management practices. Development and distribution of a targeted, user friendly publication providing education on sustainable land management practices. Coordination with other interested agencies to provide education to this clientele, and funding for this effort. Provide educational opportunities for professionals involved with small acreage landowners. Seek external funding to provide education to natural resource professionals, and small acreage landowners.

2. Brief description of the target audience

The University of Wyoming is committed to reaching underrepresented groups and individuals and to implementing the objectives of equal opportunity regulations relative to the consideration and treatment of clientele for participation in all programs regardless of their race, national origin, gender, age, religion, or disability. Participants will include policy makers for County, State, and Federal government agencies, crop producers, livestock producers, ag lenders, potential investors, and the scientific community. An existing secondary audience will be the media, general public, and interest groups not directly involved in production agriculture (i.e., environmental groups).

The targeted audience for horticulture programs include: horticultural crop producers and consumers, Master Gardener and 4-H volunteers, youths, lenders, and potential investors. An existing secondary audience will be the media, general public, and interested groups not directly involved in the production of

horticultural crops or products.

The target audience for small acreage programming is individuals who reside on small acreages of 40 acres or less.

3. How was eXtension used?

NA

V(E). Planned Program (Outputs)

1. Standard output measures

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	0	0	0	0

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

Patent Applications Submitted

Year: 2011

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of horticulture contacts reached. Target is the number of contacts.
Not reporting on this Output for this Annual Report

Output #2

Output Measure

- Research efforts will develop new and improved forages for high elevation livestock systems.
Target measures are new or improved forages.
Not reporting on this Output for this Annual Report

Output #3

Output Measure

- Ultimately, this program will improve livestock value through cropping practices, herd selection, and management for Wyoming livestock producers. Targets include number of programs conducted, livestock producers reporting change in practices as a result of educational efforts. Not reporting on this Output for this Annual Report

Output #4

Output Measure

- Number of subscriptions to Barnyards and Backyards publication. Target is paid subscription numbers for magazine. Not reporting on this Output for this Annual Report

Output #5

Output Measure

- Develop improved methods of estimating forage base under varying environmental conditions. Targets included new methods developed for assessing forage base and growth. Not reporting on this Output for this Annual Report

Output #6

Output Measure

- Number of Master Gardener Volunteers statewide. Target measure is new volunteers recruited and trained. Not reporting on this Output for this Annual Report

Output #7

Output Measure

- Research will develop more sustainable dryland cropping systems using extended rotations, ley pastures and narrow row fallow systems. Short term goals include increased grants and demonstration projects. Target is the number of demonstration projects implemented. Not reporting on this Output for this Annual Report

Output #8

Output Measure

- Research: Wildlife/livestock disease interaction and transfer: long term goal to maintain Wyoming's Brucellosis free status and determine CWD transfer from cervids to domestic livestock. Targets are defined as projects developed. Not reporting on this Output for this Annual Report

Output #9

Output Measure

- Research: Improve pest management practices. Long term goal is to reduce pesticide applications and increase use of IPM practices. Targets are programs implemented. Not reporting on this Output for this Annual Report

Output #10

Output Measure

- Research: Development of biological control practices that effectively reduce populations of invasive weeds. Targets are listed as new programs developed on various weed species.
Not reporting on this Output for this Annual Report

Output #11

Output Measure

- Research: Development of simple blood test for diagnosis of brisket disease. Short term goals include increased grant funding and demonstration results. Target is grant funding obtained.
Not reporting on this Output for this Annual Report

Output #12

Output Measure

- Research: Determine the impact environment has on the ability of female ewes to produce healthy offspring. The long term goal is to develop models to predict production performance under different environments. Targets listed are new projects intended.
Not reporting on this Output for this Annual Report

Output #13

Output Measure

- Develop profitable and sustainable forage based livestock systems for the High Plains. Targets are defined as new systems developed.
Not reporting on this Output for this Annual Report

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Awareness created through extension and research efforts. Target is number of participants in extension and research programs reporting that they have gained awareness on topic.
2	Pasture land owners and/or managers will be able to recognize indicators of pasture condition and will possess decision-making skills necessary to make needed management decisions. Target is number of participants reporting outcome.
3	Producers will gain an understanding of heifer development as well as opportunities for matching genetic improvement with successful marketing strategies. Target is number of producers reporting outcome.
4	Wyoming producers will benefit through an increased value of livestock and crops related to improved cropping practices, herd selection, and management. Target is number of producers reporting positive outcome as a result of educational efforts.
5	Wyoming crop producers will be able to substitute traditional or current crop production with alternative horticultural crops to market if increased profitability may result. Target is number of crop producers utilizing alternative crop production practices.
6	Research: Awareness created; change in knowledge through publications and integration into extension programs. Target is number of research projects. Research outcomes often take multiple years to establish results. The target numbers indicate on-going research projects.
7	Research - Awareness created in animal systems; Change in knowledge through publications and integration into extension programs. Target is number of projects. Outcomes from research efforts often take multiple years. The number of projects reflects efforts.
8	Research - Awareness created on IPM; change in knowledge through publications and integration into extension programs. Target is number of projects which have outcomes that have been integrated into extension programs.
9	Research - Awareness created in plant systems; change in knowledge through publications and integration into extension programs. Target is number of projects which have outcomes integrated into extension programs.
10	Research in animal reproduction - awareness created; change in knowledge through publications and integration into extension activities. Target is number of projects which are on-going which have generated publications or integration into extension programs.

Outcome #1

1. Outcome Measures

Awareness created through extension and research efforts. Target is number of participants in extension and research programs reporting that they have gained awareness on topic.

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Pasture land owners and/or managers will be able to recognize indicators of pasture condition and will possess decision-making skills necessary to make needed management decisions. Target is number of participants reporting outcome.

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

Producers will gain an understanding of heifer development as well as opportunities for matching genetic improvement with successful marketing strategies. Target is number of producers reporting outcome.

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

Wyoming producers will benefit through an increased value of livestock and crops related to improved cropping practices, herd selection, and management. Target is number of producers reporting positive outcome as a result of educational efforts.

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

Wyoming crop producers will be able to substitute traditional or current crop production with alternative horticultural crops to market if increased profitability may result. Target is number of crop producers utilizing alternative crop production practices.

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

Research: Awareness created; change in knowledge through publications and integration into extension programs. Target is number of research projects. Research outcomes often take multiple years to establish results. The target numbers indicate on-going research projects.

Not Reporting on this Outcome Measure

Outcome #7

1. Outcome Measures

Research - Awareness created in animal systems; Change in knowledge through publications and integration into extension programs. Target is number of projects. Outcomes from research efforts often take multiple years. The number of projects reflects efforts.

Not Reporting on this Outcome Measure

Outcome #8

1. Outcome Measures

Research - Awareness created on IPM; change in knowledge through publications and integration into extension programs. Target is number of projects which have outcomes that have been integrated into extension programs.

Not Reporting on this Outcome Measure

Outcome #9

1. Outcome Measures

Research - Awareness created in plant systems; change in knowledge through publications and integration into extension programs. Target is number of projects which have outcomes integrated into extension programs.

Not Reporting on this Outcome Measure

Outcome #10

1. Outcome Measures

Research in animal reproduction - awareness created; change in knowledge through publications and integration into extension activities. Target is number of projects which are on-going which have generated publications or integration into extension programs.

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
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)
- Other (Global market changes)

Brief Explanation

NA

V(I). Planned Program (Evaluation Studies)

Evaluation Results

NA

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Nutrition and Health

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	100%		100%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	8.0	0.0	1.5	0.0
Actual Paid Professional	0.0	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
0	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	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

Nutrition and Health has been integrated into Childhood Obesity, Nutrition and Health - all reporting information will be found under that program.

EFNEP adult curriculum taught in a series of lessons; adult one-time lessons; youth curricula taught in a series of lessons and day camps; displays and demonstrations; state and community partnerships with agencies serving the low-income; training for educators; evaluation of program; Ongoing- Updating of curricula and materials.

Other nutrition efforts will focus on educational programs; media outreach; health fairs; training; assessment/data collection; and research in human health and disease (specifically type 2 diabetes) and N-3 Polyunsaturated fatty acids.

Since skeletal muscle is the main site for utilization of glucose and fatty acids in the body and insulin resistance in skeletal muscle is the key step in the incidence of type 2 diabetes, we hypothesize that impaired fetal skeletal muscle growth due to nutrient deficiency plays an important role. Our goal is to understand how the development of fetal skeletal muscle affects the properties of skeletal muscle of adulthood, and to develop effective strategies to mitigate or avoid incidence of diabetes and obesity caused by impaired skeletal muscle development due to fetal nutrient deficiency.

2. Brief description of the target audience

The University of Wyoming is committed to reaching underrepresented groups and individuals and to implementing the objectives of equal opportunity regulations relative to the consideration and treatment of clientele for participation in all programs regardless of their race, national origin, gender, age, religion, or disability. Specific target audience groups for the CNP (EFNEP) program: Low-income adults, Youth in Title I schools.

Targeted audiences for food safety programs include:

- General Public (Youth and Adults)
- In-Home and Child Care Center Providers. Dining with Diabetes program targets the general public (youth and adults) with Type 2 Diabetes.

All other nutrition efforts targeted audience includes: general public, both adults and youth and policy makers.

3. How was eXtension used?

NA

V(E). Planned Program (Outputs)

1. Standard output measures

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	0	0	0	0

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

Year: 2011
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of Dining with Diabetes, nutrition and programs which promote healthier food choices and lifestyles offered in Wyoming communities. Target is number of programs.
 Not reporting on this Output for this Annual Report

Output #2

Output Measure

- Number of participants in educational programs offered in Nutrition initiative. Target is number of participants.
 Not reporting on this Output for this Annual Report

Output #3

Output Measure

- Number of partnerships formed with public health of other agencies, and Diabetes coordinators. Target is number of partnerships.
 Not reporting on this Output for this Annual Report

Output #4

Output Measure

- Increased adoption of healthy food practices and participation in regular physical activities. Target is number of participants reporting outcome.
 Not reporting on this Output for this Annual Report

Output #5

Output Measure

- Effectiveness of research programs will be based on integration into extension programs, patents, grant dollars, and publications.
 Not reporting on this Output for this Annual Report

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Improved attitude related to diabetes self care, food, and physical activity. Targets are number of participants reporting outcome.
2	Increased knowledge of healthy food choices for optimal diabetes management, and health. Targets are number of participants reporting outcome.
3	Improved skill in selection of healthy foods. Targets are number of participants reporting outcome.
4	Improved eating behavior practices, food choices , and lifestyle habits. Targets are number of participants reporting outcome.
5	Using a variety of food resources to reduce food costs. Providing culturally acceptable meals that are balances for cost as well as for nutritional value. Target is number of participants reporting outcome.
6	Increased availability of personal/family food resources. Target is number of participants reporting outcome.
7	Individuals gain awareness, knowledge and skills related to: improved attitude about healthy eating; increased knowledge of healthy food choices; improved skill in selection of healthy foods; improved body image. Target is number of participants reporting outcome.
8	Individuals incorporate skills and change behaviors related to: increased participation in physical activity; increased knowledge of healthy food choices; improved skill in selection of healthy foods; improved body image. Target is number of participants reporting outcome.
9	Individuals and families experience: improved nutritional health; reduced medical costs; health improved through improved community opportunities; healthier weight; decreased risk factors for nutrition-health related problems. Target is number of participants reporting outcome.
10	The short term goal of research efforts is to increase grant funding and to patent detective process. Target is number of projects which show positive outcomes in regard to additional funding and patents.

Outcome #1

1. Outcome Measures

Improved attitude related to diabetes self care, food, and physical activity. Targets are number of participants reporting outcome.

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Increased knowledge of healthy food choices for optimal diabetes management, and health. Targets are number of participants reporting outcome.

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

Improved skill in selection of healthy foods. Targets are number of participants reporting outcome.

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

Improved eating behavior practices, food choices , and lifestyle habits. Targets are number of participants reporting outcome.

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

Using a variety of food resources to reduce food costs. Providing culturally acceptable meals that are balances for cost as well as for nutritional value. Target is number of participants reporting outcome.

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

Increased availability of personal/family food resources. Target is number of participants reporting outcome.

Not Reporting on this Outcome Measure

Outcome #7

1. Outcome Measures

Individuals gain awareness, knowledge and skills related to: improved attitude about healthy eating; increased knowledge of healthy food choices; improved skill in selection of healthy foods; improved body image. Target is number of participants reporting outcome.

Not Reporting on this Outcome Measure

Outcome #8

1. Outcome Measures

Individuals incorporate skills and change behaviors related to: increased participation in physical activity; increased knowledge of healthy food choices; improved skill in selection of healthy foods; improved body image. Target is number of participants reporting outcome.

Not Reporting on this Outcome Measure

Outcome #9

1. Outcome Measures

Individuals and families experience: improved nutritional health; reduced medical costs; health improved through improved community opportunities; healthier weight; decreased risk factors for nutrition-health related problems. Target is number of participants reporting outcome.

Not Reporting on this Outcome Measure

Outcome #10

1. Outcome Measures

The short term goal of research efforts is to increase grant funding and to patent detective process. Target is number of projects which show positive outcomes in regard to additional funding and patents.

Not Reporting on this Outcome Measure

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Appropriations changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)
- Other (Global conditions)

Brief Explanation

NA

V(I). Planned Program (Evaluation Studies)

Evaluation Results

NA

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

4-H and Youth Development

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
801	Individual and Family Resource Management	10%		0%	
802	Human Development and Family Well-Being	25%		0%	
806	Youth Development	65%		0%	
	Total	100%		0%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	29.0	0.0	0.0	0.0
Actual Paid Professional	34.0	0.0	0.0	0.0
Actual Volunteer	12.0	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
519025	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
519025	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

Activities include volunteer training on the following topics: Ages and stages of youth; Risk Management; Youth Development Concepts; Non-Profit Management/Coordination; Financial Management/IRS Issues; Project Training; Learning Styles; Club Maintenance; Recruitment and Retention.

Traditional 4-H will focus on project or leadership activities; teach and/or facilitate educational programs; recruitment of new members, training, camps, clinics, contests, media, and assessment.

Non-traditional 4-H activities will include: Cloverbuds (pre 4-H); After School Programs; School Enrichment; Youth Leadership; Marketing; and Camps.

2. Brief description of the target audience

The University of Wyoming College of Agriculture and Natural Resources is committed to reaching underrepresented groups and individuals and to implementing the objectives of equal opportunity regulations relative to the consideration and treatment of clientele for participation in Extension programs regardless of their race, national origin, gender, age, religion, or disability. 4-H Volunteers will be recruited from the following groups: Adults in the Community, Other Agencies, Civic Groups, Youth Groups, and the General Public.

Traditional 4-H youth audiences will target:

- Youth
- Volunteers
- Families
- Community.

The target audience for non-traditional 4-H will include: Underserved and high risk youth who do not participate in the traditional 4-H Youth program in Wyoming.

3. How was eXtension used?

eXtension is utilized as a resource for all program areas. The 4-H youth program refers educators and clientele to eXtension through its' prominent display on the University of Wyoming Extension Web site. The UW state equine specialists refers educators to the site frequently. In addition professional development opportunities through eXtension are shared with educators monthly.

V(E). Planned Program (Outputs)

1. Standard output measures

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	2452	5000	19770	10000

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

Patent Applications Submitted

Year: 2011

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of youth enrolled in the traditional 4-H program. Target is number of youth enrolled in traditional 4-H club programs.

Year	Actual
2011	9160

Output #2

Output Measure

- Number of educational events, camps, training workshops, clinics implemented. Target is number of programs and events.

Year	Actual
2011	800

Output #3

Output Measure

- Number of volunteers enrolled as leaders in the 4-H program. Target is number of volunteers enrolled in the 4-H program.

Year	Actual
2011	2452

Output #4

Output Measure

- Number of volunteers participating in formal training programs. Target is number of volunteers participating in training programs.

Year	Actual
2011	4959

Output #5

Output Measure

- Number of non-traditional programs established. Target is number of non-traditional programs.

Year	Actual
2011	20

Output #6

Output Measure

- Number of youth enrolled in non-traditional youth development programs. Target is number of youth enrolled in non-traditional programs.

Year	Actual
2011	10610

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Increased knowledge, skills, self-esteem, awareness, motivation, belonging, and diversity. Target is number of youth participating who report positive outcome.
2	Wyoming youth will acquire knowledge which builds life skills including critical thinking, public speaking, teamwork, self-discipline, responsibility, decision making, self-esteem, communication, and leadership. Target is number of youth reporting outcome.
3	Youth will be empowered to make logical decisions, develop a positive behavior (according to traditional values), effectively communicate, and establish a working relationship with others. Target is number of participants reporting outcome.
4	Wyoming youth build assets and essential life skills to lead productive, responsible, and healthy lifestyles. Target is number of participants reporting outcome.
5	Decreased incidence of youth engaging in high risk behavior. Youth become responsible, productive adults. Target is number of participants reporting outcome.
6	Non-traditional youth participating in programs serve in leadership roles, serve on governing bodies, act as mentors, and teach other youth. Target is number of participants reporting outcome.
7	Volunteers demonstrate increased knowledge in project areas. Target is number of participants reporting outcome.
8	Volunteers become key players in 4-H and youth development programs. Target is number of participants reporting outcome.
9	Volunteers demonstrate knowledge of youth development principles. Target is number of participants reporting outcome.
10	Volunteers will learn and apply the experiential learning model. Target is number of participants reporting outcome.
11	Trained adult volunteers will demonstrate skills and abilities in which they are able to foster youth to become responsible adults. Target is number of participants reporting outcome.

Outcome #1

1. Outcome Measures

Increased knowledge, skills, self-esteem, awareness, motivation, belonging, and diversity. Target is number of youth participating who report positive outcome.

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Wyoming youth will acquire knowledge which builds life skills including critical thinking, public speaking, teamwork, self-discipline, responsibility, decision making, self-esteem, communication, and leadership. Target is number of youth reporting outcome.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	17669

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

In Wyoming there are an estimated 75,000 youth between the ages of 8 and 18 according to the U.S. Census Bureau. According to the Search Institute 'youth who have ten or fewer of the 40 external and internal assets are at high risk of developing at-risk behaviors'. All of the 40 external and internal assets are likely to be developed by youth involved in the 4-H program. Youth in the traditional 4-H program have the opportunity to expand their knowledge base, increase their life skills and develop leadership abilities in order to become responsible, contributing citizens.

What has been done

4-H youth educators conducted 299 educational activities including 4-H camps, Junior Leader programs, leadership retreats and special interest sessions, judging programs, training on public speaking and presentations and implemented Character Counts training statewide. In 2011 the issue of bullying was also addressed in two counties via in-school programs. Additionally UW Extension with an over \$200,000 State Department grant led a group of 30 youth and five adults to Mongolia for a month to begin implementation of 4-H in that country.

Results

100 percent of youth participating in 4-H judging programs reported increased confidence and skills in decision making and communication. Junior leaders (youth age 13 - 18) reported through formal and informal evaluations increased awareness and skills in teamwork, decision making, self-discipline, leadership, communication, and responsibility. Youth participating in educational programs, camps, and other activities demonstrate increased knowledge and skills. Youth participating in the Mongolian gained leadership skills and understanding of diverse cultures.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #3

1. Outcome Measures

Youth will be empowered to make logical decisions, develop a positive behavior (according to traditional values), effectively communicate, and establish a working relationship with others. Target is number of participants reporting outcome.

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

Wyoming youth build assets and essential life skills to lead productive, responsible, and healthy lifestyles. Target is number of participants reporting outcome.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	3975

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

In Wyoming there are an estimated 75,000 youth between the ages of 8 and 18 according to the U.S. Census Bureau. According to the Search Institute 'youth who have ten or fewer of the 40 external and internal assets are at high risk of developing at-risk behaviors'. All of the 40 external and internal assets are likely to be developed by youth involved in the 4-H program. Youth in the traditional 4-H program have the opportunity to expand their knowledge base, increase their life

skills and develop leadership abilities in order to become responsible, contributing citizens.

What has been done

4-H educators work with youth ages 13 - 18 in Junior Leader programs which target development of assets. A variety of methods are used including training, camps, workshops, leadership retreats, and on-going monthly junior leader meetings. WYLE curriculum, Wyoming Youth Leadership Education program, funded through the Daniels Fund, was held in all areas in the state with 2 to 3 day retreats for junior leader age youth. Focusing on developing assets in youth is an objective of all educational activities. Bullying has been addressed through programs in schools including peer mentoring.

Results

Junior leader age youth (13 - 18) report through formal and informal evaluation increased skills, knowledge, and assets such as self esteem, communication, responsibility, and decision making. Wyoming Youth Leadership Education retreats had the following impact: daily evaluations as well as a final overall evaluation were used to evaluate the overall impact of the program. The evaluations showed that 70 percent of youth said that their knowledge was improved or greatly improved by the True Colors assessment, 74 percent for learning styles, 89 percent for body language, and 94 percent for extreme leadership, 40 percent for youth in governance, 58 percent for business etiquette, 90 percent for senior sensitivity, 65 percent for Character Counts, and 90 percent for communication. Bullying program evaluation results indicated: 78 percent reported an increase in student awareness of what bullying is; 65 percent of students have an increased understanding of how to handle bullying situations; 100 percent of teachers indicated the mentor relationship was beneficial to students; 27 percent indicated they would make changes in the classroom as a result of the program.

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being
806	Youth Development

Outcome #5

1. Outcome Measures

Decreased incidence of youth engaging in high risk behavior. Youth become responsible, productive adults. Target is number of participants reporting outcome.

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

Non-traditional youth participating in programs serve in leadership roles, serve on governing bodies, act as mentors, and teach other youth. Target is number of participants reporting outcome.

Not Reporting on this Outcome Measure

Outcome #7

1. Outcome Measures

Volunteers demonstrate increased knowledge in project areas. Target is number of participants reporting outcome.

Not Reporting on this Outcome Measure

Outcome #8

1. Outcome Measures

Volunteers become key players in 4-H and youth development programs. Target is number of participants reporting outcome.

Not Reporting on this Outcome Measure

Outcome #9

1. Outcome Measures

Volunteers demonstrate knowledge of youth development principles. Target is number of participants reporting outcome.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	2452

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Adult volunteers are the mainstay of the 4-H Program. The success of the program depends on the knowledge and skills volunteer leaders have and can then pass on to the youth and parents in their clubs. Leaders can directly accomplish goals of the program for positive youth development of all participants. In the 2010-2011 program year in Wyoming there were 2452 leaders at all stages of experience and expertise. Area advisory meetings, 4-H councils, program assessments compiled over three years revealed the need for leadership training beyond the basics of 4-H.

What has been done

4-H educators and the State 4-H volunteer development specialist teamed to design and implement the Master 4-H Volunteer Training in 2010. Resources included curriculum and activities developed to provide hands-on, experiential learning opportunities for volunteers. The program consisted of 11 hours of intensive training. Wyoming leaders spent the past year planning and organizing the Western 4-H Leaders Forum. In addition, county youth educators conducted over 134 training sessions for volunteers, reaching over 4959 including parents of youth.

Results

100 percent of the volunteer leaders rated the overall Master Volunteer training as good or very good. Many leaders indicated an intent to use the information to help train other leaders in their home county. Volunteer leaders report and demonstrate increased confidence and skills in their volunteer role. Average time committed to the 4-H program is between 7 - 360 hours per year at the volunteer rate of \$18.38 per hour (Independent Sector). Volunteers contribute close to \$1 million to the youth development program in Wyoming.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #10

1. Outcome Measures

Volunteers will learn and apply the experiential learning model. Target is number of participants reporting outcome.

Not Reporting on this Outcome Measure

Outcome #11

1. Outcome Measures

Trained adult volunteers will demonstrate skills and abilities in which they are able to foster youth to become responsible adults. Target is number of participants reporting outcome.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	2452

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Adult volunteers are the mainstay of the 4-H Program. The success of the program depends on the knowledge and skills volunteer leaders have and can then pass on to the youth and parents in their clubs. Leaders can directly accomplish goals of the program for positive youth development of all participants. In the 2010-2011 program year in Wyoming there were 2432 leaders at all stages of experience and expertise. Area advisory meetings, 4-H councils, program assessments compiled over three years revealed the need for leadership training beyond the basics of 4-H.

What has been done

4-H youth educators conducted 135 training activities including state 4-H leaders conference, project and general leader training. Objectives and goals of 4-H youth development principles are incorporated into all training sessions.

Results

Volunteers stated increased understanding of youth development principles which foster youth to become productive adults. Testimonials from 4-H leaders and youth indicate the positive influence adult volunteers have on the life of 4-H members.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management
802	Human Development and Family Well-Being
806	Youth Development

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)
- Other (background of participants)

Brief Explanation

High staff turnover in the 4-H program also impacts continuity of youth development programs.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Over one-third of youth development programs and volunteer training are evaluated through formal evaluations including end of session surveys, pre and post test, follow up, and observation. Testimonials from participants, teachers, and parents.

Youth age 13 - 18 participate in on-going year round Junior Leader programs. The following quotes are from informal evaluations:

"Junior leaders has helped me become more involved with my community and prepare me for future leadership roles." -18-year-old 4-H'er

"I now have better social skills, public speaking and increased my group interaction abilities from being a part of junior leaders." -17-year-old 4-H'er

"I have learned so many public speaking skills and enjoy 4-H so much I would like to become a 4-H educator." -14-year-old 4-H'er

"My son has more confidence in himself and able to make decisions after his first year involved in junior leaders." - Parent

"The youth involved in junior leaders for sure have more leadership and public speaking abilities." - FFA adviser

In 2011 the issue of bullying was addressed through peer mentor and teacher education training.

- 78 percent reported an increase in student awareness of what bullying is
- 65 percent of students have an increased understanding of how to handle bullying situations
- 100 percent of teachers indicated the mentor relationship was beneficial to students
- 27 percent indicated they would make changes in the classroom as a result of the program

Volunteers contribute significant volunteer time adding approximately \$1 million dollars to youth outreach efforts.

Key Items of Evaluation

Volunteers contribute significant volunteer time adding approximately \$1 million dollars to youth outreach efforts.

In 2011 the issue of bullying was addressed through peer mentor and teacher education training.

- 78 percent reported an increase in student awareness of what bullying is
- 65 percent of students have an increased understanding of how to handle bullying situations
- 100 percent of teachers indicated the mentor relationship was beneficial to students
- 27 percent indicated they would make changes in the classroom as a result of the program

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Sustainable Management of Rangeland Resources (SMRR)

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
101	Appraisal of Soil Resources	5%		5%	
102	Soil, Plant, Water, Nutrient Relationships	5%		5%	
103	Management of Saline and Sodic Soils and Salinity	5%		5%	
104	Protect Soil from Harmful Effects of Natural Elements	5%		5%	
111	Conservation and Efficient Use of Water	5%		5%	
112	Watershed Protection and Management	5%		5%	
121	Management of Range Resources	5%		5%	
123	Management and Sustainability of Forest Resources	5%		5%	
131	Alternative Uses of Land	5%		5%	
132	Weather and Climate	5%		5%	
135	Aquatic and Terrestrial Wildlife	5%		5%	
136	Conservation of Biological Diversity	5%		5%	
205	Plant Management Systems	5%		5%	
206	Basic Plant Biology	5%		5%	
211	Insects, Mites, and Other Arthropods Affecting Plants	5%		5%	
213	Weeds Affecting Plants	5%		5%	
306	Environmental Stress in Animals	5%		5%	
311	Animal Diseases	5%		5%	
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals	5%		5%	
605	Natural Resource and Environmental Economics	5%		5%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	12.0	0.0	12.0	0.0
Actual Paid Professional	13.0	0.0	6.0	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
198451	0	267245	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
198451	0	267245	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

Natural resource programs will reach out to a broad spectrum of constituents throughout Wyoming using a variety of sources. Workshops on sustainable rangeland and animal management principles will be offered within each extension area in the state. Provide professional development opportunities for rangeland professionals. Develop written educational materials on rangeland and animal management practices and principles (fact sheets, bulletins, media, presentations, Web). Conduct technical consultation on rangeland and animal management, and monitoring of rangelands. Develop media on rangeland management principles (radio, TV, press). Conduct research and demonstrations on sustainable natural resource management principles. Work with individual rangeland managers on developing, implementing, and evaluating sustainable management practices.

Develop and/or present programs on natural resources at youth activities. Produce, or update currently produced educational materials targeted to youth on natural resource education. Produce information/education modules emphasizing natural resource topics for 4-H leader use in 4-H project with large enrollment.

2. Brief description of the target audience

The University of Wyoming is committed to reaching underrepresented groups and individuals and to implementing the objectives of equal opportunity regulations relative to the consideration and treatment of clientele for participation in programs regardless of their race, national origin, gender, age, religion, or disability. In FY 2011 UW Extension hired a bi-lingual agriculture educator to expand our ability to reach a more diverse audience. The College of Agriculture and Natural Resources is committed to transmitting unbiased scientific-based information to solve local and regional natural resource conflicts involving state, federal, and private resources. All efforts will be made to provide information through direct contact and through publications, newsletters, Web sites and other methods. The general public and exurban

landowners, agricultural producers and federal and state land management agency personnel.

General youth and traditional 4-H are among the target audiences for natural resource youth programs.

3. How was eXtension used?

eXtension is utilized as a resource for educators and clientele. The University of Wyoming Extension Web site prominently displays the eXtension link on the home page. Additionally, professional development opportunities through eXtension are publicized for Extension employees.

V(E). Planned Program (Outputs)

1. Standard output measures

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	12379	100000	500	2500

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

Patent Applications Submitted

Year: 2011

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	Extension	Research	Total
Actual	10	18	28

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of programs implemented. Target is number of programs.

Year	Actual
2011	665

Output #2

Output Measure

- Documented media efforts implemented. Target is number of media efforts such as magazines, TV, radio, newspaper inserts.

Year	Actual
2011	75

Output #3

Output Measure

- Number of individuals participating in educational programs or activities. Target is number of participants.

Year	Actual
2011	12379

Output #4

Output Measure

- Number of agency personnel, range professionals, and general public participating in training. Target is number of participants.

Year	Actual
2011	200

Output #5

Output Measure

- Number of youth related natural resource programs implemented. Target is number of programs.

Year	Actual
2011	3

Output #6

Output Measure

- Number of youth participating in natural resource educational programs or activities. Target is number of participants.

Year	Actual
2011	200

Output #7

Output Measure

- Research: The ability of producers to adopt economically and environmentally sustainable production practices in the face of persistent drought will improve the economic viability while

reducing potential resource damage. The long term goal will be to model scenarios of long term drought on economic viability of rural communities. Target is number of producers implementing practices.

Not reporting on this Output for this Annual Report

Output #8

Output Measure

- Research - Impacts of natural resource development on long term rural water quality. Long term goals will be to integrate knowledge gained into environmental regulations and improved water quality. Target is number of projects.

Year	Actual
2011	2

Output #9

Output Measure

- Research - One of the major environmental controversies is rising CO2 levels. There is a large potential to increase C storage in disturbed and reclaimed land. Long term goals will be to develop improved soil properties on these sites. Target is number of projects.
Not reporting on this Output for this Annual Report

Output #10

Output Measure

- Research - Matching animal productivity to actual resources available rather than modifying resources to match animal nutrient needs. The long term goal is to develop more sustainable grazing systems. Target is number of projects.

Year	Actual
2011	1

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Increase public knowledge and appreciation of natural resources and public awareness of sustainable resources. Target is number of participants reporting outcome.
2	General public understands the impact of resource use and management on the quality and quantity of the resources. (i.e. water, rangeland, wildlife, viewsheds). Target is number of participants reporting outcome.
3	Raise the understanding of the general public on the interaction of natural resource use in Wyoming's economy. Citizens will make better informed decisions on natural resource issues and topics. Target is number of participants reporting outcome.
4	Increased enrollment in 4-H natural resource programs (projects, camps, activities). Target is number of increased youth participation in natural resource programs.
5	Raise awareness, knowledge, and skills for development, implementation and evaluation of land management plans that include management of grazing and browsing animals, and adjusting management as necessary to meet objectives. Target is number of participants reporting outcome.
6	Land managers, public and private, will develop, implement, and evaluate plans for improved management of rangeland resources and associated herbivores. Target is number of participants reporting outcome.
7	Research - Increased knowledge and appreciation of sustainable production practices. Change in knowledge through publications and integration into extension programs. Target is number of projects which have resulted in publication of results and/or integration into extension programs.
8	Research - Increase knowledge and appreciation of resource development on water quality. Outcomes will be change in knowledge through publications, bulletins, reports and long term to integrate research into extension programs. Target is number of projects which have outcomes that have been documented in publications, bulletins and/or integrated into extension programs.
9	Research - Increase public awareness on long term CO2 levels and integrate findings into extension programs. Target is number of projects in which outcomes have been integrated into extension programs.
10	Research - Increase producers ability to match resources to animal productivity. Target is number of projects which report research outcome. These projects have been integrated into extension programming.

Outcome #1

1. Outcome Measures

Increase public knowledge and appreciation of natural resources and public awareness of sustainable resources. Target is number of participants reporting outcome.

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

General public understands the impact of resource use and management on the quality and quantity of the resources. (i.e. water, rangeland, wildlife, viewsheds). Target is number of participants reporting outcome.

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

Raise the understanding of the general public on the interaction of natural resource use in Wyoming's economy. Citizens will make better informed decisions on natural resource issues and topics. Target is number of participants reporting outcome.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	30000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Many Wyomingites are not directly tied to natural resources and agriculture. This results in lack of knowledge and experience regarding natural resource systems, their management and the industries they support. Unfortunately, a segment of the general public appears to believe that any use of even renewable resources is damaging. There is often conflict and occasional litigation among interest groups that differ on how resources should be used and managed. Natural resources are important to all segments of the Wyoming population.

What has been done

The Sustainable Management of Rangeland Resources initiative team has produced over 228 seventy second TV spots which air twice weekly on commercial TV station in Casper. The segment titled 'Exploring the Natural Wonders of Wyoming' (ENOW) covers natural resource topics to provide education to the general public. The ENOW spots have also been placed on You-Tube to reach a national audience. Articles on natural resource issues appear in Barnyards & Backyards, rural living in Wyoming Magazine quarterly and statewide newspaper inserts.

Results

In the sixth year of airing these spots, the team receives regular feedback from Wyoming citizens and now national viewers on the positive aspects of the spots. The videos have been transferred to DVD's for public distribution and also distributed to schools though the state. The spots posted on You-Tube with viewership growth from 2,400 in 2007 to 158,000 views in 2011. It is difficult to measure impact, though the audience response has generated enough impact that the the energy industry now provides partial funding for the segments aired twice weekly. Barnyards and Backyards magazine has over 3000 paid subscribers.

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
121	Management of Range Resources
123	Management and Sustainability of Forest Resources
131	Alternative Uses of Land
135	Aquatic and Terrestrial Wildlife
605	Natural Resource and Environmental Economics

Outcome #4

1. Outcome Measures

Increased enrollment in 4-H natural resource programs (projects, camps, activities). Target is number of increased youth participation in natural resource programs.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
-------------	---------------

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Extension is uniquely positioned in that we have existing volunteer youth development programming infrastructure already built in the 4-H program featuring offices in all of Wyoming's 23 counties, several thousand volunteer staff and thousands of youth already acquainted with the 4-H program. These youth present an immediate natural resource education audience and an opportunity to reach the broader youth audience with the educational resources we have. Building stronger natural resource programs, enhancing natural resource teaching opportunities within existing high-interest projects (like market livestock and shooting sports projects) and increasing youth development opportunities are key. This will continue to foster interest in natural resource careers. Science, engineering, and technology emphasis of 4-H align with SMRR educational efforts.

What has been done

Educators conducted 12 educational programs including an ag expo, GPS training, plant anatomy, native plants and noxious weeds, and nature awareness. Alternative energy, windmill science and wind workshops were also conducted. Over half the counties in Wyoming conduct summer camping programs which include natural resource education.

Results

Enrollment in 4-H livestock projects continues to increase. Shooting sports which is also closely tied to natural resources is also experiencing increased enrollment. All youth participating in targeted natural resource education programs report increased knowledge and skills.

4. Associated Knowledge Areas

KA Code	Knowledge Area
121	Management of Range Resources
123	Management and Sustainability of Forest Resources
132	Weather and Climate
135	Aquatic and Terrestrial Wildlife

Outcome #5

1. Outcome Measures

Raise awareness, knowledge, and skills for development, implementation and evaluation of land management plans that include management of grazing and browsing animals, and adjusting management as necessary to meet objectives. Target is number of participants reporting outcome.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	935

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Rangelands comprise over 80 percent of Wyoming's land base. Range livestock production, recreation, and wildlife habitat are some of the dominant uses of rangelands. Rangelands also provide water for homes and municipalities, irrigation, industries, fisheries, wildlife and livestock. In semi-arid Wyoming, rangeland uses need to be compatible with maintaining the quality and quantity of water resources. Livestock grazing and wildlife habitat management must also be compatible as both are important for the sustainability of the State's rangeland resources and its economy.

What has been done

Extension educators in the SMRR initiative conducted 26 educational programs, tours, or workshops on range monitoring. Most classes were targeted toward permittees reaching 935 individuals. Reclamation 101 School has been implemented to assist producers and industry in mitigating energy impacts.

Results

100 percent of participants in educational programs reported increased awareness, knowledge, and skills of range monitoring. Over one third of individuals reported implementing or adjusting management plans as a result of the workshops.

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
121	Management of Range Resources
123	Management and Sustainability of Forest Resources
131	Alternative Uses of Land

Outcome #6

1. Outcome Measures

Land managers, public and private, will develop, implement, and evaluate plans for improved management of rangeland resources and associated herbivores. Target is number of participants reporting outcome.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	450

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Rangelands comprise over 80 percent of Wyoming's land base. Range livestock production, recreation, and wildlife habitat are some of the dominant uses of rangelands. Rangelands also provide water for homes and municipalities, irrigation, industries, fisheries, wildlife and livestock. In semi-arid Wyoming, rangeland uses need to be compatible with maintaining the quality and quantity of water resources. Livestock grazing and wildlife habitat management must also be compatible as both are important for the sustainability of the State's rangeland resources and its economy.

What has been done

Extension educators in the SMRR initiative conducted 11 educational programs, tours, or workshops on range monitoring. Most classes were targeted toward permittees reaching 450 individuals.

Results

100 percent of participants in educational programs reported increased awareness, knowledge, and skills of range monitoring. 65 individuals reported implementing or adjusting management plans as a result of the workshops. A southeast Wyoming intensive grazing school reached 31 producers. When evaluating the course the expected impact on profitability was estimated at \$43.54 per head. When extrapolated by number of head managed by each participant the total estimated improvement as a result of participating in the school is \$527,600.

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management

121	Management of Range Resources
123	Management and Sustainability of Forest Resources
135	Aquatic and Terrestrial Wildlife
306	Environmental Stress in Animals
311	Animal Diseases
605	Natural Resource and Environmental Economics

Outcome #7

1. Outcome Measures

Research - Increased knowledge and appreciation of sustainable production practices. Change in knowledge through publications and integration into extension programs. Target is number of projects which have resulted in publication of results and/or integration into extension programs.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	2

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Sagebrush management has changed over the last two decades from a focus on removal and increasing forage yields to concerns about sage grouse habitat values and associated impacts of plant succession and sagebrush manipulations.

What has been done

A sagebrush management research project was established in 1987. Over the life of the project herbage yields were determined annually and sagebrush abundances were determined periodically and at 23 years. Seasonal precipitation was measured each year.

Results

BLM used the information in formulating their habitat management plans for sage grouse. An unknown number of ranchers have made adjustments in livestock numbers and grazing plans in response to readily available seasonal precipitation information and its impact on forage yields in the upcoming year or grazing season.

4. Associated Knowledge Areas

KA Code	Knowledge Area
121	Management of Range Resources
132	Weather and Climate
205	Plant Management Systems
206	Basic Plant Biology

Outcome #8

1. Outcome Measures

Research - Increase knowledge and appreciation of resource development on water quality. Outcomes will be change in knowledge through publications, bulletins, reports and long term to integrate research into extension programs. Target is number of projects which have outcomes that have been documented in publications, bulletins and/or integrated into extension programs.

Not Reporting on this Outcome Measure

Outcome #9

1. Outcome Measures

Research - Increase public awareness on long term CO2 levels and integrate findings into extension programs. Target is number of projects in which outcomes have been integrated into extension programs.

Not Reporting on this Outcome Measure

Outcome #10

1. Outcome Measures

Research - Increase producers ability to match resources to animal productivity. Target is number of projects which report research outcome. These projects have been integrated into extension programming.

Not Reporting on this Outcome Measure

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Other (Technology changes)

Brief Explanation

UW Extension has experienced several educators resigning during this period. Searches are in progress to bring this team of educators back to full capacity. Weather extremes and funding are factors which impact both research and extension efforts.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Educational classes, workshops, schools utilized end of session evaluations with informal follow-up to document actual practices implemented. 100 percent of participants indicated increasing knowledge and skills as a result of educational efforts. Over one-third indicated they had used the information to make a positive change on their land.

One multi-day extensive grazing school held in Southeast Wyoming gathered evaluation data at the conclusion of the program. Thirtyone participants responded.

Participants listed changes they would make. A sample of comments included:

- Intensify my winter grazing management in hope of better animal performance.
- Will continue to improve our program, especially will start doing cost analyses and recording forage amounts available.
 - Convert everything to year-round grazing by matching stock to resources. Improve forage quality and pasture capability. My planned goal is to improve the land and its resources by grazing it with intensive management.
 - Try to graze winter with wind row hay; understand importance of good quality water availability importance; manage water better; graze better to stage 2 not stage 1.

Participants were also asked to evaluate the expected impact on the profitability of their operations. Those raising livestock estimated profitability improved \$43.54 per head. When extrapolated by number of head managed by each participant, the total estimated improvement as a result of attending the school is \$527,600.

Key Items of Evaluation

Permittees have implemented range monitoring plans which improve sustainability of their land.

Natural resource media efforts have enhanced knowledge of Wyoming citizens on rangeland, natural resources, water conservation and preservation of the land.

Participants were asked to evaluate the expected impact on the profitability of their operations. Those raising livestock estimated profitability improved \$43.54 per head. When extrapolated by number of head managed by each participant, the total estimated improvement as a result of attending the school is \$527,600

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Global Food Security and Hunger, Crop, Livestock, and Horticulture Systems

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	5%		5%	
111	Conservation and Efficient Use of Water	5%		5%	
202	Plant Genetic Resources	5%		5%	
204	Plant Product Quality and Utility (Preharvest)	5%		5%	
205	Plant Management Systems	10%		10%	
211	Insects, Mites, and Other Arthropods Affecting Plants	5%		5%	
212	Pathogens and Nematodes Affecting Plants	5%		5%	
213	Weeds Affecting Plants	5%		5%	
214	Vertebrates, Mollusks, and Other Pests Affecting Plants	5%		5%	
216	Integrated Pest Management Systems	5%		5%	
301	Reproductive Performance of Animals	5%		5%	
302	Nutrient Utilization in Animals	5%		5%	
305	Animal Physiological Processes	5%		5%	
307	Animal Management Systems	10%		10%	
311	Animal Diseases	5%		5%	
502	New and Improved Food Products	5%		5%	
601	Economics of Agricultural Production and Farm Management	5%		5%	
704	Nutrition and Hunger in the Population	5%		5%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	3.0	0.0	4.0	0.0

Actual Paid Professional	24.0	0.0	21.2	0.0
Actual Volunteer	2.0	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
366371	0	944134	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
366371	0	944134	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

Any or all channels of the media are used to familiarize the public with UW College of Agriculture and Natural Resources areas of research and extension programming and personnel. Newsletter articles distributed both electronically and through the mail by county offices, area teams, and the University of Wyoming will reach producers locally, regionally, and statewide. Public educational programs by extension specialists and educators presenting research-based information were held in response to local, state, and national crop and livestock production, horticultural and nutrition issues. Demonstrations of technology and skills training will be included in education curriculum to enhance educational effectiveness. Field tours were organized to provide producers with the opportunity to observe improved sustainable agricultural practices.

Areas of focus in livestock systems emphasis will be placed on the four main areas: herd management, herd development, cropping systems and livestock development, risk and operation management techniques and alternatives to enhance the stability of Wyoming livestock producers. Crop systems focused on alternative crops, reduction of loss due to insects and diseases, and methodology to extend the growing season in Wyoming's arid climate. Fostering development of local food systems, which includes promoting use of local foods, can improve energy efficiency of the food system while yielding many other benefits. UW Extension plans to enhance efficiency within local food systems by improving relationships among local food producers and consumers in Wyoming.

- development and pilot-testing of *Wyoming Local Food Expos* were conducted in two communities; development and distribution of the *Wyoming Local Foods Guide* (print and electronic versions) which will include a directory of specialty crops and other local food products, nutrition and food safety resources, recipes for using local foods, fact sheets related to local foods in Wyoming, and tips on sustainable living. The *Foods Guide* will be uniquely Wyoming but will draw from several existing examples.

- development and implementation of a training module was conducted in August 2011 to provide UW extension educators statewide with the knowledge and skills to successfully promote local foods.

Wyoming's arid climate presents challenges for home horticulture. Over half the counties in the state have on-going master gardener training programs to assist with research based horticulture information.

2. Brief description of the target audience

The University of Wyoming is committed to reaching underrepresented groups and individuals and to implementing the objectives of equal opportunity regulations relative to the consideration and treatment of clientele for participation in programs regardless of their race, national origin, gender, age, religion, or disability. All efforts will be made to provide information through direct contact and through publications, newsletters, Web sites and other methods. The general public and exurban landowners, agricultural producers and specific target audience groups for the CNP (EFNEP) program: low-income adults, youth in Title I schools. UW Extension employed four area educators fluent in Spanish which assisted with expanding outreach to a diverse clientele.

3. How was eXtension used?

eXtension is used as a resource in Wyoming. The link to eXtension is prominently displayed on the UW Extension Web site home page. In addition, professional development opportunities through eXtension are publicized to Extension employees.

V(E). Planned Program (Outputs)

1. Standard output measures

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	39426	90000	970	5000

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

Patent Applications Submitted

Year: 2011

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	Extension	Research	Total
Actual	21	54	75

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of educational programs focusing on global food security and hunger. Target is the number of programs

Year	Actual
2011	341

Output #2

Output Measure

- Number of participants attending programs focusing on global food security and hunger. Target is the number of individual participants

Year	Actual
2011	5648

Output #3

Output Measure

- Number of partnerships formed with other nutrition/health/farmers market agencies or organizations. Target is the number of partnerships.

Year	Actual
2011	10

Output #4

Output Measure

- Increased adoption of sustainable agriculture methods and practices which result in increased production of the food supply. Target is number of participants reporting outcome.

Year	Actual
2011	2000

Output #5

Output Measure

- Effectiveness off research programs will be based on integration of extension programs, patents, grant dollars, and publications. Target is number of research projects focusing on global food security and hunger.

Year	Actual
2011	32

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Increased knowledge of agriculture producers on sustainable cropping and livestock systems. Target is number of producers reporting outcome.
2	Improved sustainable agriculture production practices resulting in an increased food supply. Outcome is number of producers reporting outcome.
3	Increased availability of personal/family food resources. Target is number of participants reporting outcome.
4	Individuals gain awareness, knowledge, and skills related to: increased knowledge of healthy food choices; improved selection of healthy foods; improved food resource management. Target is the number of participants reporting outcome.
5	The short term goal of research efforts is to increase grant funding. Target is number of projects which show positive outcomes in regard to additional funding.
6	Research - Awareness created in plant systems: change in knowledge through publications, and integration into Extension programs. Target is number of projects reporting this outcome.
7	Research in animal production - awareness created; change in knowledge through publications and integration into extension activities. Target is number of projects which are on-going that have generated publications or integration into extension programs.

Outcome #1

1. Outcome Measures

Increased knowledge of agriculture producers on sustainable cropping and livestock systems.
Target is number of producers reporting outcome.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	5648

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The value of agriculture to Wyoming's economy approaches \$1 billion each year, and agriculture's contribution to open spaces, wildlife, and recreation is even greater. Livestock and crop producers throughout the state of Wyoming face an ever changing industry with issues such as; increasing cost of production, increasing pressure focused on land conversion, changing requirements for marketing knowledge. All of the issues are coupled with the need for producers to be able to raise agricultural products in a sustainable operation with limited resources.

What has been done

Extension Educators in Profitable and Sustainable Agriculture Systems conducted 431 educational programs including field days, workshops, classes, multi-session courses, and volunteer training. In addition media is utilized to reach citizens through television, newspaper inserts, magazines, news columns and special articles, and radio. Educators also write educational newsletters distributed by mail and on line. Two local food expos were piloted in 2011 and training conducted for educators to expand expos statewide.

Results

Formal and informal evaluations were used to determine outcome. 100 percent of agriculture producers participating in educational activities reported increased awareness on Global Food Security, Hunger, Crop, Livestock, and Horticulture Systems.

4. Associated Knowledge Areas

KA Code	Knowledge Area
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102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
213	Weeds Affecting Plants
216	Integrated Pest Management Systems
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
307	Animal Management Systems
502	New and Improved Food Products
601	Economics of Agricultural Production and Farm Management
704	Nutrition and Hunger in the Population

Outcome #2

1. Outcome Measures

Improved sustainable agriculture production practices resulting in an increased food supply. Outcome is number of producers reporting outcome.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	7145

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The value of agriculture to Wyoming's economy approaches \$1 billion each year, and agriculture's contribution to open spaces, wildlife, and recreation is even greater. The largest component of Wyoming agriculture is the beef cattle industry, accounting for approximately 70 percent of all cash receipts and 86.5 percent of all livestock production. Sheep, lamb, and wool receipts in 1998 were \$29 million. Forage sustains the Wyoming livestock industry. Hay is the leading crop in Wyoming with 1998 production valued at \$185 million, mostly marketed through livestock. Crop producers across Wyoming are challenged with increasing production costs, global market competition, environmental pressure, and decreased labor availability. Alternative markets, improved management practices, and cost efficiency is critical to ensure profitability and

sustainability for Wyoming producers. Irrigation is a key factor identified by UW Extension area advisory committees and AES advisory groups.

What has been done

UW Extension educators conducted 431 classes, workshops, tours on crop, livestock, and horticulture systems targeting Wyoming producers and landowners. In addition, educators published articles in local newspapers, newsletters, special newspaper inserts and discussed the topic on radio programs. Topics included pasture management, introduction to irrigation, and the Wyoming Water Conference, and Wyoming Water Association tour. The Master Cattleman Class, which met weekly for eight weeks, provided 24 hours of classroom instruction. Over a three year period classes have been held in all five areas of the state. Horticulture programs are conducted throughout the state with Master Gardener programs implemented in 13 of the 23 counties.

Results

Participants indicated through formal and informal evaluations that they increased confidence in decision making skills necessary to make needed management decisions. Producers reported increased knowledge and awareness of pasture conditions. All 7,145 participants in educational activities reported gaining knowledge and awareness of resources and methods of irrigation and cost related to each method. End of 2011 program evaluations reported:

- 85 percent gained knowledge of production strategies
- 90 percent gained knowledge of enterprise analysis and risk management
- 100 percent plan to implement one or more ideas

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
213	Weeds Affecting Plants
216	Integrated Pest Management Systems
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
305	Animal Physiological Processes
307	Animal Management Systems
502	New and Improved Food Products
601	Economics of Agricultural Production and Farm Management
704	Nutrition and Hunger in the Population

Outcome #3

1. Outcome Measures

Increased availability of personal/family food resources. Target is number of participants reporting outcome.

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

Individuals gain awareness, knowledge, and skills related to: increased knowledge of healthy food choices; improved selection of healthy foods; improved food resource management. Target is the number of participants reporting outcome.

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

The short term goal of research efforts is to increase grant funding. Target is number of projects which show positive outcomes in regard to additional funding.

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

Research - Awareness created in plant systems: change in knowledge through publications, and integration into Extension programs. Target is number of projects reporting this outcome.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	17

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Corn seed that is not harvested (due to wind, mechanical issues, pests, etc.) will often emerge in the following year's sugarbeet or dry bean crop. These volunteer corn plants then compete with the sugarbeet and dry bean crops, and can significantly reduce yields. Because there is little information available, growers dealing with volunteer corn in their sugarbeet and dry bean crops are unable to make informed decisions on how to manage their crop rotations most economically.

What has been done

A series of studies has been conducted to determine how to most economically manage volunteer corn in sugarbeet and dry beans.

Results

It was determined that if left uncontrolled, volunteer corn at moderate densities can significantly reduce yield of both sugarbeet and dry bean. Economical options for control of volunteer corn are available in both crops, and we have determined the critical densities and critical times of removal of the volunteer corn for both crops.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
213	Weeds Affecting Plants
601	Economics of Agricultural Production and Farm Management

Outcome #7

1. Outcome Measures

Research in animal production - awareness created; change in knowledge through publications and integration into extension activities. Target is number of projects which are on-going that have generated publications or integration into extension programs.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	27

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Producers face a growing dilemma to reduce current input costs while providing increased outputs (i.e. meat, milk, wool) with reduced resources (land and feedstuffs). A potential solution is to select for feed efficiency traits.

What has been done

Rambouillet rams (n = 87) submitted to the Fall 2010 University of Wyoming Ram Test were evaluated for 140 d on the GrowSafe System. The Growsafe System records individual animal intake data that can be used to evaluate individual RFI ranking. Overall and weekly RFI values were generated.

Results

Results from this study suggest that a testing period similar to that used in beef cattle (approximately 60 days) is adequate to estimate RFI in sheep. Also, RFI ranking does not adversely affect carcass, growth, or fleece traits in sheep.

4. Associated Knowledge Areas

KA Code	Knowledge Area
302	Nutrient Utilization in Animals
305	Animal Physiological Processes
307	Animal Management Systems
601	Economics of Agricultural Production and Farm Management
704	Nutrition and Hunger in the Population

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges

Brief Explanation

Many conditions and situations that exist in Wyoming are similar to those in other parts of the country, for example, the following:

- Food choices made available and advertised to consumers by producers
- Access to timely and accurate information
- Coordination and cooperation of federal agencies and state partners
- Existence of local collaboration
- Level of funding at federal, state and local level
- Willingness of private sector-funders, such as corporations, foundations, and community organizations, to collaborate with the University of Wyoming Extension.

Weather extremes and drought may affect producers in agriculture or horticulture issues. Funding is vital to this program; changes in appropriations could impact funding. Additionally, global market changes impact both research and extension

programs in profitable and sustainable agriculture.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Systematic evaluation utilizing a variety of methods was used to document outcomes and impact to clientele. This program includes four focuses: global food security and hunger, livestock systems; crop systems; and urban horticulture. Each focus has developed a logic model which includes specific evaluation plans and methods. Educational activities use written evaluations following the program, as follow-up; pre-and post -test to measure knowledge and aspirations. Follow-up evaluations either by mail, phone, or personal visit document medium and long term outcomes.

Multiple methods were used. Sampling was utilized to gather evaluative data from media education efforts. Surveys, by mail, telephone, or on-site were used with program participants. Observation and unstructured interviews were used to determine medium to long term outcomes. Tests including pre- and post- were utilized to measure knowledge gained.

100% of participants indicated increasing knowledge, awareness and skills. Over half of respondents of evaluation surveys indicated aspirations to implement practices that would be an improvement.

Over 90% of individuals enrolling in the master gardener program complete the course and pass the certification test.

Key Items of Evaluation

100% of participants indicated increasing knowledge, awareness and skills. Over half of respondents of evaluation surveys indicated aspirations to implement practices that would be an improvement.

Over 90% of individuals enrolling in the master gardener program complete the course and pass the certification test.

V(A). Planned Program (Summary)

Program # 7

1. Name of the Planned Program

Climate Change

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
104	Protect Soil from Harmful Effects of Natural Elements	10%		10%	
112	Watershed Protection and Management	10%		10%	
132	Weather and Climate	20%		20%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	10%		10%	
205	Plant Management Systems	10%		10%	
306	Environmental Stress in Animals	10%		10%	
307	Animal Management Systems	10%		10%	
605	Natural Resource and Environmental Economics	10%		10%	
608	Community Resource Planning and Development	10%		10%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	1.0	0.0	1.0	0.0
Actual Paid Professional	2.0	0.0	2.6	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
30531	0	115091	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
30531	0	115091	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

UW Research and Extension activities will focus on best species and variety selection as well as effectiveness of production practices as aspects of climate changes. Invasive species, and drought will be addressed through educational programs which enhance strategies to control global warming and will likely create opportunities for Wyoming agriculture to both profit and contribute to mitigation of forces driving change in climate.

Basic work in carbon storage in ecosystems, the implications of agricultural and land management practices on storage, and education related to these questions will be addressed. Plant species and variety adaption to the changing ecosystem will be critical to maintaining the agricultural productivity for the state. Educational programs will help producers and land managers understand the implications of drought for grasslands and cropping ecosystem management. The implications of climate change for invasive species and ecosystem management implications are important opportunities for UW AES and UW Extension.

2. Brief description of the target audience

The University of Wyoming is committed to reaching underrepresented groups and individuals and to implementing the objectives of equal opportunity regulations relative to the consideration and treatment of clientele for participation in all programs regardless of their race, national origin, gender, age, religion, or disability. Specific target audience groups for the climate change program include agriculture producers, commodity groups, and agriculture agencies. Horticulture and small acreage audiences will also benefit from water conservation and risk management components of the program.

3. How was eXtension used?

eXtension is utilized as a resource for educators and clientele. The link to eXtension is prominently displayed on the UW Extension Web site home page. Additionally all extension employees are made aware of professional development opportunities available through eXtension.

V(E). Planned Program (Outputs)

1. Standard output measures

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	736	3000	100	1000

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

Patent Applications Submitted

Year: 2011

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	Extension	Research	Total
Actual	2	12	14

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of agriculture producers participating in educational programs. Target is number of program participants.

Year	Actual
2011	736

Output #2

Output Measure

- Number of educational programs conducted targeting climate change. Target is the number of programs.

Year	Actual
2011	40

Output #3

Output Measure

- Number of horticulture or small acreage landowners who participate in programs which focus on climate change. Target is number of program participants from target audience.

Year	Actual
2011	726

Output #4

Output Measure

- Research will develop more sustainable cropping systems which demonstrate best species and variety selection as well as effectiveness of production practices in the face of climate changes. Target is number of systems developed.

Year	Actual
2011	4

Output #5

Output Measure

- Research on invasive species in the dry cold dessert ecosystem while small changes in climate can shift the competitive relationship among plant species. Target is the number of research projects implemented.

Year	Actual
2011	3

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Awareness created through extension and research efforts. Target is the number of participants in extension and research programs reporting that they have gained awareness on topic.
2	Horticulture and small acreage participants will increase awareness of climate change and the impact on horticulture production. Target is number of participants reporting outcome.
3	Producers will gain knowledge and implement carbon credit program in their operation. Target is number of producers who report signing up for carbon credit program.
4	Producers will implement practices in animal and plant production which will mitigate climate change. Target is the number of producers reporting outcome.
5	Agriculture producers will gain awareness and knowledge in risk management issues related to climate change and drought. Target is number of producers reporting outcome.
6	Research - Awareness created in plant systems: change in knowledge through publications, and integration into extension programs. Target is number of projects which have outcomes integrated into extension programs.
7	Research in animal production - awareness created; change in knowledge through publications and integration into extension activities. Target is number of projects which are on-going that have generated publications or integration into extension programs.

Outcome #1

1. Outcome Measures

Awareness created through extension and research efforts. Target is the number of participants in extension and research programs reporting that they have gained awareness on topic.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	736

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Wyoming is a rangelands state where small changes in temperature and growing season and amount and timing of precipitation can have a dramatic effect on the success of plant communities in the ecosystem. Best species and variety selection as well as effectiveness of production practices will change as aspects of climate changes. Invasive species are a particular problem in the dry cold desert ecosystem as small changes in climate can shift the competitive relationship among plant species. This can have a significant effect on plant community diversity and rangelands productivity. Periodic and sustained drought is another critical factor in the success of agriculture in Wyoming. Some evidence suggests that drought and other climate variability may be more of a factor as the climate warms. In addition, strategies to control global warming will likely create opportunities for Wyoming agriculture to both profit and contribute to mitigation of forces driving change in climate.

What has been done

UW research and extension activities focus on best species and variety selection as well as effectiveness of production practices as aspects of climate changes. Invasive species, and drought were addressed through educational programs which enhance strategies to control global warming and will likely create opportunities for Wyoming agriculture to both profit and contribute to mitigation of forces driving change in climate. Basic work in carbon storage in ecosystems, the implications of agricultural and land management practices on storage, and education related to these questions are addressed. Educational programs presented help producers and land managers understand the implications of drought for grasslands and cropping ecosystem management.

Results

Participants in the 40 educational programs conducted by UW Extension reaching 736 youth and adults reported gaining awareness and knowledge on the subject.

4. Associated Knowledge Areas

KA Code	Knowledge Area
104	Protect Soil from Harmful Effects of Natural Elements
112	Watershed Protection and Management
132	Weather and Climate
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
205	Plant Management Systems
306	Environmental Stress in Animals
307	Animal Management Systems
605	Natural Resource and Environmental Economics

Outcome #2

1. Outcome Measures

Horticulture and small acreage participants will increase awareness of climate change and the impact on horticulture production. Target is number of participants reporting outcome.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	726

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Wyoming is a semi arid climate state where small changes in temperature and growing season and amount and timing of precipitation can have a dramatic effect on the success of plant communities in the ecosystem. In urban areas, small acreages, and towns, horticulture has become an important component of UW Extensions agriculture efforts. Best species and variety selection as well as effectiveness of production practices will change as aspects of climate changes. Invasive species are a particular problem in the dry cold desert ecosystem as small changes in climate can shift the competitive relationship among plant species. This can have a significant effect on plant community diversity and rangelands productivity. Periodic and sustained drought is another critical factor in the success of agriculture including horticulture in Wyoming. Some evidence suggests that drought and other climate variability may be more of a factor as the

climate warms. In addition, strategies to control global warming will likely create opportunities for Wyoming agriculture to both profit and contribute to mitigation of forces driving change in climate.

What has been done

UW Extension educators in crop and livestock systems, and horticulture address climate change in numerous production programs presented throughout the state. The energy extension coordinator provides programming specific to climate change mitigation. Newspaper inserts, magazines, and newsletters also assist in information dissemination. Landowners with 50 acres or less are targeted in small acreage management programs which is a foci in the state. A new program last year involved a train the trainer model for real estate professionals who are first contact with new residents to the state focusing on soils and climate.

Results

100 percent of participants indicated they had gained awareness and knowledge as a result of educational programs. Over 50 percent of participants in UW Extension programs on xeriscape, landscape design, water conservation, and plant selection and livestock production have made changes in practices as a result of educational efforts.

4. Associated Knowledge Areas

KA Code	Knowledge Area
104	Protect Soil from Harmful Effects of Natural Elements
132	Weather and Climate
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
205	Plant Management Systems

Outcome #3

1. Outcome Measures

Producers will gain knowledge and implement carbon credit program in their operation. Target is number of producers who report signing up for carbon credit program.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	1400

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Wyoming is a rangelands state where small changes in temperature and growing season and amount and timing of precipitation can have a dramatic effect on the success of plant communities in the ecosystem. In urban areas, small acreages, and towns, horticulture has become an important component of UW Extension agriculture efforts. Best species and variety selection as well as effectiveness of production practices will change as aspects of climate changes. Invasive species are a particular problem in the dry cold desert ecosystem as small changes in climate can shift the competitive relationship among plant species. This can have a significant effect on plant community diversity and rangelands productivity. Periodic and sustained drought is another critical factor in the success of agriculture including horticulture in Wyoming. Some evidence suggests that drought and other climate variability may be more of a factor as the climate warms. In addition, strategies to control global warming will likely create opportunities for Wyoming agriculture to both profit and contribute to mitigation of forces driving change in climate.

What has been done

UW Extension educators in crop and livestock systems, and horticulture address climate change in numerous production programs presented throughout the state. The energy extension coordinator provides programming specific to climate change mitigation. Newspaper inserts, magazines, and newsletters also assist in information dissemination.

Results

100 percent of participants indicated they had gained awareness and knowledge as a result of educational programs. As a new program, significant impact data is not available.

4. Associated Knowledge Areas

KA Code	Knowledge Area
132	Weather and Climate
605	Natural Resource and Environmental Economics

Outcome #4

1. Outcome Measures

Producers will implement practices in animal and plant production which will mitigate climate change. Target is the number of producers reporting outcome.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	700

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Wyoming is a rangelands state where small changes in temperature and growing season and amount and timing of precipitation can have a dramatic effect on the success of plant communities in the ecosystem. In urban areas, small acreages, and towns, horticulture has become an important component of UW Extension agriculture efforts. Best species and variety selection as well as effectiveness of production practices will change as aspects of climate changes. Invasive species are a particular problem in the dry cold desert ecosystem as small changes in climate can shift the competitive relationship among plant species. This can have a significant effect on plant community diversity and rangelands productivity. Periodic and sustained drought is another critical factor in the success of agriculture including horticulture in Wyoming. Some evidence suggests that drought and other climate variability may be more of a factor as the climate warms. In addition, strategies to control global warming will likely create opportunities for Wyoming agriculture to both profit and contribute to mitigation of forces driving change in climate.

What has been done

UW Extension educators in crop and livestock systems, and horticulture address climate change in numerous production programs presented throughout the state. The energy extension coordinator provides programming specific to climate change mitigation. Newspaper inserts, magazines, and newsletters also assist in information dissemination.

Results

Over 50 percent of participants in UW Extension programs on xeriscape, landscape design, water conservation, and plant selection and livestock production have made changes in practices as a result of educational efforts. Demonstration sites show positive results as a result of practices changed.

4. Associated Knowledge Areas

KA Code	Knowledge Area
104	Protect Soil from Harmful Effects of Natural Elements
112	Watershed Protection and Management
132	Weather and Climate
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
205	Plant Management Systems
306	Environmental Stress in Animals
307	Animal Management Systems
605	Natural Resource and Environmental Economics

Outcome #5

1. Outcome Measures

Agriculture producers will gain awareness and knowledge in risk management issues related to climate change and drought. Target is number of producers reporting outcome.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	1400

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Wyoming is a rangelands state where small changes in temperature and growing season and amount and timing of precipitation can have a dramatic effect on the success of plant communities in the ecosystem. Best species and variety selection as well as effectiveness of production practices will change as aspects of climate changes. Invasive species are a particular problem in the dry cold desert ecosystem as small changes in climate can shift the competitive relationship among plant species. This can have a significant effect on plant community diversity and rangelands productivity. Periodic and sustained drought is another critical factor in the success of agriculture in Wyoming. Some evidence suggests that drought and other climate variability may be more of a factor as the climate warms. In addition, strategies to control global warming will likely create opportunities for Wyoming agriculture to both profit and contribute to mitigation of forces driving change in climate.

What has been done

UW research and extension activities focus on best species and variety selection as well as effectiveness of production practices as aspects of climate changes. Invasive species, and drought were addressed through educational programs which enhance strategies to control global warming and will likely create opportunities for Wyoming agriculture to both profit and contribute to mitigation of forces driving change in climate. Basic work in carbon storage in ecosystems, the implications of agricultural and land management practices on storage, and education related to these questions are addressed. Educational programs presented help producers and land managers understand the implications of drought for grasslands and cropping ecosystem management. Quarterly newspaper inserts distributed statewide emphasize risk management and mitigation.

Results

Participants in the 40 educational programs conducted by UW Extension reaching over 1400 youth and adults reported gaining awareness and knowledge on the subject.

4. Associated Knowledge Areas

KA Code	Knowledge Area
104	Protect Soil from Harmful Effects of Natural Elements
132	Weather and Climate
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants

205	Plant Management Systems
306	Environmental Stress in Animals
307	Animal Management Systems
605	Natural Resource and Environmental Economics

Outcome #6

1. Outcome Measures

Research - Awareness created in plant systems: change in knowledge through publications, and integration into extension programs. Target is number of projects which have outcomes integrated into extension programs.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	6

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

This research activity is developing the basic understanding of how rangelands in Wyoming are likely to be affected by changes in climate, atmospheric chemistry, and weedy plant invasion. The data will be used to develop and refine predictive models for grassland productivity changes affecting the cattle industry and management of wildlife and water resources. Local, state, federal and private land management organizations and agencies will benefit from the modeling products and the new knowledge.

What has been done

Six full field seasons have been completed on this project. Measures of plant photosynthesis, water balance and ecosystem CO₂ and evapotranspiration fluxes have been made and plant biomass samples have been analyzed for isotopic variation.

Results

Elevated CO₂ and warming so far have had large impacts on the regulation of photosynthesis and growth in dominant prairie grasses and forbs. Further, interactive effects of warming and elevated CO₂ have been detected in above ground biomass production and soil carbon cycling.

4. Associated Knowledge Areas

KA Code	Knowledge Area
104	Protect Soil from Harmful Effects of Natural Elements
132	Weather and Climate
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
205	Plant Management Systems

Outcome #7

1. Outcome Measures

Research in animal production - awareness created; change in knowledge through publications and integration into extension activities. Target is number of projects which are on-going that have generated publications or integration into extension programs.

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
- Competing Programmatic Challenges

Brief Explanation

Weather extremes and drought often affect program participation. Funding is vital to this new program, changes in appropriations could impact funding. Additionally, global market changes impact both research and extension programs in agriculture.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

End of session evaluations were used to determine outcomes of educational efforts. In addition, small acreage (land conversion) has implemented three land demonstration projects in central and SE Wyoming mitigating soil erosion, and climate change issues. Drought has been an issue for agriculture producers for almost a decade, follow up on risk management is conducted informally.

100% of program participants report gaining awareness and knowledge of the topics covered in educational programs.

Over 50% report that they plan to make positive changes as a result of classes.

Energy audits are being implemented resulting in changes which contribute to money saved and increased efficiency of energy use.

Key Items of Evaluation

100% of program participants report gaining awareness and knowledge of the topics covered in educational programs.

Over 50% report that they plan to make positive changes as a result of classes.

Energy audits are being implemented resulting in changes which contribute to money saved and increased efficiency of energy use.

As a program in its first full year of implementation, outcomes are minimal.

V(A). Planned Program (Summary)

Program # 8

1. Name of the Planned Program

Sustainable Energy

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%		20%	
121	Management of Range Resources	20%		20%	
131	Alternative Uses of Land	0%		10%	
133	Pollution Prevention and Mitigation	0%		10%	
401	Structures, Facilities, and General Purpose Farm Supplies	10%		10%	
402	Engineering Systems and Equipment	20%		20%	
608	Community Resource Planning and Development	30%		10%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	2.0	0.0	3.0	0.0
Actual Paid Professional	3.0	0.0	3.2	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
45796	0	142400	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
45796	0	142400	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

Media will be used to familiarize the public with UW College of Agriculture and Natural Resources areas of programming and personnel in regard to sustainable energy. Media releases in local newspapers, radio spots and television advertisements will inform the public of upcoming extension programs. Newsletter articles distributed both electronically and through the mail by county offices, area teams, and the University of Wyoming will reach general public and agriculture producers locally, regionally, and statewide. Public educational programs with invited speakers and extension specialists and educators presenting research-based information will continue to be held in response to local, state, and national energy sustainability. Demonstrations of technology and skills training will be included in education curriculum to enhance educational effectiveness. Field tours will be organized to provide producers with the opportunity to observe industry procedure (i.e., tour of an ethanol plant).

The Sustainable Agriculture Research and Extension Center (SAREC) located at Lingle, Wyoming will provide a resource base for integrating agriculture production and renewable energy based programs.

Educational programs will emphasize sustainable energy practices such as bio-fuels and wind energy, reclamation and restoration of disturbed lands, and energy conservation practices. Other methods will include individual interaction with landowners educating them on resources available to assist them with sustainable energy practices. UW Extension will provide coordination with other colleges on the UW campus such as Engineering and the School of Energy Resources, state and federal agencies to provide education on this topic, and funding for this effort. UW Extension will also provide educational opportunities for professionals involved with reclamation and restoration of disturbed lands.

The University of Wyoming's College of Agriculture and Natural Resources will conduct research and direct extension programming efforts to help ensure prudent use of the state's precious resources.

2. Brief description of the target audience

The University of Wyoming is committed to reaching underrepresented groups and individuals and to implementing the objectives of equal opportunity regulations relative to the consideration and treatment of clientele for participation in all programs regardless of their race, national origin, gender, age, religion, or disability. Participants will include policy makers for county, state, and federal government agencies, crop producers, livestock producers, energy companies, general public, and the scientific community. An existing secondary audience will be the media, general public, and interest groups not directly involved in production agriculture (i.e., environmental groups). Energy conservation methods will be targeted at both

agriculture and general public audiences.

3. How was eXtension used?

The UW Extension energy extension coordinator serves on the eXtension energy community of practice. eXtension is used as a resource for educators and the public. the Web site link is prominently displayed on the UW Extension home page. UW Extension educators are aware of professional development opportunities available through eXtension.

V(E). Planned Program (Outputs)

1. Standard output measures

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	1222	90000	200	8000

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

Patent Applications Submitted

Year: 2011

Actual: 5

Patents listed

- (US Patent) Apparatus and Method to Sequester Flue Gas Carbon Dioxide. NO 7,879,305B2.
- (New Zealand Patent) System and Method for Removing Arsenite and Arsenate from Water. NO. 546332.
- (Japan Patent) System and Method for Removing Arsenite and Arsenate from Water. NO. Y06B031H.
- (Mexico Patent) System and Method for Removing Arsenite and Arsenate from Water. NO. 63430.
- (US Patent) System and Method for Removing Arsenite and Arsenate from Water. NO: 7,897,052 B2.

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	Extension	Research	Total
Actual	5	15	20

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of individuals participating in sustainable energy programs. Target is the number of contacts.

Year	Actual
2011	2828

Output #2

Output Measure

- Research: Measures of AES success will be tied to grants awarded, and publications on renewable energy, climate change, cleaner energy as well as reclamation and restoration techniques. The ultimate goal is to provide increased energy sustainability. Target numbers include projects focusing on energy sustainability.

Year	Actual
2011	13

Output #3

Output Measure

- Develop systems for renewable energy utilizing Wyoming's natural resources. Targets included new systems developed.
Not reporting on this Output for this Annual Report

Output #4

Output Measure

- Number of educational programs or activities focusing on sustainable energy by CES. Target is the number of educational programs implemented.

Year	Actual
2011	38

Output #5

Output Measure

- Number of collaborative partnerships formed to address sustainable energy in Wyoming. Target is the number of partnerships.

Year	Actual
2011	15

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Awareness created focusing on sustainable energy topics. Target is the number of individuals reporting this outcome.
2	Partnerships will be developed with agencies and organizations to expand sustainable energy efforts. Target is the number of partnerships formed.
3	New technologies or devices used in ag production systems and/or farmsteads. Target is the number of new technologies developed.
4	Community development to sustain energy impacted communities. Target is the number of projects reported successful in community development in energy impacted communities.
5	Short term outcome of research efforts include increased grant funding and increased involvement on regional and multi-state projects. Target is number of projects.

Outcome #1

1. Outcome Measures

Awareness created focusing on sustainable energy topics. Target is the number of individuals reporting this outcome.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	2828

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The State of Wyoming is well known for being a critical source of the nation's supply of natural resources. Because fossil fuels are essentially an irreplaceable base for Wyoming's vibrant energy industry, the College of Agriculture and Natural Resources conducts research and direct extension programming efforts to help ensure prudent use of the state's precious resources. In addition to fossil fuel resources, Wyoming also possesses abundant renewable energy resources including wind, solar, hydroelectric, geothermal, and biomass. Both small-scale, such as solar photovoltaics or geothermal heat pumps, and utility-scale, primarily wind energy, are important issues. Development of renewable technologies such as specific systems that can be used in agriculture production and/or farmsteads and small-scale power generation where power can be sold such as wind energy are also important issues. Conservation and preservation of our natural resources, both land and water is an ongoing effort for both extension and research.

What has been done

The University of Wyoming College of Agriculture and Natural Resources research and extension efforts in sustainable energy focus on efficiency and conservation specifically in relation to farm and agriculture production. In addition, residential and public conservation education is targeted toward the general public and businesses. In fall 2009, UW Extension partnered with the School of Energy Resources at UW to fund an energy extension coordinator who provides leadership and coordination for extension energy programs in the college. Initial training for field extension educators was conducted; a Western SARE grant (\$110,000) was obtained by Montana State University in collaboration with the UW Extension energy extension coordinator to implement a Western Region training on energy issues (release of funds has delayed this until Fall 2011). In addition to educational programs to raise awareness and knowledge, UW Extension has developed a Web site for information, publications, and a set of educational videos. To maximize outreach efforts, partnerships have been developed with the

College of Engineering and Applied Science, School of Energy Resources, the Wyoming State Energy Office, Wind Energy Research Center, USDA Rural Development, Natural Resource Conservation Service, and the Wyoming Business Council. UW Range specialists and area educators have partnered with the UW Reclamation and Restoration Center to develop and implement Reclamation 101 schools for agriculture land owners and agency personnel.

Results

In 2011, UW Extension initiated an issue team focusing on sustainable energy issues. 100 percent of participants in the 38 programs held reported gaining awareness of the topic and gaining knowledge. Early partnership efforts have resulted in increasing effectiveness of programs through multiple collaborators. 25 UW extension educators, specialist and agency professionals received comprehensive training on renewable energy, and reclamation issues increasing knowledge and skills.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
121	Management of Range Resources
401	Structures, Facilities, and General Purpose Farm Supplies
402	Engineering Systems and Equipment

Outcome #2

1. Outcome Measures

Partnerships will be developed with agencies and organizations to expand sustainable energy efforts. Target is the number of partnerships formed.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	15

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The State of Wyoming is well known for being a critical source of the nation's supply of natural resources. Because fossil fuels are essentially an irreplaceable base for Wyoming's vibrant energy industry, the College of Agriculture and Natural Resources strives to conduct research and direct extension programming efforts to help ensure prudent use of the state's precious resources. In addition to fossil fuel resources, Wyoming also possesses abundant renewable energy resources including wind, solar, hydroelectric, geothermal, and biomass. Both small-scale, such as solar photovoltaics or geothermal heat pumps, and utility-scale, primarily wind energy, are important issues. Development of renewable technologies such as specific systems that can be used in agriculture production and/or farmsteads and small scale power generation where power can be sold such as wind energy are also important issues. As an energy rich state, conservation and preservation of our natural resources, both land and water is an ongoing effort for both extension and research.

What has been done

To maximize outreach efforts, partnerships have been developed with the College of Engineering and Applied Science, School of Energy Resources, the Wyoming State Energy Office, Wind Energy Resource Center, USDA Rural Development, Natural Resource Conservation Service, and the Wyoming Business Council. The UW Reclamation and Restoration Center, Energy Industry, local partners focusing on local food production are additional partners.

Results

Partnerships have increased resources, both financial and human capital to maximize outreach efforts. Partnerships have leveraged funding to support an innovative energy internal grant program for UW Extension. Integrated program efforts are in progress.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
121	Management of Range Resources
401	Structures, Facilities, and General Purpose Farm Supplies
402	Engineering Systems and Equipment
608	Community Resource Planning and Development

Outcome #3

1. Outcome Measures

New technologies or devices used in ag production systems and/or farmsteads. Target is the number of new technologies developed.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Over 137 million people in more than 70 countries are affected by arsenic poisoning through drinking water supplies. Studies have shown that long-term human exposure to drinking water containing arsenic in excess of 50 µg/L causes increased risk of skin, lung, bladder, and kidney cancer and increased risk of premature death. U.S. Environmental Protection Agency (EPA) proposed a new limit of 10 µg/L for arsenic for human drinking water, effective January 26, 2006.

What has been done

A flow-through filtration system for field applications was designed, developed, and tested to remove arsenic from groundwater. Several groundwater samples were pumped through the flow-through reactor consisting of CuO nanoparticles.

Results

Cupric oxide nanoparticles effectively removed arsenic from groundwater samples across a wide range of pHs and concentrations of competing ions including, phosphate, silica, and sulfate. Removal of arsenic with CuO nanoparticles did not affect the chemistry of groundwater samples and most of the water quality parameters remained within the US EPA human drinking water limits.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
133	Pollution Prevention and Mitigation
401	Structures, Facilities, and General Purpose Farm Supplies
402	Engineering Systems and Equipment

Outcome #4

1. Outcome Measures

Community development to sustain energy impacted communities. Target is the number of projects reported successful in community development in energy impacted communities.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Coalbed Methane (CBM) is natural gas associated with coal deposits, and production predominates in Wyoming's Powder River Basin. The intensity of development in the Powder River Basin, however, has led to some real socioeconomic and environmental consequences. Strongly held disagreements and difficulties about CBM development and its concurrent water management challenges have resulted in lawsuits in federal and civil courts resulting in uncertainty about the state's current framework for regulating CBM produced water discharges.

What has been done

The Wyoming Department of Environmental Quality (WDEQ) convened a 20-member stakeholder group representing ranchers, oil and gas producers, conservation organizations, and state regulatory agencies. The group was charged to development recommendations for a CBM permitting strategy. UW faculty and staff of the UW Ruckelshaus Institute designed and conducted a collaborative education and decision process to develop stakeholder-driven recommendations on a new strategy for permitting water discharges from coalbed methane production well.

Results

The CBM Produced Water Working Group succeeded in developing a set of recommendations that guided the WDEQ in developing a new permitting strategy that recognizes the serious and substantial interests of landowners, industry and the state of Wyoming so that water quality statutes can be met. The new strategy is now being applied to new DEQ Coalbed Methane permits in Wyoming's Powder River Basin.

4. Associated Knowledge Areas

KA Code	Knowledge Area
133	Pollution Prevention and Mitigation
608	Community Resource Planning and Development

Outcome #5

1. Outcome Measures

Short term outcome of research efforts include increased grant funding and increased involvement on regional and multi-state projects. Target is number of projects.

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
- Competing Programmatic Challenges

Brief Explanation

Funding for this new program is essential in development and implementation of both research and extension efforts. Weather extremes are a factor in agriculture production outcomes regarding crops for alternative fuels. As a new planned program, the first year heavily involved training and awareness for extension educators. The community development partnership in Wamsutter to assist with infrastructure development ended in June 2011.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

End of session written evaluations were utilized to collect outcome data. In addition personal follow-up with the local educator or UW Energy Extension Coordinator was conducted. 100% of program participants indicated they increased awareness and knowledge as a result of educational efforts. Educators and professional agency personnel who participated in training on renewable energy and reclamation issues reported increased knowledge, skills and increased confidence in disseminating information on these topics.

Program participants reported that in some instances, alternative energy options are not cost effective therefore contributed to decision making which is a positive outcome.

Key Items of Evaluation

Increased awareness and knowledge on sustainable energy issues.
Program participants reported that in some instances, alternative energy options are not cost effective therefore contributed to decision making which is a positive outcome.

V(A). Planned Program (Summary)

Program # 9

1. Name of the Planned Program

Childhood Obesity, Nutrition and Health

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
305	Animal Physiological Processes	0%		40%	
703	Nutrition Education and Behavior	10%		20%	
704	Nutrition and Hunger in the Population	80%		20%	
724	Healthy Lifestyle	10%		20%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	3.0	0.0	2.0	0.0
Actual Paid Professional	10.0	0.0	6.3	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
152655	0	280900	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
152655	0	280900	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

Nutrition efforts focus on educational programs which increase knowledge and skills in nutrition needs of children and incorporate physical activity into lifestyle; media outreach; health fairs; training; assessment/ data collection. Programs which teach body size acceptance were also targeted to youth.

EFNEP adult curriculum taught in a series of lessons; adult one-time lessons; youth curricula taught in a series of lessons and day camps; displays and demonstrations; state and community partnerships with agencies serving the low-income; training for educators; evaluation of program; Ongoing- Updating of curricula and materials.

Other nutrition efforts will focus on educational programs which increase knowledge and skills in nutrition such as Dining with Diabetes and general nutrition which enhance health and incorporate physical activity into lifestyle. In 2011 the NFS extension team began implementation of programs promoting local foods, ultimately encouraging consumption of fresh fruits and vegetables.

Since skeletal muscle is the main site for utilization of glucose and fatty acids in the body and insulin resistance in skeletal muscle is the key step in the incidence of type 2 diabetes, we hypothesize that impaired fetal skeletal muscle growth due to nutrient deficiency plays an important role. The goal is to understand how the development of fetal skeletal muscle affects the properties of skeletal muscle of adulthood, and to develop effective strategies to mitigate or avoid incidence of diabetes and obesity caused by impaired skeletal muscle development due to fetal nutrient deficiency.

UW AES researchers intend to investigate the role of maternal nutrition in programming of pre- and postnatal body composition.

2. Brief description of the target audience

The University of Wyoming is committed to reaching underrepresented groups and individuals and to implementing the objectives of equal opportunity regulations relative to the consideration and treatment of clientele for participation in all programs regardless of their race, national origin, gender, age, religion, or disability. Specific target audience groups for the CNP (EFNEP) program: Low-income adults, Youth in Title I schools.

All other nutrition efforts targeted audience includes: general public, both adults and youth and policy makers.

3. How was eXtension used?

eXtension is utilized with all extension initiatives as a resource. eXtension is prominently highlighted on the UW Extension Web site home page. Additionally, extension personnel are made aware of professional development opportunities offered through eXtension.

V(E). Planned Program (Outputs)

1. Standard output measures

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	2707	3000	4287	3000

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

Patent Applications Submitted

Year: 2011

Actual: 1

Patents listed

A Leukotriene Based Asthmatic Diagnostic, Applied For 04/15/2011

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	Extension	Research	Total
Actual	0	19	19

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of educational programs delivered to youth. Target is number of programs.

Year	Actual
2011	100

Output #2

Output Measure

- Number of youth participating in educational program targeting childhood obesity. Target is number of youth participating.

Year	Actual
2011	4287

Output #3

Output Measure

- Number of teachers or other youth serving professionals trained in childhood obesity issues.

Target is number of professionals trained.

Year	Actual
2011	10

Output #4

Output Measure

- Number of partnerships formed in local counties of youth professionals to collaborate on childhood obesity issues. Target is number of partnerships formalized.

Year	Actual
2011	15

Output #5

Output Measure

- Research: Awareness created; change in knowledge through publications and integration into extension programs. Target is number of research projects.

Year	Actual
2011	10

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Improved knowledge of food guide pyramid, serving sizes, and physical activity. Targets are the number of participants reporting outcome.
2	Increased knowledge of healthy food choices including five servings of fruits and vegetables each day. Target is number of youth reporting outcome.
3	Improved eating behavior practices, food choices, and lifestyle habits. Targets are the number of participants reporting outcome.
4	Individuals gain awareness, knowledge and skills related to: improved attitude about healthy eating; increased knowledge of healthy food choices; improved skills in selection of healthy foods; improved body image. Target is number of participants reporting outcome.
5	Youth incorporate skills and change behaviors related to: increased physical activity; increased knowledge of healthy food choices; improved selection of healthy foods; understanding of serving sizes; improved body image.
6	Youth and families experience: improved nutritional health; reduced medical costs; health improved through community opportunities; healthier weight; decreased risk factors for nutrition-health related problems. Target is number of participants reporting outcome.
7	Short term outcome of research efforts include increased grant funding, publications, and increased involvement on regional and multi-state projects. Target is number of projects.

Outcome #1

1. Outcome Measures

Improved knowledge of food guide pyramid, serving sizes, and physical activity. Targets are the number of participants reporting outcome.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	6997

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Wyoming youth and adults are at risk as reflected by various health-related data: For example, over 20 percent of Wyoming adults report no leisure time physical activity, 47 percent of Wyoming high school students report not being enrolled in a physical education class, and 78 percent of both Wyoming adults and high school students do not eat recommended amounts of fruits and vegetables. Additionally, research in Wyoming, Montana, and Idaho documented body dissatisfaction as a significant predictor of self-consciousness keeping respondents from participating in physical activity.

What has been done

A variety of classes (many multi-session) on Steps to a New You, Healthy Eating, Weight Management and basic nutrition were conducted by nutrition educators. Articles were published in newsletters, newspaper columns and educational displays were developed.

Results

36 percent reported being physically active for at least 30 minutes per day, on four or more days per week, more often.

40 percent reported getting a 'super-sized' portion less often. (A 'super-sized' portion of food or beverage is one that is much bigger but costs only a little more money).

92 percent showed improvement in one or more nutrition practices.

25 percent reported weight loss as a result of changes in eating, meal planning, and increasing physical activity.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
724	Healthy Lifestyle

Outcome #2

1. Outcome Measures

Increased knowledge of healthy food choices including five servings of fruits and vegetables each day. Target is number of youth reporting outcome.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	2088

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Approximately 13,000 of 57,000 Wyoming children ages 10 to 17 years (22.9%) are considered overweight or obese according to BMI for age standards. Wyoming ranks third among the 50 states and D.C. in overall prevalence.

* Only one in six (16.3%) Wyoming children in higher income families are overweight or obese. The United States Department of Agriculture Dietary Guidelines for Americans identified the number one message of the new guidelines as getting the most nutrition out of calories consumed. The key recommendations include an emphasis on increased consumption of fruits and vegetables, whole grains, and low-fat dairy and increased physical activity. Childhood obesity concerns identify similar issues in eating and lifestyle behavior.

What has been done

UW Extension utilized EFNEP youth curricula taught in a series of lessons and day camps; displays and demonstrations; Other nutrition efforts focused on educational programs which increase knowledge and skills in nutrition needs of children and incorporate physical activity into lifestyle; educators use media outreach (newspapers, newsletters, radio); health fairs; Programs which teach body size acceptance also are targeted to youth.

Results

Results of the youth educational programs (several were series of 5 - 8 weeks) reaching 2088 youth included:

- 30% reported eating a variety of foods;
- 36% increased knowledge of nutrition;

Over 53% increased their knowledge of MyPryamid food groups;
30% tried new fruits and vegetables more often;
28.5% increased their knowledge of body size diversity.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior

Outcome #3

1. Outcome Measures

Improved eating behavior practices, food choices, and lifestyle habits. Targets are the number of participants reporting outcome.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	5500

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Wyoming youth and adults are at risk as reflected by various health-related data: For example, over 20 percent of Wyoming adults report no leisure time physical activity, 47 percent of Wyoming high school students report not being enrolled in a physical education class, and 78 percent of both Wyoming adults and high school students do not eat recommended amounts of fruits and vegetables. Additionally, research in Wyoming, Montana, and Idaho documented body dissatisfaction as a significant predictor of self-consciousness keeping respondents from participating in physical activity.

What has been done

A variety of classes (many multi-session) on Steps to a New You, Healthy Eating, Weight Management and basic nutrition were conducted by nutrition educators. Youth participated in day camps, and in-school curriculum including Grazing with Marty Moose, Munching through Wyoming History, Passports to Food Adventures, and WIN Kids. Articles were published in newsletters, newspaper columns and educational displays were developed.

Results

End of session and follow up evaluations indicated:
36 percent reported being physically active for at least 30 minutes per day, on four or more days per week, more often.
90 percent showed improvement in one or more nutrition practices.
97.5 percent had a positive change in any food group.
50 percent serve more than one kind of fruit and 48 percent serve more than one kind of vegetable each day.
48 percent of youth could correctly identify the physical activity recommendation for children.
25 percent reported weight loss as a result of changes in eating, meal planning, and increasing physical activity.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
724	Healthy Lifestyle

Outcome #4

1. Outcome Measures

Individuals gain awareness, knowledge and skills related to: improved attitude about healthy eating; increased knowledge of healthy food choices; improved skills in selection of healthy foods; improved body image. Target is number of participants reporting outcome.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	7000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Wyoming residents are at risk as reflected by various health-related data: For example, over 20 percent of Wyoming adults report no leisure time physical activity, 47 percent of Wyoming high school students report not being enrolled in a physical education class, and 78 percent of both Wyoming adults and high school students do not eat recommended amounts of fruits and vegetables.

What has been done

UW Extension educators conducted over 377 classes which emphasized a holistic approach including proper nutrition, increasing physical activity and healthy food choices. Strong Bones - Strong People, basic nutrition, and Steps to a New You were all programs focused on objectives. Youth curriculum developed by the UW Cent\$ible Nutrition program was also implemented in schools across the state.

Results

7000 individuals participated in 337 classes of which 10 were multi-session with four to eight sessions in length. Over 50 percent, or 3500 participants reported improved eating behavior practices, food choices, and lifestyle habits through end of session evaluations.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior

Outcome #5

1. Outcome Measures

Youth incorporate skills and change behaviors related to: increased physical activity; increased knowledge of healthy food choices; improved selection of healthy foods; understanding of serving sizes; improved body image.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	2088

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Approximately 13,000 of 57,000 Wyoming children ages 10 to 17 years (22.9%) are considered overweight or obese according to BMI for age standards. Wyoming ranks third among the 50 states and D.C. in overall prevalence.

* Only one in six (16.3%) Wyoming children in higher income families are overweight or obese. The state ranks third in prevalence among higher income children.

* One in five (20.2%) Wyoming children with private health insurance are overweight or obese.

* Wyoming children are more likely than their counterparts nationwide to be physically active for at least 4 days per week, and less likely to spend 2 hours or more in front of a television or computer

screen.

What has been done

UW Extension utilized EFNEP youth curricula taught in a series of lessons and day camps; displays and demonstrations; Other nutrition efforts focused on educational programs which increase knowledge and skills in nutrition needs of children and adults and also incorporate physical activity into lifestyle; educators use media outreach (newspapers, newsletters, radio); health fairs; Programs which teach body size acceptance also are targeted to youth. A variety of classes (many multi-session) on Steps to a New You, Healthy Eating, Weight Management and basic nutrition were conducted by nutrition educators. In addition 4-H educators partner with Cent\$ible Nutrition to implement special interest classes in the school system.

Results

Results of the educational programs (several were series of 5 - 8 weeks) reaching 2088 youth included:

90 percent showed improvement in one or more nutrition practices.

27% reported eating a variety of foods;

Over 55% increased their knowledge of MyPyramid food groups;

24% could identify missing food groups in meals;

48% could identify physical activity recommendations for their age;

36% are physically active for at least 30 minutes per day during four or more days per week.

33% increased their knowledge of body size diversity.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
724	Healthy Lifestyle

Outcome #6

1. Outcome Measures

Youth and families experience: improved nutritional health; reduced medical costs; health improved through community opportunities; healthier weight; decreased risk factors for nutrition-health related problems. Target is number of participants reporting outcome.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	6500

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Approximately 13,000 of 57,000 Wyoming children ages 10 to 17 years (22.9%) are considered overweight or obese according to BMI for age standards. Wyoming ranks third among the 50 states and D.C. in overall prevalence.

* Only one in six (16.3%) Wyoming children in higher income families are overweight or obese. The state ranks third in prevalence among higher income children.

* One in five (20.2%) Wyoming children with private health insurance are overweight or obese.

* Wyoming children are more likely than their counterparts nationwide to be physically active for at least 4 days per week, and less likely to spend 2 hours or more in front of a television or computer screen.

What has been done

UW Extension utilized EFNEP youth curricula taught in a series of lessons and day camps; displays and demonstrations; Other nutrition efforts focused on educational programs which increase knowledge and skills in nutrition needs of children and adults and also incorporate physical activity into lifestyle; educators use media outreach (newspapers, newsletters, radio); health fairs; Programs which teach body size acceptance also are targeted to youth.

A variety of classes (many multi-session) on Steps to a New You, Healthy Eating, Weight Management, Dining with Diabetes, and basic nutrition were conducted by nutrition educators.

Results

Results of the 347 educational programs (several were series of 5 - 8 weeks) reaching over 2088 youth and 3013 adults included:

90 % showed improvement in one or more nutrition practices.

97.5% had a positive change in any food group.

27% reported eating a variety of foods;

Over 50% increased their knowledge of MyPyramid food groups;

24% could identify missing food groups in meals;

45% could identify physical activity recommendations for their age;

36% are physically active 30 minutes per day, four or more days a week.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior

Outcome #7

1. Outcome Measures

Short term outcome of research efforts include increased grant funding, publications, and increased involvement on regional and mulit-state projects. Target is number of projects.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	12

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Epidemiological studies report a significant inverse association between exclusive breastfeeding and reduced prevalence of childhood obesity. The recent discovery that human milk contains bioactive components, including the appetite-regulating peptides leptin and ghrelin, also provides an attractive mechanism that may explain why infants who are exclusively breastfed consume fewer calories than infants who are given infant formula, and are leaner at 8 to 11 months of age.

What has been done

Work in the Nutrition and Exercise Laboratory has focused on determining whether the appetite suppressing peptides leptin, peptide YY (PYY) and glucogon like peptide 1 (GLP-1) are present in human milk and whether their concentrations change across a single feeding along with milk fat, which is known to be lower in foremilk and higher in hindmilk.

Results

We have found that the concentration of fat and the appetite-suppressing hormone GLP-1 increases across a feeding and is significantly higher in hind- compared to foremilk. While leptin and PYY were both present in human milk, the composition of these hormones remained consistent across feeding. The leptin composition of the milk, however, varied considerably among individual mothers and was higher in those who were overweight or obese compared to those who were normal weight.

4. Associated Knowledge Areas

KA Code	Knowledge Area
305	Animal Physiological Processes
703	Nutrition Education and Behavior

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges

Brief Explanation

Many conditions and situations that exist in Wyoming are similar to those in other parts of the country, for example, the following:

Food choices made available and advertised to consumers by producers; Access to timely and accurate information; Coordination and cooperation of federal agencies and state partners, schools and other youth agencies; Existence of local collaboration; Level of funding at federal, state and local level; and Willingness of community organizations, to collaborate with The University of Wyoming Extension.

If EFNEP funding is decreased, appropriations will impact program delivery. Population changes impact limited resource audiences eligible for program.

Availability of funding for research in childhood obesity.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Steps to a New You is curricula which uses a holistic approach to nutrition and health. All participants completed a pre- and post-questionnaire, enabling to measure new attitudes gained such as, living a life focused on health, honoring hunger, and enjoy physical activity every day. The following are significant impacts reported by them.

50% Participants increased physical activity purposely.

90% of participants now stop eating when they start to feel full.

Research data have provided conclusive evidence that changes in individual lifestyles and behaviors can lead to improved health status (Centers for Disease Control and Prevention, 1997; Canadian Nurses Association, 1992).

Adults who participate in programs complete end of session evaluations. Those in a series of lessons complete a pre- and post-survey and/or follow up evaluations. 3000 adults completing lessons reported the following.

Nutrition Practices and Food Intake

- 90 percent improved in one or more nutrition practices.
- 97.5 percent had a positive change in any food group.
- 61 percent use the Nutrition Facts labels to make food choices more often.
- 50 percent serve more than one kind of fruit, and 48 percent serve more than one kind of vegetable to their families each day more often.

Physical Activity Practices

- 36 percent are physically active for at least 30 minutes per day during four or more days per week

2,088 youth participating in Grazing with Marty Moose, Munching Through Wyoming History, Passports to Food Adventures, and WIN Kids curricula reported the following through pre- and post-assessments to capture behavior changes.

Specific questions for each curriculum showed the following after the lessons.

- 53 percent improved their knowledge of MyPyramid food groups.
- 31.5 percent more correctly identify the number of food groups in a meal and 30 percent more correctly identified missing food groups in a meal.
- 30 percent tried new fruits and 30 percent tried new vegetables more often.
- 48 percent could correctly identify the physical activity recommendation for children.
- 55.5 percent increased their knowledge about carbohydrates as a source of energy.

Key Items of Evaluation

Research data have provided conclusive evidence that changes in individual lifestyles and behaviors can lead to improved health status (Centers for Disease Control and Prevention, 1997; Canadian Nurses Association, 1992).

100 percent of participants gained knowledge and raised awareness of the role nutrition and physical activity play in health.

V(A). Planned Program (Summary)

Program # 10

1. Name of the Planned Program

Food Safety

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	10%		10%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	90%		90%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	2.0	0.0	2.0	0.0
Actual Paid Professional	3.0	0.0	2.0	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
45796	0	89732	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
45796	0	89732	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 Wyoming Extension collaborates with the Wyoming Department of Agriculture, Consumer Health Division and Wyoming Environmental Health Association, and local health agencies in partnership as the Wyoming Food Safety Coalition. Educational efforts include a series of workshops or classes targeting food industry personal. In addition, utilizing ServSafe, the certification course of the National Restaurant Association in depth classes which include end of session certification testing are conducted. Classes, workshops, displays, and demonstrations are used to reach a general consumer audience. Youth are reached through school programs on handwashing and avoidance of cross contamination. In the past year food safety classes have been delivered in Spanish in the west area of the state by three bi-lingual educators. This has been extremely effective as many food service industry workers in tourist destinations such as Jackson Hole speak Spanish as thier first language. One of the partnering agencies has a food inspector who speaks fluent Chinese and also delivers food safety classes to reach that audience.

Research will focus on more rapid methods of detection of food-borne pathogens such as E.coli and Listeria. Ultimately deliniate genes that promote survival in the environment and result in disease contamination of food.

2. Brief description of the target audience

The University of Wyoming is committed to reaching underrepresented groups and individuals and to implementing the objectives of equal opportunity regulations relative to the consideration and treatment of clientele for participation in all programs regardless of their race, national origin, gender, age, religion, or disability. Specific target audience groups for the CNP (EFNEP) program: Low-income adults, Youth in Title I schools. All other food safety efforts targeted audiences include: general public, both adults and youth and policy makers.

UW Extension employee three Nutrition/Food Safety Educators fluent in Spanish who provide ServSafe and Serve Safe Starter classes in Spanish, seven courses were delivered in 2011 which has allowed expansion of the audience.

3. How was eXtension used?

eXtension is utilized as a resource both to educators and clientele. The University of Wyoming Extension Web site prominatly displays eXtension on its' home page. eXtension professional development oportunities are publicized to all extension personnel.

V(E). Planned Program (Outputs)

1. Standard output measures

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	1517	3000	214	1000

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

Patent Applications Submitted

Year: 2011
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	Extension	Research	Total
Actual	5	3	8

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Research; Improve ability to detect and analyze for the presence of food-borne pathogens. Target is number of research projects.

Year	Actual
2011	3

Output #2

Output Measure

- Number of food safety programs which promote safe handling practices in the public and food service industry.

Year	Actual
2011	79

Output #3

Output Measure

- Number of participants in educational programs offered by the Wyoming Food Safety Coalition.

Year	Actual
2011	1731

Output #4

Output Measure

- Effectiveness of research programs will be based on integration into extension programs, patents, grants awarded, and publications. The ultimate research goal is to provide tools for detection of food contaminated products. Target is the number of research projects in AFRI.

Year	Actual
2011	1

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Improve personal hygiene such as hand washing. Avoidance of cross-contamination resulting in keeping foods safe. Target is the number of participants reporting outcome.
2	Increased awareness and knowledge of food safety practices. Target is the number of participants reporting outcome.
3	The short term goal of research efforts is to increase grant funding and to patent detective processes. Target is the number of projects which show positive outcomes in regard to additional funding and patents.
4	Research will result in easier, more rapid methods of detection of food-borne pathogens such as E.coli and Listeria. Ultimately delineate genes that promote survival in the environment and result in disease contamination of food. Target is the number of projects with results that demonstrate outcome.
5	Behavior or practice changes that improve food safety. Target is number of participants reporting outcome.
6	Food service industry personnel pass ServSafe certification test. Target is the number of participants who complete course and pass test of the National Restaurant Association.

Outcome #1

1. Outcome Measures

Improve personal hygiene such as hand washing. Avoidance of cross-contamination resulting in keeping foods safe. Target is the number of participants reporting outcome.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	1304

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Microbial contamination of food is a serious public health problem: Each year in the U.S., food-borne diseases cause approximately 48 million illnesses, 128,000 hospitalizations, and 3,000 deaths. It is estimated that the average cost per foodborne illness is \$1,850. With approximately 60 percent of food-borne illness outbreaks nationwide attributable to food-service establishments, food-service personnel are key to reducing the risk of food-borne illness. Additionally, home food preparers and consumers are important groups to reach with food safety education because their behaviors greatly affect the safety of food that they serve to others and/or eat themselves.

What has been done

UW Extension collaborates with the Wyoming Department of Agriculture, Consumer Health Division and Wyoming Environmental Health Association, and local health agencies in partnership as the Wyoming Food Safety Coalition (WFSC). Educational efforts include a series of workshops or classes targeting food industry personal. In addition, utilizing ServSafe, the certification course of the National Restaurant Association in depth classes which include end of session certification testing are conducted. Classes, workshops, displays, and demonstrations are used to reach a general consumer audience. Youth are reached through school programs on handwashing and avoidance of cross contamination.

Results

Based on data from an evaluation project conducted by UW Extension for the WFSC, this year 97 percent of participants made at least one change related to cleanliness, for example, washed their hands more often. 78 percent made at least one change related to food preparation, for example, prevented cross-contamination by keeping raw meats, cooked foods, and fresh produce separated.

4. Associated Knowledge Areas

KA Code	Knowledge Area
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #2

1. Outcome Measures

Increased awareness and knowledge of food safety practices. Target is the number of participants reporting outcome.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	1731

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Food-borne diseases cause approximately 48 million illnesses, 128,000 hospitalizations, and 3,000 deaths. With approximately 60% of food-borne illness outbreaks nationwide attributable to food-service establishments, food-service personnel are key to reducing the risk of food-borne illness. Additionally, home food preparers and consumers are important groups to reach with food safety education because their behaviors greatly affect the safety of food that they serve to others and/or eat themselves.

What has been done

79 classes ranging from ServSafe certification courses, ServeSafe Starters, Going for the Gold food safety classes for food service handlers, consumer food safety classes and school workshops on proper handwashing methods were conducted. Additionally classes on safe food preservation were taught statewide.

Results

100 percent of participants reported through both formal and informal evaluations increased awareness and knowledge of food safety practices.
97% made at least one change in regard to cleanliness.
80% made at least one change in regard to cooling food.
78% made at least one change related to food preparation.
75% made at least one change such as monitored critical control points more closely.
70% made at least one change related to cooking food.

Improved food handling behaviors such as those listed above increase the likelihood that food served in Wyoming is safe, and therefore, that lives have been saved, illnesses avoided, health care costs controlled, fewer work days missed, and local businesses and institutions made stronger.

4. Associated Knowledge Areas

KA Code	Knowledge Area
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #3

1. Outcome Measures

The short term goal of research efforts is to increase grant funding and to patent detective processes. Target is the number of projects which show positive outcomes in regard to additional funding and patents.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	3

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Myxobacteria are an example of microbes that produce a vast repertoire of natural products and are competitors that kill pathogenic microbes. Understanding how microbes interact and communicate to elicit phenotypic changes may lead to insights for new intervention strategies.

What has been done

We have recently made significant progress in understanding a newly discovered process in which bacteria within biofilms can exchange their outer membrane lipoproteins and lipids. This process involves direct cell contact, cell-cell communication and results in phenotypic changes to biofilm cells.

Results

Biofilms are omnipresent in nature and their impact on human health and welfare are significant. Our studies involving the elucidation of new mechanism of how biofilm cells interact may have utility for developing interventions with applied utility to disrupts or treat biofilm cells.

4. Associated Knowledge Areas

KA Code	Knowledge Area
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #4

1. Outcome Measures

Research will result in easier, more rapid methods of detection of food-borne pathogens such as E.coli and Listeria. Ultimately delineate genes that promote survival in the environment and result in disease contamination of food. Target is the number of projects with results that demonstrate outcome.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	2

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Food contamination by bacterial pathogens causes a large number of illnesses in the USA each year, resulting in billions of dollars of losses to patients and food producers.

What has been done

The laboratory is studying the foodborne pathogen, *Listeria monocytogenes*, and its ability to colonize surfaces encountered in food processing plants and retail stores.

Results

The proposed research will identify genes involved in colonization and contamination of surfaces and reveal the mechanism of regulation of a key sugar transporter required for growth in the environment.

4. Associated Knowledge Areas

KA Code	Knowledge Area
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- 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 #5

1. Outcome Measures

Behavior or practice changes that improve food safety. Target is number of participants reporting outcome.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	1731

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Food-borne diseases cause approximately 48 million illnesses, 128,000 hospitalizations, and 3,000 deaths. With approximately 60% of food-borne illness outbreaks nationwide attributable to food-service establishments, food-service personnel are key to reducing the risk of food-borne illness. Additionally, home food preparers and consumers are important groups to reach with food safety education because their behaviors greatly affect the safety of food that they serve to others and/or eat themselves.

What has been done

79 classes ranging from ServSafe certification courses, ServSafe Starters, Wyoming Food Safety Fundamentals, and Wyoming Retail and Foodservice HACCP classes for food service handlers, consumer food safety classes and school workshops on proper handwashing methods were conducted. Additionally classes on safe food preservation were taught statewide.

Results

100 percent of participants reported through both formal and informal evaluations increased awareness and knowledge of food safety practices.

97% made at least one change in regard to cleanliness.

80% made at least one change in regard to cooling food.

78% made at least one change related to food preparation.

75% made at least one change such as monitored critical control points more closely.

70% made at least one change related to cooking food. Improved food handling behaviors such as those listed above increase the likelihood that food served in Wyoming is safe, and therefore, that lives have been saved, illnesses avoided, health care costs controlled, fewer work days missed, and local businesses and institutions made stronger.

4. Associated Knowledge Areas

KA Code	Knowledge Area
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #6

1. Outcome Measures

Food service industry personnel pass ServSafe certification test. Target is the number of participants who complete course and pass test of the National Restaurant Association.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	317

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Microbial contamination of food is a serious public health problem: Each year in the U.S., food-borne diseases cause approximately 48 million illnesses, 128,000 hospitalizations, and 3,000 deaths. With approximately 60 percent of food-borne illness outbreaks nationwide attributable to food-service establishments, food-service personnel are key to reducing the risk of food-borne illness.

What has been done

UW Extension collaborates with the Wyoming Department of Agriculture, Consumer Health Division and Wyoming Environmental Health Association, and local health agencies in partnership as the Wyoming Food Safety Coalition (WFSC). Educational efforts include a series of workshops or classes targeting food industry personal. In addition, utilizing ServSafe, the certification course of the National Restaurant Association in depth classes which include end of session certification testing are conducted.

Results

Of the 317 participant's in WFSC's ServeSafe and ServSafe Starters workshops : 90% passed the certification exam.

97% made at least one change in regard to cleanliness.

80% made at least one change in regard to cooling food.

78% made at least one change related to food preparation.

75% made at least one change such as monitored critical control points more closely.

70% made at least one change related to cooking food.

Improved food handling behaviors such as those listed above increase the likelihood that food served in Wyoming is safe, and therefore, that lives have been saved, illnesses avoided, health care costs controlled, fewer work days missed, and local businesses and institutions made stronger.

4. Associated Knowledge Areas

KA Code	Knowledge Area
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

Turnover of personnel offers challenges in Wyoming; Food Preservation as part of food safety also requires specialized training to provide competency in that subject area.

Populations changes (immigration, new cultural groupings, etc.)

Economy

Appropriation changes

Government Regulations

Competing Programmatic Challenges

Public Policy changes

V(I). Planned Program (Evaluation Studies)

Evaluation Results

End of session questionnaires, follow up surveys were used to document outcomes.

- 100 percent of participants reported through both formal and informal evaluations increased awareness and knowledge of food safety practices.
- 97% made at least one change in regard to cleanliness.
- 80% made at least one change in regard to cooling food.
- 78% made at least one change related to food preparation.
- 75% made at least one change such as monitored critical control points more closely.
- 70% made at least one change related to cooking food.

Improved food handling behaviors such as those listed above increase the likelihood that food served in Wyoming is safe, and therefore, that lives have been saved, illnesses avoided, health care costs controlled, fewer work days missed, and local businesses and institutions made stronger.

Key Items of Evaluation

UW Extension is a key leader with the Wyoming Food Safety Coalition (WFSC) started in 1995. WFSC is a multi-agency, multi-disciplinary partnership that has become the primary source of food-safety education throughout the state. The heart of WFSC is a core of local trained teams, most of which include area UW Extension Nutrition and Food Safety educator and a health inspector from either the Wyoming Department of Agriculture or a local city/county health department of both. These teams plan and conduct a wide variety of educational programs.

Improved food handling behaviors such as those listed above increase the likelihood that food served in Wyoming is safe, and therefore, that lives have been saved, illnesses avoided, health care costs controlled, fewer work days missed, and local businesses and institutions made stronger.