2013 University of Alaska Combined Research and Extension Annual Report of Accomplishments and Results

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I. Report Overview

1. Executive Summary

Alaska is recognized for its immense size and sparse population and its cultural, geographic and environmental diversity. The state represents a major region of renewable and nonrenewable natural resources in the United States. Its 365 million acres include the nation's largest oil reserves, coal deposits and two national forests. The state also contains an array of mineral deposits, including gold, zinc, boron and molybdenum. Alaska has a diverse geography that offers soils for production of food, fiber and biomass fuels as well as a multitude of recreational and tourism activities. Waters surrounding Alaska's shoreline and riparian habitats contain large stocks of salmon, cod, pollock, halibut, herring, crab and shrimp that support thriving commercial, sport and subsistence fisheries. Alaska's natural resources have historically been the foundation of the state's economy though resource industries have been mostly extractive in nature. The use and management of these resources is a predominant force in the planning and delivery of any teaching, research, extension and engagement programs.

The finite nature of the state's nonrenewable resources and local and national controversies surrounding resource extraction and related environmental concerns affects the activities of the School of Natural Resources and Agricultural Sciences and the Agricultural and Forestry Experiment Station (SNRAS/AFES) and the Cooperative Extension Service (CES). The University of Alaska Fairbanks in general and SNRAS/AFES and CES, in particular, meet the challenges of increasing demands for research, education and outreach relevant to sustainable management of Alaska's resources.

During the past 40 years, Alaska's economy has become dependent upon revenues related to petroleum development. To diversify its economy, the state is moving toward nonpetroleum natural resources for economic opportunities that are cost-effective and sustainable. The programs of SNRAS/AFES and CES play a vital role in linking the knowledge generated at the university to meet the needs and interests of Alaskans. Citizens are provided opportunities through engagement to influence future research and education priorities. CES is a critical partner for the university, providing a two-way linkage (engagement) between researchers and natural resource users to deliver the latest research findings, educational and outreach opportunities.

Planned programs for purposes of this report include Agriculture and Food Security; Natural Resources and Community Development; Healthy Individuals, Families and Communities; Youth Development; Climate Change and Ecosystem Management; and Sustainable Energy. Climate change, while addressed primarily in one planned program, affects all the program areas.

While Alaska imports a high percentage of foods and other agricultural products, growers in the agricultural sector produce fresh market potatoes, vegetables and herbs; forages, grains and manufactured livestock feeds; controlled environment products, which include bedding plants, florals, landscape ornamentals, and short season vegetables; and a variety of niche market crops. One such crop, peonies, is one of our success stories and Rhodiola rosea also shows potential as a new crop.

Livestock enterprises include dairy, beef, goat, swine, reindeer, poultry and nontraditional livestock species such as muskoxen, elk and bison. Producers need information specific to northern latitudes as

consumer demand increases due to changing preferences. As the population grows, more locally and regionally produced food will be needed to provide greater food security.

Many Alaskans live a subsistence lifestyle or supplement their diets with fish and game meat. Alaska also has a large military population, and most have not previously preserved game meat or fish. Our state has the nation's highest rate of botulism, making it imperative to provide much needed information on safe preservation of these staples.

Alaska also has one of the fastest growing senior populations, who face the challenge of remaining active and healthy in a demanding environment. Other concerns that define health and nutrition programming are the high rates of child and adult obesity and diabetes. Indoor air quality is a particular Alaska concern.

High energy costs remain a critical issue, particularly in rural Alaska, where fuel oil runs $8 to $9 a gallon. Research and outreach have focused on new and alternative sources of energy, wood and biomass and energy conservation.

The mission of SNRAS/AFES is to provide new information to manage renewable resources, and to improve technology for enhancing the economic well-being and quality of life at high latitudes. While foresters, farmers, and land managers use our research results, all Alaskans benefit from the wise use of land resources. Our research projects are in response to requests from producers, industries, and state and federal agencies for information in plant, animal, and soil sciences; forest sciences; and resources management.

AFES priorities correspond to the national priorities of enhanced sustainability of food and agricultural systems, adapt to and mitigate the impacts of climate change, support energy security through the development of renewable natural resources, ensure a safe, secure, and abundant food supply, improve human health, nutrition and wellness, support environmental stewardship through the development of sustainable management practices, and strengthen individual, family, and community development and resilience.

Experiment station scientists publish research in scientific journals, conference proceedings, books, and in experiment station bulletins, circulars, newsletters, research progress reports and miscellaneous publications. Scientists also disseminate their findings through conferences, public presentations, workshops and other public information programs like websites and blogs.

Administratively, AFES is an integral part of the School of Natural Resources and Agricultural Sciences. This association provides a direct link between research and teaching. Scientists who conduct research at the experiment station also teach, sharing their expertise with both undergraduate and graduate students and adult learners.

Cooperative Extension's mission is to educate, engage and support the people and communities of Alaska, connecting them with their university. It provides factual and practical information while bringing Alaskans' issues and challenges to the university. CES is committed to promoting the sustainability and economic security of individuals, families and communities by providing practical, nonformal education, including conferences, workshops and cooperative work with community, regional and tribal partners. Outreach is also provided through more than 375 numbered publications; faculty consultations, newsletters and 18 Facebook sites dedicated to district information and subject matter such as gardening and food preservation.

CES priorities address national priorities through helping families, youth and individuals be physically, mentally and emotionally healthy; enhancing workforce preparation and life skills; strengthening the profitability of animal and plant production systems; protecting our rich natural resources and environment;

ensuring an abundant and safe food supply through horticulture and food preservation education; preparing for and responding to economic and natural disasters; and fostering greater energy independence.

Programming respects cultural and ethnic diversity and is responsive to emerging stakeholder needs and interests. Programs result from client requests, an active state advisory council, various regional and subject matter advisory groups, surveys and needs assessments.

This report show strong linkages between CES and SNRAS/AFES supporting agriculture, horticulture, forestry, and rural and economic development. The units work cooperatively as well as separately with multistate collaborations with other universities and with other units within UAF, the University of Alaska statewide system, federal and state agencies, nongovernmental organizations and private industry. . They collectively and individually generate and disseminate knowledge to stakeholders who include K-12 students, higher education students, individuals, businesses, industry, government, nongovernmental organizations and families and communities throughout Alaska and the circumpolar North and the nation. AFES and CES bring the university to Alaskans while bringing community concerns and issues back to the university.

During 2013, SNRAS and CES began working collaboratively to effect a merger into one unit which is proposed to take effect July 1, 2014.

Total Actual Amount of professional FTEs/SYs for this State

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	35.0	0.0	24.9	0.0
Actual	45.1	0.0	29.7	0.0

II. Merit Review Process

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

- Combined External and Internal University Panel
- Combined External and Internal University External Non-University Panel
- Expert Peer Review

2. Brief Explanation

The Agricultural and Forestry Experiment Station uses an established scientific peer review process to review and evaluate proposals, publications and specific annual reports that could include the annual narratives that are required to report activities related to the POW. Extension uses the merit review process and the general review process for this joint annual report and Plan of Work. The Agricultural and Forestry Experiment Station (AFES) complies with sections 3(c)(1) and (2) of the Hatch Act and section 1445 of NARETPA (Hatch Regular Capacity Funds) and the amendment to the Hatch Act of 1887 to Section 104 by AREERA for programs funded under section 3(c)(3) of the Hatch Act (Hatch Multistate Research Funds) by using its established scientific review process for all proposals, publications and specific annual reports that could include annual progress of work accomplished under this Plan of Work. All new and revised Hatch (and McIntire-Stennis) project proposals within the Agricultural and Forestry

Experiment Station undergo scientific peer review. All proposals are submitted for director approval. The blind peer review panel is composed of a minimum of three members and consists of competent authorities in the discipline of the proposal/publication/annual report or related disciplines. Each reviewer completes a Peer Review Form that includes specific criteria, provides for other comments and suggestions, and makes a recommendation to the Director. Reviews are returned to the author(s) for revision if needed. The Director reviews all comments and recommendations from the reviewers along with the revised proposal/publication/report. Scientific peer review of multistate research projects are carried out for individual projects under the aegis of the Multistate Review Committee (MRC- formerly RCIC). The specific review process can be found in the Section I.G. "Summary of the Western Review Process" in the Supplementary Manual of Procedures for Western Regional Research and also found at http://www.colostate.edu/Orgs/WAAESD/. All faculty in AFES who are participants in Hatch multistate projects are required to have an approved Hatch General project that is related to the field of study of the multistate project in which they are a member. The Associate Director of AFES is a member of the MRC.

Extension hired an evaluation specialist in August 2012 who has been conducting program impact evaluations and is working with faculty to evaluate individual programs. Evaluation assistance has been provided to faculty in several program areas. Strategic plan theme committees are reviewing how Extension's programs reflect goals stated in our 2010 Strategic Plan. Many of our individual programs are evaluated, including workshops and all conferences. Extension will examine particular programs on a more regular basis in the future.

Peer review of the Extension components of the POW consist of internal and external reviews. Internal review of the Extension components of the POW is achieved by a panel of University of Alaska Fairbanks faculty and administrators. Extension's State Advisory Council conducted external reviews of programs. The different review panels assessed how well the activities and resources proposed in the plan contribute to achieving the proposed goals and established emphasis on climate change, chronic health issues, food security and safety, economic development, positive youth development and energy as priorities for the future. Collective feedback from reviews is incorporated into the future iterations of the Extension components of the Plan of Work.

Extension developed outreach metrics in 2010 for the 2011 accreditation of the university by the Northwest Accreditation Commission. The accreditation covers Extension's outreach process, indicators and outcomes. The next round in the accreditation process is developing a strategic plan for the university, where engagement is a major theme. Extension research, teaching and outreach processes and measurements will be embedded in the new strategic plan. CES provides information to the university

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
- Other (SNRAS Website & Facebook, Newsletter & Blog, 17 CES Facebook pages, 7 newsletters, Research Mag: Agroborealis)

Brief explanation.

SNRAS/AFES reestablished an Advisory Council whose nine members are drawn from agriculture, natural resources, forestry, mine engineering and economic development. SNRAS/AFES also interacts with regional audiences around the state in both formal and informal settings each year. Examples of these include:

- Regional and Statewide Farm Bureau
- Alaska Produce Growers
- Delta Farm Forum
- Alaska Greenhouse Growers
- Kawerak Inc., nonprofit native association
- Reindeer Herders Association
- Alaska Northern Forest Cooperative
- Alaska Livestock Producers
- Association of Peonies Growers
- Alaska Food Policy Council
- On-demand meetings at the request of stakeholders

These traditional meetings are excellent forums for receiving input from stakeholders. As required by the AREERA of 1998, and in cooperation with the Cooperative Extension Service, these are advertised as broadly as possible and identified as points of contact for public input into research and extension program development.

Since much of Alaska land is under federal and state agency control, natural resource stakeholders include government land managers.

Federal stakeholders include:

- National Park Service
- U.S. Forest Service
- USDA/NRCS
- USDA/ARS
- Bureau of Land Management
- Bureau of Indian Affairs
- U.S. Fish and Wildlife
- U.S. Geological Survey

State stakeholders include:

- Fairbanks North Star Borough
- Matanuska-Susitna Borough
- Alaska Northern Forest Cooperative
- Fairbanks Economic Development Corporation
- Division of Agriculture
- Department of Fish and Game
- Department of Natural Resources
- Division of Forestry
- Fairbanks North Star Borough District schools

Extension sponsors agricultural and horticultural conferences and outreach activities with SNRAS/AFES involvement. Formal and informal stakeholder input is gathered there. Outreach events in 2013 included the Delta Farm Forum, Alaska Produce Growers Conference, Alaska Greenhouse and Nursery Conference, Sustainable Agriculture Conference, the Alaska Invasive Species Conference and a joint grazing conference with SNRAS/AFES. Extension coordinated the Alaska Wood Energy Conference in Ketchikan. Extension invited stakeholders to serve on various conference planning committees.

Extension has a 12-member Statewide Advisory Council, which provides guidance about programming across the state. Representatives are drawn from all regions of the state. The State Advisory Council meets biannually as well as through two audio conferences. Local advisory committees provide community input related to local program needs and interests. Additionally, advisory councils provide guidance on forestry, mining and 4-H programming.

Extension faculty members gathered stakeholder input as part of their program planning and development process as well as surveys following instructional activities. Faculty, staff and administrators within Extension are also members of the advisory committees and boards of organizations that are stakeholders of the organization. This service on committees and boards provides another venue for stakeholders to provide input to Extension. 4-H has several programmatic audios with stakeholders that generate suggestions. CES also invited stakeholder participation through 17 district, 4-H and subject matters areas as well as an overall Facebook page. Forestry, 4-H, home economics, agricultural and Master Gardener newsletters also provided outlets for stakeholders.

Other significant CES stakeholders include:

- Food banks
- Alaska Department of Environmental Conservation
- Alaska Department of Health and Human Services
- State fairs
- Schools
- Hospitals
- Women's shelters
- City of Bethel
- Alaska Energy Authority Alaska Center for Energy and Power
- Alaska Head Start programs
- Cold Climate Housing Research Center
- Southeast Alaska Regional Health Consortium
- Tanana Chiefs Conference
- Bristol Bay Native Corp.
- Kawarek Inc.

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.

Extension identifies stakeholders as those who would logically benefit from Extension's services. Other stakeholders are partner agencies organizations and related stakeholder organizations. Examples include the Farm Bureau, Grange and Farmers Union, as well as Master Gardener associations and food banks. Additional stakeholder groups are Alaska Native tribal organizations, school districts and village governments who request services to help build community growing, educational and development capacity. A number of stakeholders identify themselves by calling or e-mailing Extension faculty or staff. Individuals and groups have been identified through advisory committees, working with agencies that have similar missions, work with community, religious, and workforce groups and other units of the university. Subject area advisory groups, 4-H leaders' organization and the State CES Advisory Council provide stakeholder input.

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

Brief explanation.

SNRAS/AFES relies on stakeholder input from agricultural advisory groups, collaborators, federal and state agencies, colleagues, faculty and students for assistance in establishing priorities and developing program direction in consultation with appropriate constituencies. Major stakeholders include the Fairbanks North Star Borough, Matanuska-Susitna Borough, Northern Forest Cooperative, Reindeer Herders Association, Peony Growers Association, federal and state agencies, Fairbanks Economic Development Corporation, and industries involved in food, fiber and fuel/energy production. Feedback from the Georgeson Botanical Garden, local community supported agriculture groups, local restaurants and resorts have provided direction.

Members from the public who have participated in or who have an interest in Extension's offerings represent one segment of the organization's stakeholders. Stakeholders often identify themselves by emailing or calling Extension faculty or staff. Advisory groups also lead us to stakeholders. Another significant stakeholder group is public and private agencies and organizations that have professional and programmatic relationships with Extension or direct interest in Extension programming. Some of Extension's major stakeholder organizations include, but are not limited to, the Farm Bureau, Grange, Reindeer Herders Association, greenhouse growers, food banks, Department of Natural Resources (Alaska), Forest Service, Boys and Girls Clubs, school districts, electric cooperatives, the Alaska Municipal League and research service units of the university. Extension collects stakeholder input through surveys following conferences and workshops, by email surveys, and through public presentations made to a variety of groups and agencies. Input is also collected individually by agents who work with stakeholders and through advisory groups.

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
- Other (Underserved populations identified)

Brief explanation.

SNRAS/AFES and CES joint research and outreach planned programs are directly related to the strategic plans produced by faculty as well as the administrative leadership. The SNRAS/AFES plan reflects ideas and advice given by client user groups, students, expert advisors, state and national peers and cooperators, and UAF administration. During the 2013 reporting period, the focus areas of energy, climate change, local and regional food production and food safety, and the need for adult and youth education and training to fill Alaska job and career demands were addressed. These focus areas were used to set priorities in meeting the need for knowledge about Alaska and circumpolar resources. Input was considered in the budget process. Capacity funds were used in response to research needs based on the four emerging focus areas.

The Extension strategic plan was developed with input from stakeholders, its advisory council and the public. Its focus areas include food safety and security, health, climate, energy, youth families and communities, and economic development. Agents' work reflected the strategic plan.

Stakeholder needs will continue to be a driving factor in determining Extension priorities and programming as a grass-roots program. Agents use stakeholder input to identify programming needs and work to offer programs and information that meet those needs. Stakeholder input in 2013 led to increased youth outreach in rural Alaska, a greater emphasis on health and nutrition programming and more programs on biomass and responsible wood burning. Interest in raising chickens and growing local foods has increased programming in those areas. Stakeholder involvement on conference planning committees and input at conferences led to specific topics and speakers at subsequent conferences. An outcome of a 2011 livestock meeting with stakeholders, including consumers, processors and producers, was a redirection of livestock research and Extension priorities during 2012 and 2013. We began focusing more on grazing management in addition to animal reproduction and other production techniques.

Brief Explanation of what you learned from your Stakeholders

Alaskans desire information necessary to make decisions related to a healthy lifestyle and a healthy economy. Food security, energy, climate change, chronic health issues and youth development have risen to the forefront as areas of particular importance and are therefore leading to development of research and Extension programming particularly in subsistence, small farm agriculture and energy. There is also strong interest in more health and nutrition programming, additional classes for parents and child care workers, programs on reducing energy consumption, family finance, budgeting and estate planning.

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
1026523	0	1143718	0

2. Totaled Actual dollars from Planned Programs Inputs				
	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	1496783	0	1202275	0
Actual Matching	1036566	0	1050822	0
Actual All Other	6679124	0	3488836	0
Total Actual Expended	9212473	0	5741933	0

3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous				
Carryover	863836	0	0	0

V. Planned Program Table of Content

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Agriculture and Food Security

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	10%		25%	
205	Plant Management Systems	25%		30%	
213	Weeds Affecting Plants	15%		0%	
216	Integrated Pest Management Systems	33%		0%	
301	Reproductive Performance of Animals	0%		10%	
302	Nutrient Utilization in Animals	0%		5%	
305	Animal Physiological Processes	2%		5%	
401	Structures, Facilities, and General Purpose Farm Supplies	5%		15%	
405	Drainage and Irrigation Systems and Facilities	5%		5%	
601	Economics of Agricultural Production and Farm Management	5%		0%	
903	Communication, Education, and Information Delivery	0%		5%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	3.0	0.0	3.1	0.0
Actual Paid Professional	5.9	0.0	7.5	0.0
Actual Volunteer	0.0	0.0	36.0	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**
359228	0	876007	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
248776	0	610041	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
1602990	0	559221	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Research and outreach in collaboration assured that best management practices appropriate to Alaska were provided to the target audiences. Adaptation and resilience of crops and animals to the changes occurring in the subarctic and arctic climate were addressed through research and extension programs relevant to regional and local agricultural production. An emphasis was placed on educating and training youth and adults for the Alaska workforce. Continuing education and training programs are in place to prepare for replacing an aging workforce. Group and one-on-one educational activities with specific sectors of the pest management industry, the agricultural community, and the horticultural industry provided individuals and businesses with important information. Increased reliance on the Internet and distance technology has enhanced delivery to more people. Partnerships provided important strategies in maintaining pest species below threshold levels. Outreach included forums, workshops, tours, site visits, responses to emails, phone calls and walk-in stakeholders.

2. Brief description of the target audience

The target audiences included producers and consumers, communities, entrepreneurs, agribusinesses, industry leaders, and individuals and groups concerned about the quality of the Alaska environment, public resource agencies, public and private resource managers, other faculty and researchers, and undergraduate and graduate students. Users included arborists, farmers, garden and plant associations, public and commercial greenhouses, homeowner associations, landscapers, state and federal park employees, gardeners, museums, military base personnel, local governments, pest control operators, property managers, public health organizations, public and private schools, recreational facilities, resorts and hotels, rural residents, youth groups and school districts. Advisors and the target audience include: Alaska Farm Bureau, USDA Natural Resource Conservation Service, the USDA Forest Service, the Alaska Department of Natural Resources, local governments, and Alaska Native corporations.

3. How was eXtension used?

One agent recommends the use of eXtension to Master Gardener volunteers and he uses it on a daily basis to research client questions. Another uses it frequently to answer client questions and he is a regular contributor to content.

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	16105	355739	2754	16881

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

Patent Applications Submitted

Year:	2013
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	4	7	11

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Output 1: Faculty will provide nonfood agricultural and horticultural workshops, short courses, classes, field days, and conferences including IPM.
  Not reporting on this Output for this Annual Report

Output #2

Output Measure

- Output 2: Faculty will provide nonfood agricultural, horticultural and pest management information through one-on-one consultations and consultations with other organizations (in contact hours).
  Not reporting on this Output for this Annual Report

Output #3

Output Measure

- Output 3. Horticultural crop research will concentrate on home and commercial varieties appropriate to Alaska. Publications and presentations are the output measures.

Year	Actual
2013	17

Output #4

Output Measure

- Output 4. Controlled environment horticulture will focus on controlled environment technology and technology transfer and appropriate nonfood crops and best management practices for crop production in specific environments. Output measures will be publications and presentations. Not reporting on this Output for this Annual Report

Output #5

Output Measure

- Output 5. Turf research will continue including variety selection and expansion into multiple use. Output measure will be publications, presentations and technology transfer.

Year	Actual
2013	8

Output #6

Output Measure

- Output 6. Faculty will provide agricultural and horticultural workshops, short courses, classes, field days, and conferences including IPM. Publications and presentations are the output measures.

Year	Actual
2013	189

Output #7

Output Measure

- Output 7: Faculty will provide agricultural and horticultural information through one-on-one consultations and consultations with other organizations to provide information on best management practices of production (in contact hours).

Year	Actual
2013	5321

Output #8

Output Measure

- Output 8: Controlled environment horticulture will focus on controlled environment technology and technology transfer and appropriate crops and best management practices for crop production in specific environments. Output measures will be publications and presentations.

Year	Actual
2013	3

Output #9

Output Measure

- Output 9: Focus will be on best management practices for food crops and variety evaluation. Output measures will be publications.

Year	Actual
2013	3

Output #10

Output Measure

- Output Target 10: Focus will be on best management practices for livestock management and production for food. Output measures will be publications and presentations.

Year	Actual
2013	82

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Outcome 1: Increase nonfood agricultural and horticultural producers' ability to understand and assess optimum production practices.
2	Outcome 2: Increase nonfood livestock producers' ability to understand and assess optimum production practices.
3	Outcome 3: Increase the number of activities that monitor and control invasive species and pests.
4	Outcome 4: Increase the number of adopters of new technology and management practices.
5	Outcome 5: Improve and support agricultural and horticultural producers' ability to understand and assess optimum production practices. Measure is number successful horticulture enterprises.
6	Outcome 6: Increase livestock producers' ability to understand and assess optimum production practices.
7	Outcome 7: Increase livestock producers' ability to understand and assess optimum production practices. Measure is number of stakeholders.
8	Outcome 8: Grazing management studies conducted in Alaska will yield new information that will protect the land base. Measure is adopters reflecting a change in action.
9	Outcome 9: Enhanced technology transfer through a new state-of-the art greenhouse. Outcome measure is technologies researched.
10	Outcome 10: Increase recognition of the value of weed-free forage and train individuals who are certified to become weed-free forage inspectors. Measure is the number of inspectors trained and number of certified weed-free field inspections and consultations on this subject.
11	Outcome 11: Increase agronomic crop producers' ability to understand and assess best management practices of crop production.
12	Outcome 12: Increase participants' commercial and home horticulture optimum food crop growing techniques and improve management practices.

Outcome #1

1. Outcome Measures

Outcome 1: Increase nonfood agricultural and horticultural producers' ability to understand and assess optimum production practices.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	93

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Commercial and home growers produce flower, landscape and vegetable bedding plants. Facing many of the same growing challenges as other producers, including a short growing season, cold soils and limited soil fertility, research, education and outreach helps them face challenges and support new markets. Peony and rhodiola production has the potential of being profitable for growers.

What has been done
Support was provided to 67 potential and existing peony growers and 26 Rhodiola rosea growers with site visits, soil analysis, weed management presentations and grower consultations. State grants provided financial support for the fledgling rhodiola cooperative to support the harvest and processing of the first crop, and to AFES for post-harvest support for the peony industry. Four classes and a conference presentation offered information on growing rhodiola to 100 growers and potential growers. Presentations at the annual peony conference reached 120 attendees, and workshops provided information to 60 potential and existing growers.

Results
The Alaska Peony Growers website indicates that 19 Alaskan commercial growers now offer 61 peony varieties online at http://www.alaskapeonies.org/all-peonies.php. Some farms are already sold out for 2014. Last year nearly 25,000 high quality Alaska fresh cut stems were sold in Canada, Taiwan, Hawaii and the contiguous 48 states. Growers routinely receive from $3 to $9 per stem. Projected yield, by 2015, is over one million stems. This new industry is a direct result of research projects at the University of Alaska Fairbanks Agricultural and Forestry Experiment Station (AFES), and Cooperative Extension Service (CES) conferences, workshops and grower support where research and industry ideas were exchanged. This project is the perfect example of how public dollars are used to explore new opportunities that promote economic development

and well-being for citizens. As of summer 2013, 10 Alaska producers had planted commercial quantities of rhodiola. Two farmers harvested their first crops in FY13 and one crop had been processed for sale.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
205	Plant Management Systems
213	Weeds Affecting Plants
216	Integrated Pest Management Systems
401	Structures, Facilities, and General Purpose Farm Supplies
405	Drainage and Irrigation Systems and Facilities
601	Economics of Agricultural Production and Farm Management

Outcome #2

1. Outcome Measures

Outcome 2: Increase nonfood livestock producers' ability to understand and assess optimum production practices.

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

Outcome 3: Increase the number of activities that monitor and control invasive species and pests.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	5

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Alaska hosts thousands of visitors every year. The state also imports most of its food and many horticultural products, so it remains vulnerable to imported pests. Retail sales of plant materials contaminated with a variety of pests continue to challenge the state. Invasive weed infestation can reduce land values and agricultural productivity, and negatively impact recreation, tourism and subsistence harvesting. Improving citizen, farmer and land manager ability to assess pest management practices is critical.

What has been done
Integrated pest and invasive species management includes a variety of educational outreach. Agents and integrated pest management staff hosted 86 workshops and 29 presentations and worked with producers, agencies and individuals to identify 800 insect, plant and disease specimens. A webinar series on invasive species management issues, which began in 2012, expanded to eight presentations attended by 198 participants. Pest technicians placed 500 insect-monitoring traps for species of concern, including the gypsy moth and nun moths. An invasive species conference brought together researchers, agencies and citizens statewide in Kodiak to discuss research and prevention efforts. CES trained 94 commercial pesticide applicators.

Results
IPM staff reported 8,305 contacts, a lower-than-usual number because of position vacancies in the two major urban areas. The program serves as a proactive first detector for monitoring and outreach. No gypsy, nun, Siberian silk or rosy gypsy moths were detected with trapping efforts. The webinar series involved participants with affiliations ranging from the Department of Transportation and the Alaska Railroad to various landscape businesses, farmers and government land managers. Most webinars offered continuing education credits to pesticide applicators. Pesticide applicator certification, which is required by the state, results in safer and more effective application of pesticides. The annual invasive species conference brought agencies and individuals together to coordinate invasive species response and research. Following the Kodiak conference, 73 percent of individuals who filled out evaluations indicated they had attended previous conferences and applied knowledge gained from these conferences. More than half of respondents said the partnerships made would move their invasive species efforts forward. Topics ideas for future conferences were also proposed.

4. Associated Knowledge Areas

KA Code	Knowledge Area
213	Weeds Affecting Plants
216	Integrated Pest Management Systems
903	Communication, Education, and Information Delivery

Outcome #4

1. Outcome Measures

Outcome 4: Increase the number of adopters of new technology and management practices.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	2

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Controlled environment (CEA) research aims to increase horticulture crop production in Alaska through the use of high tunnel, season extension, greenhouse and controlled environment facilities, techniques and knowledge.

What has been done
Research comparing high tunnel size and type, and covering materials proves that high tunnels can successfully extend the growing season. Warm season crops like strawberries, bell peppers and eggplant were used to test different types of plastic coverings and mulches over raised rows. This research supplements and complements ongoing light and photosynthesis studies necessary at these latitudes.

Results
Many approaches are used to provide information and training to growers. Researchers are regularly communicating with producers and individuals interested in pursuing or who already are engaged in the use of high tunnels, greenhouses, season extension techniques and field conditions. Presentations are frequently provided at local, regional, national and international meetings, conferences and workshops on crop production. After research results were collected, beets, corn, zucchini, strawberries, green beans, tomatoes, cabbage, broccoli, purple peppers and kohlrabi were either delivered to the Farm to School projects in two rural towns or to the local food bank.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
401	Structures, Facilities, and General Purpose Farm Supplies
405	Drainage and Irrigation Systems and Facilities

Outcome #5

1. Outcome Measures

Outcome 5: Improve and support agricultural and horticultural producers' ability to understand and assess optimum production practices. Measure is number successful horticulture enterprises.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Horticulture is the largest agricultural industry in Alaska amounting to 60 percent of cash receipts for all agricultural crops. The demonstration flower gardens started in 1905 became the Georgeson Botanical Garden (GBG) in 1991. Located on the Fairbanks Experiment Farm at the UAF campus, the garden is a valuable source of information on suitable varieties of annual flowers and vegetables for commercial growers and home gardeners, and a major attraction for visitors.

What has been done
Four horticulture specialties are emerging as the most important research focus areas to support commercial enterprises in Alaska: organic and sustainable horticulture; controlled environment horticulture, especially season extension and moderation using high tunnels; field-grown cut flower production and Alaska wild berry cultivation and management for food and nutraceutical industries.

Results
Research at the GBG led to the establishment of the Alaska specialty cut flower industry beginning with the peony. Protocols were developed to support commercial businesses in the propagation and cultivation of more than 100 Alaska native plants for revegetation and home and commercial landscapes. Antioxidant levels of Alaska wild berries were identified and the fate of antioxidants in frozen and processed wild berries explored. The reproductive biology of Alaska's only endangered plant, the Aleutian shield fern, was researched and contributed toward a species recovery plan. The GBG supports research, education and outreach in horticulture, agriculture, natural resources management, biology, botany, northern studies, Alaska Native language studies and ethnobotany. The GBG staff sponsor educational programs from Pre-K through postsecondary education, established three endowment funds for future garden programs, and

provided expertise on hardy plant materials, landscaping, plant reproduction and cultivation to the university community, Cooperative Extension Service, state agencies, communities throughout Alaska and the Yukon, and botanical gardens throughout the circumpolar North.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
205	Plant Management Systems
213	Weeds Affecting Plants
216	Integrated Pest Management Systems
401	Structures, Facilities, and General Purpose Farm Supplies
405	Drainage and Irrigation Systems and Facilities

Outcome #6

1. Outcome Measures

Outcome 6: Increase livestock producers' ability to understand and assess optimum production practices.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	28

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Livestock production enterprises in Alaska provide fiber, meat and dairy products for commercial markets as well as agritourism enterprises in this state. Educating livestock producers will improve their ability to assess production practices. The program goal is to facilitate the development of management strategies to support sustainable, high-latitude livestock production in species ranging from poultry to reindeer.

What has been done
CES, AFES and the Alaska Diversified Livestock Association organized a feeding and grazing conference that also addressed emerging livestock opportunities, including elk, goat and swine. CES/AFES livestock specialist taught workshops on reindeer herd health, nutrition, genetics, sire

selection, reproduction, lactation, environmental physiology, ethology/behavior, and animal welfare and well-being in four Alaska communities where livestock is raised. Due to increased community interest, particularly in egg layers, agents taught a dozen classes on raising chickens to 524 individuals in eight communities. This included a one-day Chicken Summit in Juneau.

Results
Interest in raising chickens has increased because of the interest in eating local foods and because of city ordinance changes in Juneau and Anchorage that have allowed for raising more chickens inside of city limits. Participants in chicken classes learned how to provide their own meat and eggs safely. Participants indicated that they would select appropriate breeds and build coops for cold climates, change perch design, and properly wash eggs to prevent E. coli and salmonella. Eighteen Chicken Summit participants indicated on an evaluation that they intend to start raising chickens. As a result of the training, participants indicated that they planned to modify their coops, build a more secure area, plan more and get ducks. Participants also provided topics for the next summit, such as breed choices.

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
401	Structures, Facilities, and General Purpose Farm Supplies
601	Economics of Agricultural Production and Farm Management

Outcome #7

1. Outcome Measures

Outcome 7: Increase livestock producers' ability to understand and assess optimum production practices. Measure is number of stakeholders.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	139

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Consumers increasingly seek locally produced, high quality, chemical and hormone free meat. Reindeer perfectly fit the bill. Uniquely adapted to northern climates, reindeer eat less during the cold season. They are a good-natured animal responding well to intensive human contact and farm settings.

What has been done
The Reindeer Research Program provides nutritional guidelines to the reindeer industry to produce quality commercial meat. This data is being used to develop a National Reindeer Database. Since reindeer were long ago adapted to a northern environment, they are hormonally and physiologically triggered to put on meat at different times of the year then beef cattle. While requiring less food in the winter, if the nutritional window of opportunity is missed it is difficult to make it up. The database will provide producers with optimum production practices.

Results
Nearly every major meat distributor in Alaska and many high end restaurants elsewhere desire to purchase this tender and tasty meat. It is high in protein and minerals, while low in fat and cholesterol. Reindeer bring $10 per lbs. wholesale and $25 per lbs. retail, while organic beef retails at $6.50 to $6.75.

4. Associated Knowledge Areas

KA Code	Knowledge Area
302	Nutrient Utilization in Animals
305	Animal Physiological Processes
401	Structures, Facilities, and General Purpose Farm Supplies
601	Economics of Agricultural Production and Farm Management
903	Communication, Education, and Information Delivery

Outcome #8

1. Outcome Measures

Outcome 8: Grazing management studies conducted in Alaska will yield new information that will protect the land base. Measure is adopters reflecting a change in action.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	8

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Several grazing and pasture studies are underway. Currently only Alaska Natives can apply for reindeer grazing permits on federal land. Herds graze on large allotments that may include over a million acres of land. Management is complicated by oversight through state, federal, and private agencies, including Native corporations and landowners. Small pasture research for private land is also being addressed.

What has been done
Feed trials are being conducted, as well as GPS tracking collars used to track and record pasture and/or range distribution. A feeding and grazing conference was presented in collaboration with the Alaska Diversified Livestock Association which addressed grazing systems in Alaska.

Results
Discussions with collaborators led to a change of knowledge concerning spatial point analysis and less expensive technology. Forty-five livestock producers and hay growers attended the grazing conference and learned more about potential markets and about grazing management, including rotational practices. They also learned more about sustainable small farms from a dairy and livestock expert from Michigan State University. Attendees provided research ideas in the area of grazing management and the conference led to a holistic grazing workshop in Fairbanks the following September with that expert.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
205	Plant Management Systems
305	Animal Physiological Processes
601	Economics of Agricultural Production and Farm Management

Outcome #9

1. Outcome Measures

Outcome 9: Enhanced technology transfer through a new state-of-the art greenhouse. Outcome measure is technologies researched.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual

2013 1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
In spite of Alaska's extreme climate where winter temperatures can drop to -40 degrees and summers can see temperatures of 80 degrees Fahrenheit, UAF has built a new multipurpose, two-level greenhouse on the Fairbanks campus. With imports estimated as high as 90%, this research will continue addressing Alaska's food security issue and support commercial greenhouse activity through research and education.

What has been done
The greenhouse is equipped with state-of-the-art automated energy shade curtains and fogging systems for cooling. The upper level will be used for teaching and instructional purposes and university research will be conducted on the lower level. This unique structure is getting international press highlighted in an article with photos by Netherland based Shelley Antscheri found at HortiDaily.com.

Results
Currently, high pressure sodium lights supply lighting needs during short winter days. Research using LEDs, show no difference in crop performance for transplants grown in natural light compared to LEDs during the seedling stage. In one case, petunias seedlings exposed to red/blue and multicolored LEDs quickly filled in and produced large number of flowers to outperform the conventionally grown control crop. Results suggest opportunities to enhance field establishment and performance through limited LED exposure during propagation. Comparisons suggest that LEDs generate as much as 50% savings through less heat and overall energy use.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
205	Plant Management Systems
401	Structures, Facilities, and General Purpose Farm Supplies
405	Drainage and Irrigation Systems and Facilities

Outcome #10

1. Outcome Measures

Outcome 10: Increase recognition of the value of weed-free forage and train individuals who are certified to become weed-free forage inspectors. Measure is the number of inspectors trained and number of certified weed-free field inspections and consultations on this subject.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	19

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
State and federal agencies may require individuals who cross their lands to use certified weed-free straw and hay. Demand for the premium-priced certified hay and straw is increasing due to more stringent requirements by federal and state agencies, as well as informed consumers.

What has been done
The Certified Noxious Weed-Free Forage Program educates grain and hay growers on management of particular invasive weeds in their crops. The Delta agent regularly receives inquiries from the Bureau of Land Management and from organizers of the two long-distance sled dog races, the Yukon Quest and the Iditarod, about the availability of certified straw. Agents train certified weed-free forage inspectors. During 2013, they provided nine field inspections to certify weed-free forage and consulted with 10 producers and inspectors.

Results
Field inspections of more than 1,600 total acres of straw and hay led to weed-free forage certification. Over the past four years, prices on certified straw have risen from $6.25 to a current price of $10 or more per bale at the farm (non-certified straw has held firm at $6 per bales over this same period). At these prices, it is worthwhile for a producer to go to the extra effort to achieve certification, and requests for field inspections are increasing. The program encourages the in-state production of an inspected certified commodity for purchase and use by folks accessing the 'back country.' This will also limit the spread of noxious weeds to natural ecosystems. The next training for certified forage inspectors will occur in FY14. Training in FY12 resulted in 26 new certified inspectors, many associated with state and federal land management.

4. Associated Knowledge Areas

KA Code	Knowledge Area
216	Integrated Pest Management Systems

Outcome #11

1. Outcome Measures

Outcome 11: Increase agronomic crop producers' ability to understand and assess best management practices of crop production.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	24

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Educational opportunities and research-based practical advice offered to producers will help new producers enter the market and improve the economic viability of existing operations. The management of farm nutrients, pest scouting and pesticides also will improve financial sustainability of farm operations while making producers cognizant of environmental concerns.

What has been done
Several educational events increased growers' knowledge and ability to raise agronomic crops. The Delta Farm Forum offered information about barley flour marketing and the Alaska Farm to School schools provided opportunities for farmers and agricultural agency updates. The Produce Growers Conference included presentations from experts on potato diseases that have affected Alaska farmers, such as bacterial ring rot, early blight, soft rot and black leg diseases and potato scab. Nutrient and pest management plans also were provided to agronomic producers associated with EQIP long-term contracts.

Results
The Farm to School Program and CES recipe development for school districts has led to two Delta area farmers contracting with the Fairbanks school district. One of the farmers, who also runs Alaska's only flour mill, grew a barley variety developed by AFES. Through the EQIP program in Delta, 14 producers applied pesticides and nutrients at the specified rates and were educated in weed identification and soil sampling. Produce Growers Conference evaluations showed that 11 participants of past conferences said they changed their practices regarding use of high phosphorous fertilizers, mycorrhizae supplements, crop insurance and ring rot disinfection. Other participants had started using fertilizer recommendations provided by university researchers and precision agriculture technology.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
205	Plant Management Systems
213	Weeds Affecting Plants
216	Integrated Pest Management Systems
601	Economics of Agricultural Production and Farm Management

Outcome #12

1. Outcome Measures

Outcome 12: Increase participants' commercial and home horticulture optimum food crop growing techniques and improve management practices.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	692

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Horticulture is the largest agricultural industry in Alaska amounting to 60 percent of cash receipts for all agricultural crops. Alaska imports most of its food and costs are high, particularly in rural areas. Dependence on imports poses a food-security risk if supply lines are interrupted. Teaching more residents how to garden or grow horticultural crops increases the quality of food available to consumers and lowers food security risk.

What has been done
Many composting and gardening classes include hands-on components. Two conferences targeted industry and home horticulture. The Sustainable Agriculture Conference provided information about nutrient management and composting, solar greenhouses, business planning, marketing, organic weed and pest control and harvesting rainwater. The Greenhouse and Nursery Conference included sessions about grafting vegetables and selecting commercial plant varieties, the use of LEDs in greenhouses, finding and trialing new plants, integrated pest and disease management and information about a potential new crop, Rhodiola rosea. Nutrient and pest management plans were provided to horticulturalists associated with EQIP long-term

contracts.

Results

Nearly 200 Master Gardeners graduated this year and 36 took an advanced 15-hour plant pathology course. Thirteen months after the basic Master Gardener class in Anchorage class, 89 percent of the 25 participants who responded to a survey said they had used course information, including new varieties or plants, fertilizer practices and pest management techniques. Twenty-two of the advanced Master Gardener class responded to a survey five months after the class ended. Of those, more than half said they could identify gray and white mold, and reported an increased understanding of potato and tree diseases, mildew and more. Seven participants of past greenhouse conferences incorporated recommendations on grafting, fertilizing, season expansion and soils composition. Twenty-eight participants of Sustainable Agriculture conference made changes in fertilization, composting, organic soil amendments and weed management as a result of previous conferences. Agents worked with 430 high tunnel growers, who were educated in weed identification and soil sampling and improved soil conservation.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
205	Plant Management Systems
213	Weeds Affecting Plants
216	Integrated Pest Management Systems
601	Economics of Agricultural Production and Farm Management

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

Brief Explanation

The high cost of petroleum products and fertilizers are expected to impact the productivity and the economic viability of horticultural and agricultural operations in the state. The small number of agricultural staff working for Extension and the limited number of AFES or CES researchers present challenges to providing a supporting role for horticultural and agricultural production. Other challenges include the geographic distances between communities and high transportation costs involved in traveling to communities off the road system. The addition of new agriculture and horticulture agents in Fairbanks and the Kenai Peninsula has boosted our work. IPM contact numbers were lower in 2013 because of an unfilled fulltime position for the entire year.

The School of Natural Resources and Agricultural Sciences and the Cooperative Extension Service will be merged by July 2014. It is believed this will improve integration of research, education and service to citizens of the state of Alaska.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

CES agents used surveys after our major conferences and many agents surveyed following individual classes. We are learning through surveys what areas interest clients for future programming and what they have used from previous workshops. Comments on the 2012 Sustainable Agriculture Conference evaluation led to programming for the 2013 conference, including sessions on soil fertility and nutrient management, weed management and alternative energy use on farms. The evaluation also indicated that 28 people have used information from past conferences, including information about cover crops, soil fertility, composting, weed management and rainwater collection.

Thirteen months after the basic Master Gardener class in Anchorage class, 89 percent of the 25 participants who responded to a survey said they had used course information, including new varieties or plants, fertilizer practices and pest management techniques. Sixty-one percent of the advanced Master Gardener class responded to a survey five months after the class ended. Of those, more than half said they could identify gray and white mold, and reported an increased understanding of potato and tree diseases, mildew and more.

Produce Growers Conference evaluations showed that 11 participants of past conferences said they changed their practices regarding use of high phosphorous fertilizers, mycorrhizae supplements, crop insurance and ring rot disinfection. Other participants had started using fertilizer recommendations provided by the university and precision agriculture technology.

Greenhouse and Nursery Conference evaluations indicate that seven individuals from previous conferences had changed fertilizing practices, had planted different crops, done more grafting, and used season extension and pest control. Many suggestions were made about future topics.

Chicken Summit evaluations of 29 individuals indicated all consider the summit to be either good or excellent. They particularly liked basic chicken raising presentation and presentations on disease, flock management, egg production and chicken manure management. A panel of chicken owners was rated good or excellent by all participants.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Natural Resources and Community Development

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
111	Conservation and Efficient Use of Water	10%		0%	
112	Watershed Protection and Management	15%		0%	
122	Management and Control of Forest and Range Fires	10%		0%	
123	Management and Sustainability of Forest Resources	10%		20%	
131	Alternative Uses of Land	10%		0%	
134	Outdoor Recreation	5%		20%	
404	Instrumentation and Control Systems	5%		0%	
605	Natural Resource and Environmental Economics	15%		15%	
608	Community Resource Planning and Development	15%		15%	
610	Domestic Policy Analysis	5%		20%	
805	Community Institutions, Health, and Social Services	0%		10%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	4.0	0.0	1.9	0.0
Actual Paid Professional	3.0	0.0	3.6	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**
179614	0	139542	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
124388	0	251826	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
801495	0	614271	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Research products provided science-based information in resource planning, economic and environmental impact of natural resource use, market and nonmarket value of resources, and conflict resolution in rural communities and villages along with basic information in climate change issues and forest sciences for use by planners, economists and policy makers. Measurable outcomes included peer-reviewed publications, lay publications, rural community business/development plans and citizen participation. Extension activities involve partners from other UAF units as well as AFES to assure that information provided to stakeholders relevant to their needs. These activities provided integrated and/or multistate projects concerning natural resources stewardship within the University of Alaska Fairbanks and with other land-grant institutions.

CES programs addressed the needs of those Alaskans most directly impacted by specific natural resource matters and maintained partnerships with government agencies concerning stakeholder needs. It provided community and economic development, particularly in rural Alaska, environmental education to teachers and youth and information on harvesting firewood and responsible wood burning for home heating. It also provided training on GPS and GIS software for land use planning and water quality information for homeowners. It assisted the UAF School of Natural Resources and Agricultural Sciences and other units of the University of Alaska in recruiting and graduating young Alaskans with endorsements, certificates and degrees with careers in managing, using and protecting natural resources.

Product development activities include:

- Developing nontimber forest products with business entrepreneurs.
- Investigating the fuel potential of Alaska's forests.
- Investigating recreation opportunities and impacts in Alaska's forest ecosystems.
- Curriculum development for Resource Conservation

2. Brief description of the target audience

This program focused on industry and entrepreneurs including communities, families, and newly forming cooperatives and businesses, non-profit and for-profit development corporations. Efforts were made to address problems of the traditionally underserved rural populations within the limit of resources available. Stakeholders are those directly impacted by contemporary natural resource issues related to forest and land resources, mining resources, and water resources, young adults wanting entry-level skills needed for employment in natural resource related businesses, agencies or organizations, and persons in natural resource related occupations who wish to increase their skill and/or knowledge level, federal and state agencies.

3. How was eXtension used?

One agent helped develop content for the Drinking Water and Human Health Community of Practice. Another agent answered eXtension Ask an Expert wood energy questions. Two agents regularly use eXtension's search engine. Another agent is developing content for the Climate, Forests and Woodlands Community of Practice.

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	4138	14060	1139	740

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

Patent Applications Submitted

Year:	2013
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	1	11	12

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Output 1: Active partnerships with other land grant institutions, government agencies, stakeholder groups and organizations.

Year	Actual
2013	46

Output #2

Output Measure

- Output 2: Develop and deliver public issues education workshops and classes for stakeholders on locally relevant natural resources and related issues.

Year	Actual
2013	43

Output #3

Output Measure

- Output 3: Develop and maintain a web-based platform for discourse and information sharing on relevant areas of interest in natural resource issues that connect people to information.

Year	Actual
2013	6

Output #4

Output Measure

- Output 4: Conduct needs assessments of natural resource management stakeholders.

Year	Actual
2013	3

Output #5

Output Measure

- Output 5. Develop regional economic models for Alaska resource management scenarios. Output will be models, presentations and publications.

Year	Actual
2013	1

Output #6

Output Measure

- Output 6. Develop and implement public involvement in natural resource issues. Output measure will be public input sessions and publications.

Year	Actual
2013	13

Output #7

Output Measure

- Output 7. Provide analysis of natural resource and environmental laws. Output measure will be presentations, workshops and publications.

Year	Actual
2013	1

Output #8

Output Measure

- Output 8: Develop scenario models for predicting future needs.
  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	Outcome 1: Increase and maintain partnerships with stakeholder groups, government agencies, and other institutions that will enhance the land-grant mission.
2	Outcome 2: Increase the number of integrated and multistate research-extension activities.
3	Outcome 3: Increase the recruitment and retention of youth appreciating and considering natural resource management careers.
4	Outcome 4. Increase public involvement in natural resource and community development issues. Outcome measure will be the increase in number of communities.
5	Outcome 5: Increase community development and economic diversification through tourism. Outcome measure will be number of tourism opportunities and communities impacted.
6	Outcome 6: Increase environmental collaborations between K-12 teachers, students and university educators through outreach. Outcome measure is the number of students or educators who increased their knowledge through outreach.
7	Outcome 7: Increase familiarity with GIS software to provide learning opportunities for youth. Outcome measure is number of individuals who learned how to conduct virtual field trips with GIS software.
8	Outcome 8: Partnerships with stakeholder groups, government agencies, and other institutions enhance the land grant mission.
9	Outcome 9. Increase public awareness in natural resource and community development issues. Outcome measure will be publications and presentations.

Outcome #1

1. Outcome Measures

Outcome 1: Increase and maintain partnerships with stakeholder groups, government agencies, and other institutions that will enhance the land-grant mission.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	7

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Of the 375 million acres of land in Alaska, 218 million are federally managed. Outdoor recreation is a major component of life in Alaska. One of our most important partners is the Bureau of Land Management (BLM) and one focus of this partnership has been to collect information to assist in the implementation of Benefit-Based Management (BBM). BBM is the recreation planning framework used as a matter of national policy to gather data for different field offices prior to development of Resource Management Plans (RMP) were are being updated from earlier ANILCA plans.

What has been done
Seven studies in six different areas were conducted over a winter and a summer in interior Alaska. Surveys were designed for each study area and delivered to users while on-site and through the mail. Follow-up surveys were utilized where appropriate and focus groups were also conducted. These qualitative methods collected valuable information with regard to the experiences and benefits local residents felt were important.

Results
Overall the surveys had high response rates. The Eastern Interior Field Office has become a showcase within the BLM for applications of benefit-based management model. The RMP process has begun for the Central Yukon Field Office, and data has been gathered to inform that RMP. The BLM has also begun the RMP process for the Bering Sea Western Interior area. The land grant mission was served when a research workshop led to collaboration that provided federal agencies with data needed to design management plans that best serve the public.

4. Associated Knowledge Areas

KA Code	Knowledge Area

134 Outdoor Recreation

Outcome #2

1. Outcome Measures

Outcome 2: Increase the number of integrated and multistate research-extension activities.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	16

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The geographic isolation of Alaska and travel expense present challenges to multistate collaboration. At the same time, many issues, particularly natural resources, energy and climate change, have implications that extend well beyond our borders. Tapping into other states' experiences and research strengthen our ability to assist Alaskans. Integrated activities provide the best possible information for stakeholders in the unique environment of our state.

What has been done
Research and Extension continued to provide knowledge for both urban and rural communities to diversify their economies and improve quality of life through collaboration with stakeholders in communities, industry, and state and federal agencies. CES/AFES agent has worked to extend Alaska's forestry markets and provide wood energy and forest education outreach. As an outgrowth of the national ANREP conference in Alaska and a further workshop on climate change and forests, the agent is a member of the ANREP initiative on climate science. CES water quality coordinator chaired national Drinking Water and Human Health eXtension Community of Practice and participated in regional water quality group. CES worked with Missouri Extension and Michigan State on a web module on using cooperatives to promote heritage tourism with a geotourism emphasis.

Results
Multistate research projects included NE1962 and WERA 1020. Integrated activity included WDC28. Nontimber forest outreach included a birch-tapping workshop, harvesting and weaving birch bark and youth outreach. Water quality coordination work with Western states resulted in outreach publications on nitrate, radon and arsenic in drinking water that contain important public health information about contamination and treatment. The tourism web module is used by

communities as part of a community development toolkit.

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management
123	Management and Sustainability of Forest Resources
131	Alternative Uses of Land
134	Outdoor Recreation
605	Natural Resource and Environmental Economics
608	Community Resource Planning and Development

Outcome #3

1. Outcome Measures

Outcome 3: Increase the recruitment and retention of youth appreciating and considering natural resource management careers.

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

Outcome 4. Increase public involvement in natural resource and community development issues. Outcome measure will be the increase in number of communities.

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

Outcome 5: Increase community development and economic diversification through tourism. Outcome measure will be number of tourism opportunities and communities impacted.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	16

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Alaska's diverse communities, urban and rural, are seeking ways to broaden their economic base. The natural beauty of Alaska, its diverse cultural groups and rich history contribute to the future growth of Alaska's visitor industry. Tourism can have significant impacts on community life and culture, particularly in small communities.

What has been done
Extension worked to promote tourism in rural Alaska. Staff coordinated a Prince of Wales Island visitor summit in September 2013 that involved the local chamber of commerce, individuals in the tourism industry and others considering businesses. Presentations covered web marketing, coop marketing and geotourism. Geotourism is tourism that is beneficial to the community and concerns the environment, culture, asthetics and heritage of the locale. An agent also became trained in the state's cultural and customer service tourism training program and began offering the workshops aimed at rural Alaska.

Results
AlaskaHost training that incorporated geotourism concepts were delivered live or by videoconference to 75 people in six communities. This increased cultural sensitivity and customer service skills among individuals who work in or with rural Alaska. Six individuals also were trained to present the workshops, which will extend the reach of the program. As a result of the geotourism presentation and a visit by the keynote speaker, a working group of 25 aimed at promoting geotourism has met and formed a charter. The organization work was coordinated by CES. Since much of the tourism in Alaska is organized by large established companies, smaller, independent operators and/or community leaders now have a geotourism network to promote tourism on the local level that is beneficial to the community.

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development

Outcome #6

1. Outcome Measures

Outcome 6: Increase environmental collaborations between K-12 teachers, students and university educators through outreach. Outcome measure is the number of students or educators who increased their knowledge through outreach.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	40

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
In a natural resource-rich state it is important to familiarize students and educators about environmental issues.

What has been done
Project Learning Tree is an environmental education program designed for teachers and other educators working with youth from preschool through grade 12. Thirty-one teachers and student teachers and nine participants in an outdoor education college class were reached by CES Project Learning Tree presentations. The six-hour presentation includes forest and wildlife knowledge, games and resources for educators. A longer, 15-hour training was aimed at K-12 teachers in Palmer.

Results
Through hands-on activities, the program trained educators to show students to how to think about complex environmental issues. Evaluations of one class indicate that agency resource staff and teachers plan to use the curriculum with more than 500 students in the coming year

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
123	Management and Sustainability of Forest Resources
134	Outdoor Recreation

Outcome #7

1. Outcome Measures

Outcome 7: Increase familiarity with GIS software to provide learning opportunities for youth. Outcome measure is number of individuals who learned how to conduct virtual field trips with GIS software.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	40

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
GIS is an important job skill in many disciplines, including natural resource management and geography based careers. Learning how to use GIS software allows youth to examine maps spatially while offering customized learning.

What has been done
Working with the University of Minnesota's Children, Youth and Families Education and Research (CYFERnet) program and the Environmental Systems Research Institute in 2012, an agent carried GPS beacons while climbing Aconcagua in Argentina, the highest mountain in the Western Hemisphere. Nine hundred and seventy-one 4-H'ers followed along using new online GIS websites with high-resolution photography. Individuals saw in real time the same terrain as a person on the ground. Participants had to create a GIS-enabled website to build maps.

Results
Youth who participated learned how to use online GIS and about potential career opportunities. The program was also featured at the International GIS Education Conference in FY12 and at the National 4-H Conference in FY13. Forty participants in the 4-H conference learned how to develop projects using GIS online for these virtual field trips. Agent has been contacted by several clubs that have used the information to create online GIS sites and print maps for competitions involving 4-H GIS programs.

4. Associated Knowledge Areas

KA Code	Knowledge Area
404	Instrumentation and Control Systems
608	Community Resource Planning and Development
805	Community Institutions, Health, and Social Services

Outcome #8

1. Outcome Measures

Outcome 8: Partnerships with stakeholder groups, government agencies, and other institutions enhance the land grant mission.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	49

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
AFES provides research that meets the needs of the private, state and federal stakeholders and with CES assures that stakeholders are engaged with UAF in the application of that research. CES promotes economic development and meets other community and rural needs. Partnerships are critical to assuring this happens. Our partners work with us, often assisting in the research and outreach efforts.

What has been done
Important CES partnerships included the Alaska Energy Authority, the U.S. Forest Service, Alaska Division of Forestry and the UA Center for Economic Development. CES organized the 2012 Alaska Wood Energy Conference for the energy authority and coordinates its Wood Energy Development Task Group. The Division of Forestry supports CES forest stewardship and outreach and coordination of Project Learning Tree.

Results
The wood energy task group explores opportunities to increase the utilization of wood for energy. The wood energy conference brought multiple agencies, individuals and organizations together to consider community use of wood biomass. The conference helped communities consider whether biomass is feasible, explored technologies and showcased community experience with biomass. CES work with the Division of Forestry and the Cold Climate Housing Research center helped extend knowledge about wood heat, firewood and woodstove safety, which is important because of high energy costs in rural and urban Alaska.

4. Associated Knowledge Areas

KA Code	Knowledge Area

123	Management and Sustainability of Forest Resources
605	Natural Resource and Environmental Economics
608	Community Resource Planning and Development

Outcome #9

1. Outcome Measures

Outcome 9. Increase public awareness in natural resource and community development issues. Outcome measure will be publications and presentations.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	2

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Conflicts between the public, state and federal land managers are not unusual in Alaska. However, climate change is occurring more rapidly than previously expected which compounds natural resource issues.

What has been done
Analysis of regulatory frameworks has revealed that some laws and policies work at cross purposes and demand contrary action making consistent management difficult.

Results
The analyses and conclusions drawn from this research help address inconsistencies and improve dialogue to resolve natural resource management conflicts. The resulting manuscript was published in The George Wright Forum which is devoted to interdisciplinary inquiry about parks, protected areas, and cultural sites. They seek to publish critical thinking on all aspects of research, resource management, administration, and education as they relate to cultural and natural protected areas.

4. Associated Knowledge Areas

KA Code	Knowledge Area
610	Domestic Policy Analysis

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

Brief Explanation

External factors affecting Alaska natural resources include extreme weather events such as abnormal warm winter temperatures, which cause rain and ice storms in the subarctic winter. These high temperatures result in unfrozen seas in Western Alaska, which buffet the coast causing massive coastal erosion, hurricane force wind storms that blow down acres of forest trees, and drought, which has reduced tree growth and made the forests susceptible to insect predation and forest fire. Although Alaska is an oil-producing state, the petroleum refining facilities are limited. Most petroleum used in Alaska comes from West Coast refineries, which significantly increases gasoline, diesel and heating fuel costs in rural Alaska communities. Likewise, much of the state's vast natural gas deposits are located far from population centers and pipelines. Meanwhile state government wrestles with a burgeoning budget and the drop in oil production. Long distances between rural communities, that are not on a road system and accessible only by plane or boat, affect development and our ability to offer programs. Health and education of rural residents is slowly improving but is not on par with rural towns in the rest of the country.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

An internal survey queried Extension faculty and staff who gave presentations at the Alaska Forum on the Environment, which is the largest outreach event in Alaska specifically targeted to environmental resource issues. Extension has a large presence at this event every year. The idea was to get a sense of whether the effort involved in this five-day event was worth it. Of nine respondents, 57 percent said participation was "valuable" or "critical." Several respondents included suggestions on improving Extension's participation. Based on that feedback, CES decided to continue its presence in 2014.

Evaluations of one Project Learning Tree class indicate that agency resource staff and teachers plan to use the curriculum with more than 500 students in the coming year. Survey evaluations are part of the research design for the outdoor recreation studies.

Key Items of Evaluation

Outdoor recreation research is based on the development and application of surveys which are helping in the design of better management plans. The land grant mission was served when a research workshop led to collaboration that provided federal agencies with data needed to design management plans that best serve the public.

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Healthy Individuals, Families and Communities

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
502	New and Improved Food Products	5%		0%	
504	Home and Commercial Food Service	20%		0%	
605	Natural Resource and Environmental Economics	0%		100%	
703	Nutrition Education and Behavior	15%		0%	
724	Healthy Lifestyle	20%		0%	
801	Individual and Family Resource Management	10%		0%	
802	Human Development and Family Well-Being	15%		0%	
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures	10%		0%	
805	Community Institutions, Health, and Social Services	5%		0%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	6.5	0.0	0.0	0.0
Actual Paid Professional	7.0	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**
434067	0	0	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
300604	0	0	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
1936946	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Conduct workshops, meetings
- Develop and deliver curriculum
- Consult with clients
- Provide training
- Develop products
- Partner with other agencies and organizations
- Write numbered publications, fact sheets, articles
- Work with media
- Facilitate events, activities and teachable moments

2. Brief description of the target audience

- Parents and caregivers of children
- School children
- School teachers
- Home and building owners
- Individuals interested in healthy lifestyles
- Low income individuals and families
- Women with young children
- Clients interested in food preservation and a subsistence lifestyle
- Clients who need assistance with finances
- Human development and social work professionals

- Individuals and professionals interested in emergency preparedness

Institutional cooperation will include food banks, housing and energy authorities and organizations, and individuals or families experiencing life transitions.

3. How was eXtension used?

Three agents have been involved with communities of practice in the areas of parenting, energy and finance.

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	16647	887956	4840	46735

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

Patent Applications Submitted

Year:	2013
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	4	0	4

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Output 1: Extension faculty will offer workshops in a wide range of home economics and family and consumer science topics.

Year	Actual
2013	223

Output #2

Output Measure

- Output 2: Extension district offices will update emergency planning for internal operations and constituent communities.

Year	Actual
2013	2

Output #3

Output Measure

- Output 3: Home energy extension workshops and conferences will provide individuals and families with immediate and long-term actions they can implement for energy conservation.

Year	Actual
2013	21

Output #4

Output Measure

- Output 4: Extension and AFES faculty will offer workshops in harvesting and food preservation techniques.

Year	Actual
2013	85

Output #5

Output Measure

- Output 5: New food produced will be developed using Alaska-produced ingredients.

Year	Actual
2013	5

Output #6

Output Measure

- Output 6: Extension and AFES faculty will offer workshops in food safety.

Year	Actual
2013	81

Output #7

Output Measure

- Output 7: Field faculty will provide physical activity and nutrition programming for teachers and parents. Output is the number of teachers and parents who are trained.

Year	Actual
2013	224

Output #8

Output Measure

- Output 8: Field faculty will provide children's physical activity and nutrition programming through one-on-one consultations and consultations with other organizations.

Year	Actual
2013	419

Output #9

Output Measure

- Output 9: Faculty will develop educational resources on physical activity and nutrition

Year	Actual
2013	9

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Outcome 1: Participants in healthy lifestyle classes and workshops will adopt knowledge gained to maintain healthy lifestyle practices one year after participation.
2	Outcome 2: Participants will use knowledge gained in parent education classes to increase their application of developmentally appropriate practices.
3	Outcome 3: Increase consumer knowledge about energy conservation.
4	Outcome 4: Energy efficiency awareness will result in an increase in collaborations for energy conservation by 25% per year over five years.
5	Outcome 5: Participants will increase their knowledge about improving healthy home conditions, including indoor air quality.
6	Outcome 6: Participants in food preservation and food safety classes will improve their food preservation and food safety practices.
7	Outcome 7: New varieties and new uses of animal and plant products will result in increased production of Alaska-based products. Outcome is number of products and publications.
8	Outcome 8: Increase youth and parents' understanding of healthy food choices. Counting contacts with youth and parents.
9	Outcome 9: Youth and families have a more positive attitude toward healthful foods and/or are willing to try new foods. Counting number of families.
10	Outcome 10: Increase knowledge, attitudes, skills and aspirations to increase physical activity habits. Counting number of youth.
11	Outcome 11: Increase physical activity during a school day. Counting number of classrooms participating.

Outcome #1

1. Outcome Measures

Outcome 1: Participants in healthy lifestyle classes and workshops will adopt knowledge gained to maintain healthy lifestyle practices one year after participation.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	402

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Alaska faces the challenge of our senior population remaining active and healthy in a difficult environment. Alaska, per capita, has one of the fastest-growing populations of seniors in the nation. All of Alaska is considered medically underserved and costs to individuals for medical care are higher than the national average. It is imperative that Alaskans focus on health strategies to maintain health and independence throughout life.

What has been done
Since 2005, an agent has trained 263 StrongWomen instructors in Alaska. Fifty-eight new instructors were trained in the past year. Three agents led StrongWomen classes or hosted groups and another agent led a yoga class. Our Anchorage agent trained 47 new instructors of Living Well Alaska, a program that teaches individuals how to manage chronic health conditions. She also updated the curriculum for 33 others and taught two six-week community sessions. Sessions are taught in eight communities. One agent also taught StrongWomen Healthy Hearts, a 12-week program that combines aerobic exercise, hands-on cooking activities and nutrition education.

Results
StrongWomen leader courses have helped establish many community programs. Nearly 500 participants attended 32 groups and 294 participants have continued a year or longer. Participants report feeling stronger and they lead more active lives. Participants for a year or more reported increased bone density and better balance. Since 2007, 357 Living Well leaders have been trained and have reached more than 2,000 seniors and others with chronic health conditions. Fifty of the trained leaders offered one or more workshops in the past year. National evaluations show benefits such as better pain management, increased physical activity, less time in emergency rooms and less depression.

4. Associated Knowledge Areas

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

Outcome #2

1. Outcome Measures

Outcome 2: Participants will use knowledge gained in parent education classes to increase their application of developmentally appropriate practices.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	78

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Opportunities for parent education and training for child-care providers are lacking in many communities, particularly in rural Alaska, where many communities are accessible only by air. Transportation costs to deliver programs also limit what is offered. Statistics on child obesity and youth suicide suggest the need for enhanced early interventions through supportive family and youth education.

What has been done
Our Nome agent provided training and support for a day care center in the community. She taught a 10-hour training about promoting social and emotional competence in young children. She also co-taught two sessions of Knowing Who You Are, a curriculum that trains personnel who work with foster children or serve their families. The other trainer is Alaska Native. This program is designed to address some of the issues with Alaska Social Services, including the disproportionate number of Alaska Native youth in foster care and the need for foster children to understand and connect to their culture.

Results
Workers in the Nome child care center received training to further their education and to provide better care. This curriculum helps staff support healthy development and deal with behavioral issues in their classrooms. A survey after three sessions indicated that participants had a greater understanding of strategies to use to build positive relationships with children and improve social

skills. An adjunct faculty member working for Northwest Campus also attended. The adjunct will now be able to deliver this material. The Knowing Who You Are training resulted in staff from eight agencies who work with children in the region understanding the importance of encouraging children to learn about their culture. Participants explored issues about race and oppression, practicing ways to address these topics at work. In a post-class survey, all participants indicated that they planned to use information learned in the training.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management
802	Human Development and Family Well-Being
805	Community Institutions, Health, and Social Services

Outcome #3

1. Outcome Measures

Outcome 3: Increase consumer knowledge about energy conservation.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	284

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Alaska historically has some of the highest energy prices and interest in energy conservation remains high. It is a pocketbook issue, particularly in rural areas, where energy costs are the highest and heating oil can run upwards of $8 or $9 a gallon.

What has been done
An agent developed a remote energy course and publication aimed at helping individuals who spend time at camps for hunting and subsistence activities or recreation. The course and publication helps individuals in remote Alaska evaluate potential sources of energy to heat hot water or operate heaters, lights and radios. He taught 13 workshops in seven communities in 2013. He helped individuals evaluate which sources of energy they might use, including solar cells, small windmills, hydro props, battery banks and rocket stoves.

Results
The remote energy presentations included inventions from Alaskans who came up with different ideas to provide power remotely. Participants learned about what potential sources of energy they might use to lower traditional oil or labor-intensive wood heating costs. The course was highlighted in Alaska Business Monthly with photos of some of the inventions. As an outgrowth of this course, two homegrown energy classes were given, including how-to classes on making solar hot water panels and rocket stoves. Limited response to evaluations from the rocket stove workshop showed that some participants planned to build their own for cabin use.

4. Associated Knowledge Areas

KA Code	Knowledge Area
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures

Outcome #4

1. Outcome Measures

Outcome 4: Energy efficiency awareness will result in an increase in collaborations for energy conservation by 25% per year over five years.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	8

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
New collaborations with organizations that can help spread knowledge about energy conservation and sustainability will help improve the energy security of Alaska.

What has been done
Four joint energy presentations with a Tanana Chiefs Conference (TCC) tribal energy specialist informed participants about current products that are less-expensive energy sources for remote camps. Many remote fish and hunting camps exist in the TCC region. The energy agent worked with the Alaska Craftsman Home Program, Interior Aleutians Campus, Cold Climate Housing Research Center (CCHRC) and Alaska Center for Energy and Power to visit a flooded village and help people remove insulation from their homes. Other collaborations led to the launch of a tribal biomass conference.

Results
The presentations with the tribal energy specialist led to a new relationship with the specialist as well as increased participant understanding of energy options. This has led to a regular offering in remote energy, which has been favorably received in rural and urban workshops. The relationship also led to coordinating work to launch a tribal biomass conference in Fairbanks in October 2012, which informed more than 30 village representatives about what their biomass options were. Agent coordinated the agenda. Agent has been coordinating with CCHRC staff to develop an informational video on checking for radon and modifying homes to reduce risk to radon. The video will be released in FY14.

4. Associated Knowledge Areas

KA Code	Knowledge Area
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures

Outcome #5

1. Outcome Measures

Outcome 5: Participants will increase their knowledge about improving healthy home conditions, including indoor air quality.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	167

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Issues such as household crowding, high heating demand and increased financial pressure to tighten homes can create health concerns. Alaska has high rates of respiratory diseases, particularly in infants. Improving indoor air quality can have a profound effect on the prevention and treatment of respiratory disease. Tight homes and negative pressure inside homes can also worsen issues with radon, which is a problem in certain areas of Alaska. The Environmental Protection Agency says that radon is the second leading cause of lung cancer.

What has been done

An agent updated a curriculum he developed that addresses the leading indoor air quality concerns for homes in western Alaska. The curriculum was adapted to use in other locales. Training participants were taught about common air quality threats and how they can be palliated or provoked by local factors such as construction practices, climate and even geology. Trainings were delivered at two large environmental conferences aimed at rural residents as well as smaller, focused trainings. Another agent offered workshops in five communities on how to detect and mitigate radon.

Results
Through this training, homeowners and housing/environmental health workers throughout the state have received tools to identify and address the primary air quality concerns in their own communities. By helping them to prioritize air quality concerns at a local level, resources can be used in the most efficient way possible. Participants have been able to focus their efforts on simple, useful interventions such as carbon monoxide detectors and environmental tobacco smoke, which tend to be important health issues in Alaska homes. Through this work, the knowledge of indoor air quality and its relationship to human health has been increased for a wide audience. Through the radon detection and education workshops, agent reached 61 individuals and Extension distributed 226 radon detection kits to people with instructions on how to use the kits. Using the kits or other devices to detect radon levels is the only way of telling whether homeowners have radon in their home.

4. Associated Knowledge Areas

KA Code	Knowledge Area
724	Healthy Lifestyle
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures

Outcome #6

1. Outcome Measures

Outcome 6: Participants in food preservation and food safety classes will improve their food preservation and food safety practices.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	911

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Many Alaskans live a subsistence lifestyle or supplement their diets with fish and game meat. Alaska also has a large military population, and most have not previously preserved game meat or fish. Our state has the nation's highest rate of botulism, which occurs in low-acid foods such as fish and game meat. It is particularly important that we teach residents how to safely preserve these Alaska staples. An estimated 90 to 95 percent of Alaska's food is imported, so food preservation training increases Alaska's food security.

What has been done
Agents taught 81 food preservation and food safety classes in 25 communities, including two communities reached by videoconference. Of those, 68 were hands-on classes in which 911 participants practiced food preservation/safety skills. Extension offers a series of 23 online food preservation modules and 10 DVDs about preserving local foods, ranging from canning fish in jars and cans to drying herbs. Agents also tested 679 pressure canner gauges with an average 20 percent failure rate. Nearly 65 percent of tested gauges required adjustment. Agents took turns posting on a new Facebook page dedicated to food preservation and food safety.

Results
Clients who practice hands-on food preservation skills will be able to preserve foods safely. Participants of four classes and a food preservation series in Palmer were surveyed six months after the classes were finished. Twelve of 43 participants responded and all indicated that they were quite confident or very confident about preserving food safely. Fifty percent of respondents had processed fish in a pressure canner, 25 percent had processed wild game, 31 percent processed vegetables they had grown, 61 percent processed vegetables they had purchased, and an equal number processed wild berries. Much of Alaska is off the road system and the Flash web modules reached users who may not have access to food preservation classes. More than 100 users have filled out surveys since 2009. Ninety-two percent said they planned to use the information and 82 percent intended to share it with others. More than 35 percent of users felt more confident about using a boiler water canner or a pressure canner.

4. Associated Knowledge Areas

KA Code	Knowledge Area
504	Home and Commercial Food Service

Outcome #7

1. Outcome Measures

Outcome 7: New varieties and new uses of animal and plant products will result in increased production of Alaska-based products. Outcome is number of products and publications.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	5

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
A greater interest by Alaskans in eating local foods and state programs that encourage school districts to purchase foods harvested in Alaska have led to increased interest in recipes using Alaska-grown foods that school districts can use and that students like. That has led to new markets for local producers.

What has been done
CES food research technician worked with Alaska Farm to School program to create additional recipes with Alaska ingredients. During the past year, recipes were created for an Alaska barley pizza crust, vegetarian chili, beef stew with Alaska vegetables, a zucchini breakfast muffin, halibut and/or salmon chowder and a salmon perok recipe. Taste tests were conducted with 120 elementary school students and community members. A feasibility study was also conducted on the school district purchase of locally grown onions that were minimally processed. The technician also developed 17 nutrition labels requested by businesses.

Results
School districts' ability to use Alaska-grown foods in their breakfast and lunch programs have increased. As a result of the taste tests, all of the recipes except vegetarian chili were considered good by the testers. A draft version of these recipes was shared with the Fairbanks School District, and the recipes have also been sent to the Farm to School Program and will be shared with all the school districts in the state in a publication to be developed in FY14. As a result of the feasibility study, the school district purchased 200 pounds of locally grown onions. As a result of other recipes developed by the program, the school district served rolls with Alaska barley during the 2012-2013 school year. The school district purchased 2,300 pounds of barley from a Delta flour mill during the year. Nutrition labels brought producers into compliance with the FDA food-labeling guidelines.

4. Associated Knowledge Areas

KA Code	Knowledge Area
502	New and Improved Food Products
504	Home and Commercial Food Service

Outcome #8

1. Outcome Measures

Outcome 8: Increase youth and parents' understanding of healthy food choices. Counting contacts with youth and parents.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	1487

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Childhood obesity is a major concern in Alaska, as elsewhere. In 2008, one-third of students entering kindergarten or first grade in Anchorage were above a normal weight. A 2009 State of Alaska report says that 11 percent of Alaska high school students were obese. Helping parents and students learn about better nutrition and eating habits is essential to combatting obesity in youth and in adults.

What has been done
Nutrition educators presented USDA-approved Show Me Nutrition in multipart programs in 36 classrooms in Tok, Palmer and Anchorage and youth also participated in onetime presentations. Adults in those communities also received nutrition education in a series and onetime classes in several community venues. Agents provided nutrition information on the MyPlate method to preschool teachers and a variety of nutritious food classes were offered from eating kale and making healthy bread to making yogurt, granola, and hummus and bean dip.

Results
Nutrition educators with the Alaska Nutrition Education Program (SNAP-Ed) presented nutrition education programs that reached 3,653 youth and 1,983 adults. Of those youth, 641 completed a multipart series. Overall, 81 percent of the youth participating in the series (277 of 342) showed that they improved their ability to choose foods according to federal dietary recommendations. Forty-four percent (147 of 336) used safe food handling practices more often, and 47 percent improved their ability to prepare simple, nutritious, food. Of the 30 adults who graduated from the multipart program, 77 percent showed improvement in one or more nutrition practices, such as planning meals, making healthy food choices, reading nutrition labels, etc. Seventy percent of participants showed improvement in one or more food resource management practices, such as comparing prices, using grocery lists or planning meals.

4. Associated Knowledge Areas

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

Outcome #9

1. Outcome Measures

Outcome 9: Youth and families have a more positive attitude toward healthful foods and/or are willing to try new foods. Counting number of families.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	23

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Aside from an increased likelihood of becoming overweight adults, children and adolescents who are overweight or obese are at increased risk for a variety of negative physical, social and emotional problems. According to one survey, 84 percent of Alaska high school students eat less than the recommended amounts of fruits and vegetables daily. Families have an important influence on making healthy food choices available and enticing to youth.

What has been done
Agents provided training on healthy food choices, nutrition and hands-on food preparation classes such as making yogurt and hummus and bean dip and preparing and serving whole grains. Our Alaska Nutrition Education Program (SNAP-Ed) taught individuals who are eligible for food stamps how to eat healthy on a budget. Educators offered classes at the sites of partner agencies, Extension offices, grocery stores and other locations that are convenient to the target audience.

Results
Individuals who participate in our hands-on food preparation classes practice the skills they are taught in the class. Participants who actually prepare foods learn how to prepare them again for their families. The Alaska Nutrition Education Program worked with 51 families on hands-on

cooking skills on how to prepare nutritious meals on a lean budget. Evaluations after the classes showed that 23 of 30 families who completed the course showed improvement in one or more skills, such as planning meals, making healthy food choices, reading nutritional labels or making sure their children ate breakfast.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
801	Individual and Family Resource Management

Outcome #10

1. Outcome Measures

Outcome 10: Increase knowledge, attitudes, skills and aspirations to increase physical activity habits. Counting number of youth.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	4179

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Alaska youth spend a lot of time indoors during the long winters. According to a 2009 state health report, only 19 percent of high school students meet the U.S. Department of Social Services guidelines of 60 minutes a day exercise. Lack of exercise is tied to higher rates of obesity. Alaska Natives have higher rates of obesity and related diseases, as well as higher-than-average rates of substance abuse and suicide. Remote villages lack options for physical activities and healthful food options. Increased physical activity relates to physical and emotional health.

What has been done
The Alaska 4-H program offered youth across the state a number of projects that emphasized physical activity, including fitness and sports skills and outdoor education. Activities included orienteering, hiking, horseback riding, skijoring, shooting sports, rock climbing, cross-country skiing, geocaching, camping and more. Alaska Native youth in seven sites engaged in physical activities with 23 adult mentors. Under the guidance of a mushing champion, a village volunteer offered dog mushing to youth ages 10-16. Other activities included breakdancing, soccer and martial arts. Weekly soccer and related healthy living activities were conducted at the Nenana Student Living Center, a residential school for Alaska Native youth from outlying villages.

Results

4-H numbers indicate 2,164 youth participated in fitness and sports and 2,015 participated in outdoor education activities. Positive behavioral changed was noted in 93 percent of participants at the seven rural sites, including health measures of physical activity and nutrition as well as measures of social competence. Teachers and health aides reported positive behavioral outcomes in youth in the martial arts program, including decreased disruptive behaviors, a more positive attitude and more respectful social interactions. The success of village programs led to partnering with the Fairbanks school district and working with seven after-school programs serving Alaska Native youth and with the Boys and Girls Home of Alaska, serving youth in the court system. Presentations about the program at the National Mentoring Summit and the National AfterSchool Association allowed our 4-H program to develop networks with others serving similar populations of American Indian youth.

4. Associated Knowledge Areas

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

Outcome #11

1. Outcome Measures

Outcome 11: Increase physical activity during a school day. Counting number of classrooms participating.

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

The Home, Health and Family Development Program staff in Alaska is small with seven agents in district offices and two specialists. This translates into agents covering large geographic areas. Travel dollars are an issue because air travel is necessary for most agents to travel beyond their district office. Though agents have been successful in partnering with other governmental and private entities to make each travel dollar go farther, they are still are unable to travel as often as requested. Distance delivery has been

used more and sometimes there have been technical issues.

Staff vacancies and funding fluctuations have also been an issue. The position in Juneau was filled in FY13 after being vacant for 2.5 years. Staff vacancies have also been a factor in the Alaska Nutrition Education Program (formerly FSNE). We have had difficulties in replacing nutrition aides that were willing to work 20 hours a week at the pay rate. Even when we have been successful in rehiring, the time for recruiting and filling positions has left positions open in Alaska Nutrition Education Program (ANEP) and EFNEP and has pulled HHFD agents away from their normal duties to complete the process. We did not fill some ANEP positions because the federal funding was decreased almost 28 percent and we were also waiting for passage of the farm bill. In September of 2013, we had three of six ANEP nutrition aide positions filled.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

We have made strides this year to evaluate our programs better. An evaluation expert hired in August 2012 has been working with faculty and staff and helping them with resources to improve their evaluations. Agents have done a better job of doing pre- and post-tests and evaluations following classes. As new programs are created, evaluations for outcomes are planned with the program. The Palmer agent has been surveying participants of her food preservation classes at the end, to see what they learned, and then follow-up surveys, six to nine months after they ended to see what they used. Less than one-third of those contacted answered the survey. Of those, all felt very confident or quite confident in their ability to preserve foods safely.

A survey after three sessions of the Nome child care training indicated that participants had a greater understanding of strategies to use to build positive relationships with children and improve social skills.

A pop-up survey has yielded results for the online food preservation modules. The survey was created after staff brainstormed with an evaluation specialist. Respondents on the web module surveys reported that they found the modules very valuable (4 on a scale of 1 to 4). More than 100 individuals have filled out online surveys for the modules, giving us an idea of the modules effectiveness.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Climate Change and Ecosystem Management

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
101	Appraisal of Soil Resources	10%		10%	
102	Soil, Plant, Water, Nutrient Relationships	0%		10%	
122	Management and Control of Forest and Range Fires	15%		10%	
123	Management and Sustainability of Forest Resources	50%		50%	
132	Weather and Climate	15%		0%	
605	Natural Resource and Environmental Economics	10%		10%	
903	Communication, Education, and Information Delivery	0%		10%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	1.0	0.0	10.0	0.0
Actual Paid Professional	1.1	0.0	9.2	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**
59871	0	116732	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
41463	0	113985	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
267165	0	2150382	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Research and outreach strategies produced or updated data base and data management system necessary for:

- Forest stand characterization of the Alaska boreal and coastal rain forest.
- Long-term ecosystem monitoring and GIS modeling of the Taiga forest dynamics.
- Discovery of and complete predictive relationships between weather factors and growth of climate sensitive forest species in Alaska.
- Remote sensing to investigate landscape level responses in response to burn severity within black spruce ecosystems in Alaska.
- Land-based data sets to correlate animal distributions on the landscape with remote images.
- Precipitation controls on soil moisture recharge and its effect on boreal forest growth and carbon balance.
- Agricultural land characterization including soils and crop types.
- Compilation of a data base on agricultural production of crops and crop residues.
- Cold soils classifications and monitoring

High latitude soil research centered on the following research topics and activities:

- Characterization of northern forest soils in boreal regions of Alaska in terms of the organic carbon pool and relationship with forest management practices.
- Soil carbon balance and nitrogen dynamics following disturbance by wildfire and logging.
- Soil respiration following wildfire in lowland black spruce, upland black spruce and mixed hardwoods.
- Evaluation of the relationship between local climate and soil carbon balance.
- Soils characterization for agricultural crop production.

Research, education and outreach activities include:

- Land-based information correlation with remotely sensed images for forestry and agriculture
- Geographic Information Systems
- Maps and spatial data sets of long-term value
- Climate change adaptation as it relates to communities

2. Brief description of the target audience

The target audiences include producers and consumers, communities and small business entrepreneurs, individuals and groups concerned about the quality of the Alaska environment, public resource agencies, public and private resource managers, other faculty and researchers, and

undergraduate and graduate students. Our efforts will be directed toward environmentally and economically sustainable development and conservation of our natural resources that will benefit all citizens and help them adapt and become resilient as the climate changes. Advisors and the target audience include: Statewide Board of Advisors, CES Advisory Council, Alaska Board of Forestry, Society of American Foresters, Alaska Farm Bureau, and the Alaska Northern Forest Cooperative, USDA Natural Resource Conservation Service, the USDA Forest Service, the Alaska Department of Natural Resources, borough governments, and Alaska Native corporations. Information on impact of fires on soil organic matter will assist the Department of Natural Resources Division of Forestry and private landowners and managers.

3. How was eXtension used?

AFES/CES agent works on the multistate Cooperative eXtension Community of Practice on climate, forests and woodlands to write content

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	201	35000	0	0

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

Patent Applications Submitted

Year:	2013
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	0	14	14

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Output 1. Soils research will concentrate on the classification of permafrost soils, soil carbon properties in relation to climate change, and soil disturbance dynamics in upland and lowland forest ecosystems. Publications are output measures.

Year	Actual
2013	15

Output #2

Output Measure

- Output 2. Long-term forest productivity data sets will be converted to formats compatible with existing megadata systems for compatibility with long-term ecological research, fire management, and forest disturbance dynamics. Outputs measured will be publications and data sets converted.

Year	Actual
2013	75

Output #3

Output Measure

- Output 3. Development of data sets providing information on wildlife and domestic (traditional and alternative) livestock impact on rangelands will continue. Output measures will be data sets developed and publications.

Year	Actual
2013	1

Output #4

Output Measure

- Output 4. Curricula that train future and present land managers in ecosystem stability and geospatial technology will be developed and implemented. Output measure will be curricula implemented.

Year	Actual
2013	6

Output #5

Output Measure

- Output 5. Climate change will affect northern forest ecosystems that will impact economic development of communities and will have cultural implications as well on communities and individuals. Causes and effects of change on ecosystems and reverberations felt by communities and individuals will be investigated. The measured output will be publications.

Year	Actual
2013	0

Output #6

Output Measure

- Output 6. Research related to product development to include timber products and nontimber products including energy will continue. Forest management specific to fuel/energy demand will

be initiated. Measureable outputs will be publications and business starts.

Year	Actual
2013	0

Output #7

Output Measure

- Output 7. Recreation opportunities are important in urban and rural forests and are a part of ecosystem services. Recreation management in northern ecosystems is a part of management of ecosystems research. Measurable outputs are 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	Outcome 1. Increase knowledge of arctic and subarctic soils and forest productivity among peer scientists, managers, and governments. Knowledge outcome measures will be publications, conferences, and workshops.
2	Outcome 2. Increase animal producer and wildlife manager knowledge on range use and animal impact. Measurable outcomes are publications, workshops, and conferences.
3	Outcome 3. Increase knowledge through classroom and field course delivery. The outcome measures will be curricula delivered and number of students reached.
4	Outcome 4. Increase community and individual knowledge on the impact of climate change in northern ecosystems and effects on cultural lifeways, economies, and individual well-being. Outcome measures will be publications, workshops, and conferences.
5	Outcome 5. Provide research information that leads to product development and recreational opportunities. Outcome measures will be publications, business starts, conferences, and workshops.
6	Outcome 6: Increase environmental collaborations between K-12 teachers, students and university educators through outreach. Outcome measure is the number of students or educators who increased their knowledge through outreach.
7	Outcome 7: Increase knowledge and experience of future forestry professionals. Measure was number of attendees.
8	Outcome 8: Increase knowledge of boreal forest and its adaptability to climate change.

Outcome #1

1. Outcome Measures

Outcome 1. Increase knowledge of arctic and subarctic soils and forest productivity among peer scientists, managers, and governments. Knowledge outcome measures will be publications, conferences, and workshops.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	4

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
As the Arctic warms, greenhouse gases, such as methane and carbon dioxide, are released from thawing permafrost faster and at significantly higher levels than previous estimates. Northern soils hold around 1,700 billion gigatons of organic carbon, around four times more than all the carbon ever emitted by modern human activity and twice as much as is now in the atmosphere, according to the latest estimate.

What has been done
Collaboration, between local, national and international scientists working with graduate students, is addressing the inclusion of missing information from current models to create a large-scale predictive model. By integrating data from previous models with expert predictions the authors will have a frame of reference for scientists studying all aspects of climate change.Permafrost thaw will release approximately the same amount of carbon as deforestation. However, the effect of thawing permafrost on climate will be 2.5 times greater because emissions include methane, a more powerful greenhouse gas than carbon dioxide.

Results
Due to the seriousness of the issue and the need for more research, the Vulnerability of Permafrost Carbon Research Coordination Network (RCN) was formed. It is a NSF-funded synthesis project that promotes collaborative research. Ninety scientists attended the last meeting and data collected during the annual 10-day field trip to the Arctic is helping inform data collections and publications.

4. Associated Knowledge Areas

KA Code	Knowledge Area

122	Management and Control of Forest and Range Fires
123	Management and Sustainability of Forest Resources

Outcome #2

1. Outcome Measures

Outcome 2. Increase animal producer and wildlife manager knowledge on range use and animal impact. Measurable outcomes are publications, workshops, and conferences.

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

Outcome 3. Increase knowledge through classroom and field course delivery. The outcome measures will be curricula delivered and number of students reached.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Encouraging connections between K-12 students, higher education students and researchers is proving to be an excellent method of engagement in the process of instilling a love for life-long learning.

What has been done
One of our Peace Corps Master's International students, with an engineering undergraduate degree, became involved in the birch sap OneTree Project. The student researched and applied the reverse osmosis process to increase the concentration of sugar in birch sap by reducing the water content of sap with a redesigned machine. Although now teaching in Egypt, before leaving the country two UAF engineering students were enlisted to upgrade the machine.

Results
For their practicum the engineering students will upgrade the design so that it will run on a

continuous loop. Even though the equipment has to be restarted now, junior high students are using it as part of the STEAM/OneTree science and math project. This exciting project shows the value of collaboration between K-12 and university students and research, extension and education personnel.

4. Associated Knowledge Areas

KA Code	Knowledge Area
123	Management and Sustainability of Forest Resources
903	Communication, Education, and Information Delivery

Outcome #4

1. Outcome Measures

Outcome 4. Increase community and individual knowledge on the impact of climate change in northern ecosystems and effects on cultural lifeways, economies, and individual well-being. Outcome measures will be publications, workshops, and conferences.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Scientists collecting data see a changing boreal forest ecosystem as climate warming impacts Alaska. The Long Term Ecological Research site at Bonanza Creek contains 8,600 acres. It is the site of the greatest concentration of forestry research in Alaska. The optimum forest growth period was from 1915 to the 1960s. Right now the lowest rates of growth in 2,000 years are occurring in the Fairbanks area due to heat and dryness, while in western Alaska, trees are growing rapidly.

What has been done
Forest plots throughout the state are sampled, aerial photographs taken and databases updated to monitor post-fire growth and environmental sensitivity to climate change including insect infestation. Baseline data is used by many scientists and much is accessible through the Long-Term Ecological Research Bonanza Creek website. http://www.lter.uaf.edu/.

Results
Warm temperature anomalies are closely related to fire disturbance and white spruce reproduction, and to spruce bark beetle disturbance in Alaska. The main mode by which climate change may affect the forests of Alaska is not likely to be through effects on the existing generation of living trees, however severe they may be, but rather through effects on the next generation of forest vegetation that now is being assembled and sifted through various ecological processes. If climate-driven change continues, long before the new forest characteristics such as stem density, growth rates, and others confront managers and the public with forest change as an accomplished fact, it should be possible to detect, and thus plan for and adapt to a changing forest resource. This data is being used to inform managers and the public concerning changing forest characteristics such as stem density, growth rates and water stress enabling them to plan and adapt to changing forest resources.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
122	Management and Control of Forest and Range Fires
123	Management and Sustainability of Forest Resources

Outcome #5

1. Outcome Measures

Outcome 5. Provide research information that leads to product development and recreational opportunities. Outcome measures will be publications, business starts, conferences, and workshops.

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

Outcome 6: Increase environmental collaborations between K-12 teachers, students and university educators through outreach. Outcome measure is the number of students or educators who increased their knowledge through outreach.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	1016

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Hooking children on science through art is a natural offshoot of the OneTree Program. Art serves as the invitation to explore STEAM (science, technology, engineering, art and math) skills in a natural way. The hallmark of the work is active learning.

What has been done
BAKLAP funding leveraged by federal funds helped OneTree gather a talented pool of graduate students who work as service learners in the classrooms. The K-12 outreach program has been working with teachers since 2009 and has reached thousands of students. OneTree worked with students and teachers to plant 1,500 to 2,000 birch seedlings. Students not only grow and plant seedlings, they measure, count leaves, tap birch trees for sap for syrup and other products and create art and products based on the trees. It gives students a connection to the real world.

Results
This year 850 students participated from 8 schools, 16 K-12 teachers were trained from 12 schools and estimates from summer programs for children participating exceeds 150. The beauty of the program is its ability to reach teachers who love science and those who may be hesitant about teaching it but realize the value of it to their students. Four core instructional methods are integrative curriculum, K-12 professional development, peer teaching, and community collaborations.

4. Associated Knowledge Areas

KA Code	Knowledge Area
123	Management and Sustainability of Forest Resources

Outcome #7

1. Outcome Measures

Outcome 7: Increase knowledge and experience of future forestry professionals. Measure was number of attendees.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	125

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Attracting higher education students to natural resource careers is increasingly difficult. The Forest Sports Festival provides a fun way to increase visibility as well as provide faculty, staff and students across UAF a very Alaskan way to get acquainted, compete or collaborate in forestry-related activities.

What has been done
Faculty members and students in the Department of Forest Sciences and BECRU, a cooperative between the USDA Forest Service PNW Research Station and the University of Alaska, developed the competition as a way to commemorate old-fashioned forest festivals. High technology tools are the norm for today's forest professions and the festival pays tribute to a time when traditional woods activities were the basis for work and play, and even survival.

Results
The 16th annual Farthest North Forest Sports Festival drew record numbers this fall with over 100 competitors, both at the Fairbanks Experiment Farm and Ballaine Lake. Competitions were held using lumberjack skills including log rolling, bow saw and crosscut sawing and ax throwing. Even though the weather was brisk in early October, birling (staying upright on a log in the lake) was the hilarious focus. The campfire building served two purposes warming those who fell in and providing a competition.

4. Associated Knowledge Areas

KA Code	Knowledge Area
123	Management and Sustainability of Forest Resources

Outcome #8

1. Outcome Measures

Outcome 8: Increase knowledge of boreal forest and its adaptability to climate change.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	5

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The state and federally funded Boreal Alaska - Learning, Adaptation and Production project is being used to upgrade Alaska forest research and to assist in the development of management practices to improve the value of Alaska's forests in the face of a rapidly changing ecosystem.

What has been done
In the first field season, the scientist and graduate students measured, staked and tagged mainly white spruce and birch trees on 66 acres of remote boreal forest. Four state reports and 1 federal report have been submitted.

Results
The boreal forest is the largest forested biome on Earth and accounts for approximately one third of Earth's total forest area. In Alaska it occupies some 60-70% of the land area yet contains only six species of trees. Its condition directly impacts the climate of our state and nation. It is also a great source of wood for biomass. State legislators toured the research area and approved their investment. Now that the data is being collected and the forest measured, the Division of Forestry will have a better understanding of what is growing and will be able to create best management practices.

4. Associated Knowledge Areas

KA Code	Knowledge Area
122	Management and Control of Forest and Range Fires
123	Management and Sustainability of Forest Resources

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

Brief Explanation

Due to university downsizing and low student numbers, several forestry research positions have not been replaced.

The production of oil has decreased and the revenues to the state have changed. Funding stream losses are negatively affecting higher education. Until revenues are replaced, research support through the state will be less than previously enjoyed.

Extension published a series of six climate change projections for different regions of Alaska, but the scientist was not funded with Smith-Lever dollars and so his work is not reflected in this report. Additional publications from him included tools for planners, online climate scenario tools and wildfires.

Alaskans, in large part, become involved in climate change adaptation only when changes directly impact their lives. As climate change impacts to Alaska's resources and infrastructure become more evident and directly impact Alaskans, there will be greater interest in CES climate change programs. AFES/CES forestry specialist is preparing to teach workshops to rural communities on climate change and how to assess future vulnerabilities and determine risk.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Evaluative results are in databases of participating researchers.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Youth Development

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
607	Consumer Economics	5%		0%	
801	Individual and Family Resource Management	5%		0%	
806	Youth Development	90%		0%	
	Total	100%		0%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	8.5	0.0	0.0	0.0
Actual Paid Professional	7.0	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
434067	0	0	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
300604	0	0	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
1936946	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

With the use of a 4-H Volunteer Leaders Training Manual, CDs and accompanying web-based tutorials that incorporate Essential Elements training, various methods of delivery will be developed including district workshops, the development of digital learning platforms, teleconference trainings, highlights for newsletters and web-based tutorials. In addition to redefining the Alaska State 4-H Leaders Training Manual, portions of 4-H 101 will also be added to the training.

Many youth enter the workforce without the key skills needed to succeed in the workplace. By creating collaborations with local district schools, area businesses, federal, state and tribal agencies and other civic organizations, training programs will be made available for youth and opportunities for employment can be achieved.

Ideals of entrepreneurship will be presented at the 4-H club level by conducting trainings with local volunteer leaders, junior. leaders, and youth of the 4-H clubs. District agents will assist in promoting the ideals of youth-based enterprises through additional leader and junior leader trainings, providing entrepreneurial opportunities, and collaboration with organizations that can aid such opportunities.

Collaborations with local schools and other youth programs across the state will lead to new volunteer opportunities for 11-18 year olds. Though there are many opportunities for youth of this age, a key to success in this program will be though developing collaborations with local schools, other youth programs, and area University of Alaska campuses.

2. Brief description of the target audience

- Grades k-12
- Parents of school-age children
- Adults interested in positive youth development
- 4-H Extension educators
- Other Extension educators
- 4-H Adult volunteers
- Military youth educators
- Community leaders
- Federal and state agency representatives
- Native corporations and tribal representatives
- Youth-serving organizations, including FFA

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	12641	77192	20915	33082

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

Patent Applications Submitted

Year:	2013
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Output 1: 4-H educators will train volunteer organizational leaders in the Essential Elements of Youth Development

Year	Actual
2013	152

Output #2

Output Measure

- Output 2: Extension will offer relevant workforce skill development projects for youth 15-18.

Year	Actual
2013	31

Output #3

Output Measure

- Output 3: 4-H will offer opportunities for membership or involvement for underserved and minority youth.

Year	Actual
2013	27

Output #4

Output Measure

- Output 4: Youth Development will offer initiative programming in science, engineering and technology.

Year	Actual
2013	44

Output #5

Output Measure

- Output 5: 4-H educators will offer inter and intra-district educational and service collaborations.

Year	Actual
2013	22

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Outcome 1: 100% of faculty and staff associated within the program area will understand the Essential Elements of Youth Development
2	Outcome 2: After receiving training in the Essential Elements of Youth Development, volunteer leaders and youth will apply at least two of the Essential Elements in their interactions during programming.
3	Outcome 3: 4-H educators will expand programming to underserved and minority youth by 5% in each year of the five-year plan of work.

Outcome #1

1. Outcome Measures

Outcome 1: 100% of faculty and staff associated within the program area will understand the Essential Elements of Youth Development

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	17

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Positive youth development through 4-H is made possible through a cadre of caring adult leaders. Creating environments in which youth have a sense of belonging, experience independence, master skills and give back to the community through generosity becomes more complex each year with changing environments and demographics. Faculty and staff must increase their understanding of positive youth development and the Essential Elements of 4-H in order to deliver quality programs and train volunteer leaders.

What has been done
All Alaska 4-H agents and others with 4-H responsibilities have been trained in Essential Elements. The Alaska 4-H program uses four primary delivery modes in fostering positive youth development, clubs, special interest classes, school enrichment and camping. All are designed using the Essential Elements. Agents and leaders participate in trainings that emphasize delivery of the subject matter within the context of the Essential Elements. A state volunteer forum and audio conferences also include Essential Elements.

Results
All of the 4-H staff in the Alaska program trained and presented information to their constituents about the Essential Elements of 4-H. Training has been given in these areas and they are part of everyday 4-H language. All 4-H activities are grounded in the Essential Elements. As a result of her commitment to 4-H within its framework of the Essential Elements, a Kodiak club leader received the regional 4-H Salute to Excellence Award in March 2013, the fourth Alaska leader in five years to be recognized with this award. A volunteer for 34 years, she has worked as a project leader, recruited and trained new leaders and organized and chaired many special events. She recruits 4-H volunteers and their horses to offer a riding program for special needs children, and she was instrumental in keeping the district 4-H program going during staff transitions. She is a great example to others through her leadership.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #2

1. Outcome Measures

Outcome 2: After receiving training in the Essential Elements of Youth Development, volunteer leaders and youth will apply at least two of the Essential Elements in their interactions during programming.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	206

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Applying the Essential Elements in program development and delivery is what makes 4-H unique from other youth programs. The elements define volunteer roles in the lives of 4-H members as mentors, role models and coaches.

What has been done
Leaders are asked to provide information on events throughout the 4-H year for their clubs and also to show how activities will incorporate at least two Essential Elements. Evaluation tools have been used at the beginning and end of a project to see whether projects incorporate Essential Elements. A step in the club chartering form includes the identification of Essential Elements in club activity planning, making it an intentional step in the planning of club activities. This process is being done all across the state as well as on military installations.

Results
We know youth are benefiting from the intentional application of the Essential Elements. A number of service projects reflect this application, including an event in Anchorage at which participants sew pillowcases for foster children. A 4-H service camp in Seward partnered with a conservation alliance and a Native corporation on a project that involved cleaning camping sites on Native and public lands. After a number of Native youth suicides, a village 4-H group created an anti-suicide pledge, which is recited at many public events. In the FY14 year, this group shared its personal stories about abuse and suicide with a largest Native gathering in the state. 4-

H?ers volunteer in many ways that build responsibility and a sense of belonging in their community and state. Overall, 1,260 adult volunteers and 36 youth volunteers in 2013 provided opportunities for engagement of all kinds, from gardening to science programming.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #3

1. Outcome Measures

Outcome 3: 4-H educators will expand programming to underserved and minority youth by 5% in each year of the five-year plan of work.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	22

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
In many rural communities, activities for youth are limited. Special opportunities are also needed for minority youth. Many schools, urban and rural, are ethnically diverse. Fifty-three percent of the Anchorage School District students are minorities, including Asian and Pacific Rim populations. In order to keep the program viable and current, 4-H must reach out to these populations.

What has been done
Agents are making connections in rural Interior and Southeast communities and developed mentoring programs at seven Interior sites that encourage physical activity and nutrition education. Activities included from breakdancing, martial arts, improv and dog mushing as well as classes on energy drinks, hydration and healthy snacks. Twenty-three adult mentors, including a martial arts instructor who lived in a village, provided the classes. 4-H and the City of Bethel operate a youth center, which offers hands-on opportunities. Also, an agent instructed 14 teachers of low-income Anchorage schools how to use 4-H curriculum about electricity to provide activities for youth.

Results
Our rural outreach has led to more programming for youth. Nearly one-third of 4-H participants lived in remote or rural Alaska and 18 percent overall were Alaska Native or American Indian. The

rural mentoring program reached 121 Alaska Native youth at seven sites. Positive behavioral change was noted in 93 percent of participants, which included health measures of physical activity and nutrition, as well as greater measures of social competence. The success of village programs led to a partnership with the Fairbanks school district, working with seven after-school programs serving Alaska Native youth and with the Boys and Girls Home of Alaska. Presentations at the National Mentoring Summit in January 2013 and National AfterSchool Association in April of that year shared experiences or rural health activities. Agents have developed a network across the country with others serving American Indian youth.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

Vast geographic distances between communities and communities that are available only by air or boat are a challenge for program delivery and development and maintenance of relationships between club leaders and 4-H staff. It also presents challenges for groups of 4-H youth from different communities getting together. There is also a notable lack of adults in many remote communities who are willing to serve as 4-H volunteers. Travel time is a factor in being able to meet face to face also. Some of our local offices lacks adequate technology resources to effectively use distance delivery methods to offset geographic and travel barriers. Better techology, especially in the form of videoconferencing, mobile computing and video equipment, would help with this problem. Many communities lack resources and capacity for youth opportunities. At the same time, we see increasing need for out-of-school time activities, especially for teens. Many areas of the state lack sufficient job opportunities for youth to demonstrate job readiness skills. Internet resources for the training of leaders and links to curriculum available through other states have improved training, as has audio conferencing.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

4-H offers post-activity surveys for many of our programs. For example, the Tanana

District periodically conducts evaluations on programs with the public, such as buyers in the market livestock program. Buyers are asked to evaluate the meat quality they are buying and their interaction with the youth.The club chartering process can also be an evaluation tool. As part of our outreach to remote, rural youth, a volunteer mentor has been teaching martial arts to youth. The following are specific evaluations:

• Surveys with participants in the Youth in Government legislative program show that 100 percent of the 11 participants felt they had an increased understanding of their voice in government and the governmental process. Also, 43 percent indicated an increased ability to clearly state their ideas and thoughts to others; 86 percent indicated an increased ability to get others to share in leadership; and 43 percent reported an increased ability to contribute as a member of a team.

• Volunteer martial arts instructors taught classes to youth in Tanana as part of a mentoring program. One instructor did a pre/post survey for social competency for the 15 youth who attended regularly. All but two showed significant improvement in punctuality, participation, and respect towards peers and adults, over the course of the time he mentored them. Three showed the greatest improvement in not using fighting to resolve problems, and becoming less disruptive in class. Two youth demonstrated a slight negative change in being respectful to adults and fighting i.e. they became less respectful and more disruptive/more fighting) over the course of the lessons. But overall, the 15 youth showed positive responses to having these classes and interacting with the martial arts teachers.

• The rural mentoring program reached 121 Alaska Native youth at seven sites. Positive behavioral change was noted in 93 percent of participants, which included health measures of physical activity and nutrition, as well as greater measures of social competence.

Key Items of Evaluation

Kids want opportunities to be able to meet each other across the state. Alaska 4-H has difficulty participating in multistate programs because of the sheer cost of travel but 4-H'ers participated in an exchange to Japan, an exchange with New Jersey, Citizenship Washington Focus, National 4-H Conference, National 4-H Congress and Western Roundup. All of the above paid for their own way by fundraising, scholarships or personal funds. Despite the distances between districts, youth still participated in state livestock and horse contests. Adults participated in a state volunteer forum offered in a blended delivery format of in person and distance technology. The state presentation contest was conducted using distance technology.

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Global Food Security and Hunger

☐ Reporting on this Program

Reason for not reporting

This has been combined into the Agriculture and Food Security Planned Program, formerly the Agriculture and Horticulture Planned Program.

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	7.0	0.0	7.6	0.0
Actual Paid Professional	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
Actual Volunteer	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
1862 Matching	1890 Matching	1862 Matching	1890 Matching
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
1862 All Other	1890 All Other	1862 All Other	1890 All Other
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

V(D). Planned Program (Activity)

1. Brief description of the Activity

Research and outreach will be integrated to assure that best management practices appropriate to Alaska are provided to the target audience. Resilience and adaptability of crops and animals to changes in the subarctic and arctic climate, and revitalization in research and extension programs relevant to regional

and local food production and the safety of the foods produced and processed are critical to the food security of Alaska and will be an emphasis of these planned programs. An emphasis will also be placed on educating and training youth and adults in new fields opening in the Alaska workforce and continuing education and training programs that emphasize current needs as an aging workforce retires. Group and one-on-one educational activities with specific sectors of the pest management industry, the agricultural community, and the horticultural industry will provide individuals and businesses with important information. Increased reliance on the internet and distance education technology will enhance delivery to more people but there will continue to be reliance on traditional interactions that include forums, tours, response to emails, phone calls and walk-in stakeholders. Increasing partnerships with the agribusiness community will become an important strategy for assuring a secure food supply for Alaska.

2. Brief description of the target audience

The target audiences include producers and consumers, communities, entrepreneurs, agribusinesses, industry leaders, and individuals and groups concerned about the quality of the Alaska environment, public resource agencies, public and private resource managers, other faculty and researchers, and undergraduate and graduate students. Advisors and the target audience include: Statewide Board of Advisors, Alaska Farm Bureau, and specifically, this program will provide new information on soil properties and classification to the USDA natural Resource Conservation Service, the USDA Forest Service, the Alaska Department of Natural Resources, borough governments, and Alaska Native Corporations.

3. How was eXtension used?

{No Data Entered}

V(E). Planned Program (Outputs)

1. Standard output measures

2013	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: 2013

Actual: {No Data Entered}

Patents listed

{No Data Entered}

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total

Actual	1	12	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Output 1. Faculty will provide agricultural and horticultural workshops, short courses, classes, field days, and conferences aimed at improving food production and best management practices.

Year	Actual
2013	0

Output #2

Output Measure

- Output 2: Faculty will provide agricultural and horticultural information through one-on-one consultations and consultations with organizations to provide information on best management practices of food production.

Year	Actual
2013	0

Output #3

Output Measure

- Output 3. Horticultural crop research will concentrate on home and commercial varieties appropriate as Alaska food crops. Publications are the output measures.

Year	Actual
2013	0

Output #4

Output Measure

- Output 4. Controlled environment horticulture will focus on technology and technology transfer concerning appropriate food crops and best management practices for crop production in specific environments. Output measures will be publications.

Year	Actual
2013	0

Output #5

Output Measure

- Output 5. Focus will be on best management practices for food crops and variety evaluation. Output measures will be publications.

Year	Actual
2013	0

Output #6

Output Measure

- Output 6. Focus will be on best management practices for livestock management and production for food. Output measures will be publications.

Year	Actual
2013	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Outcome 1: Increase agronomic crop producers' ability to understand and assess best management practices of food crop production. Measure will be workshops and publications.
2	Outcome 2: Increase livestock producers' ability to understand and assess optimum production practices for food animal production.
3	Outcome 3: Increase participants' commercial and home horticulture optimum food crop growing techniques and improve management practices.
4	Outcome 4: Increase the number of activities that monitor and control invasive species and pests.
5	Outcome 5: Increase the number of adopters of new technology and management practices.

Outcome #1

1. Outcome Measures

Outcome 1: Increase agronomic crop producers' ability to understand and assess best management practices of food crop production. Measure will be workshops and publications.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #2

1. Outcome Measures

Outcome 2: Increase livestock producers' ability to understand and assess optimum production practices for food animal production.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #3

1. Outcome Measures

Outcome 3: Increase participants' commercial and home horticulture optimum food crop growing techniques and improve management practices.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #4

1. Outcome Measures

Outcome 4: Increase the number of activities that monitor and control invasive species and pests.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #5

1. Outcome Measures

Outcome 5: Increase the number of adopters of new technology and management practices.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

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

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 7

1. Name of the Planned Program

Sustainable Energy

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
123	Management and Sustainability of Forest Resources	20%		0%	
125	Agroforestry	20%		0%	
131	Alternative Uses of Land	20%		0%	
205	Plant Management Systems	40%		50%	
511	New and Improved Non-Food Products and Processes	0%		50%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	0.6	0.0	2.1	0.0
Actual Paid Professional	0.5	0.0	1.8	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**
29936	0	69994	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
20731	0	74970	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
133582	0	164962	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

AFES researchers concentrated primarily on yield potential of lignocellulosic crops and woody biomass and oilseed crops. This research could lead to development of "best practices" management regimes and genetics of bioenergy crops. We concentrated on crops likely to be successful for remote villages, especially woody crops that will require little agricultural knowledge and simple technology.

AFES research continued to work on the utilization of low value biomass for fuels and chemicals, mostly through thermochemical means (gasification, pyrolysis, supercritical fluids). The chemical composition of alder, birch, hemlock, yellow cedar, Sitka spruce, red cedar, white spruce, and aspen have been evaluated for biofuel production via supercritical liquefaction.

Two graduate student research projects are addressing the gaps in the current databases to determine the biological, physical, and economic feasibility of Alaska biomass for biofuels.

CES provided outreach to communities about biomass heating opportunities and forest management relating to biomass and provide assistance to entrepreneurs involved with sustainable energy production.

2. Brief description of the target audience

The target audiences include producers and consumers, communities, agriculture and forestry businesses, industry leaders, entrepreneurs, individuals and groups concerned about the quality of the Alaska environment, public resource agencies, public and private resource managers, other faculty and researchers, and undergraduate and graduate students. Our efforts will be directed toward environmentally and economically sustainable development and conservation of our natural resources that will benefit all citizens and help them adapt and become resilient as the climate changes. Advisors and the target audience include: Statewide Board of Advisors, State Board of Forestry, Society of American Foresters, Alaska Farm Bureau, and the Alaska Northern Forest Cooperative, CES Forest Advisory Group and the Alaska Energy Authority, USDA Natural Resource Conservation Service, the USDA Forest Service, the Alaska Department of Natural Resources, borough governments, and Alaska Native Corporations. Information on impact of fires on soil organic matter will assist the Department of Natural Resources Division of Forestry and private land owners and managers. Outreach efforts will address public education on the sustainability of biomass harvesting, new technologies and community planning.

3. How was eXtension used?

CES/AFES forester developed content for the Climate, Forests and Woodlands Community of Practice.

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	944	13300	0	700

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

Patent Applications Submitted

Year:	2013
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	0	2	2

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Output 1: Workshops, demonstrations, short courses, classes, field days, and conferences organized and conducted.

Year	Actual
2013	13

Output #2

Output Measure

- Output 2: Bioenergy crop varieties tested.

Year	Actual
2013	17

Output #3

Output Measure

- Output 3: Bioenergy research projects conducted.

Year	Actual
2013	2

Output #4

Output Measure

- Output 4: Bioenergy crop and technology publications submitted.

Year	Actual
2013	1

Output #5

Output Measure

- Output 5: Community, organizations, and one-on-one consultation concerning bio-based energy opportunities conducted.

Year	Actual
2013	12

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

Outcome #1

1. Outcome Measures

Outcome 1: Identify crops suitable for sustainable production of bio-based energy in Alaska.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	2

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Research for alternatives to fossil fuels is urgent. Energy costs in most rural communities in Alaska are prohibitively expensive, sometimes surpassing $9/gal for diesel. This necessitates heart-wrenching choices between food and warmth. We are moving forward with research in biofuels and biomass with the goal to offset some of these high-energy costs.

What has been done
Seventeen various grasses and wood species were grown and tested for application as biomass. Methods of collection, handling and planting were studied. Soil moisture was a limiting factor at this time. Weed control also was a major problem. Research found that grasses grow well in Interior Alaska and produce reasonably high biomass, however high nitrogen rates were required for high yields making it cost prohibitive. Spring harvests produced low biomass due to warm spring temperatures.

Results
Longer studies in various locations and under varying management regimes will be required for assessment of the economic feasibility of growing biomass as crops for use as an energy source in Alaska.

4. Associated Knowledge Areas

KA Code	Knowledge Area
125	Agroforestry
131	Alternative Uses of Land
205	Plant Management Systems

Outcome #2

1. Outcome Measures

Outcome 2: Identify new value-added by-products from bio-based energy crops and woody species.

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

Outcome 3: Compile a forestry biomass database.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	2

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
State legislators and foresters are seeing the benefit of the BAKLAP project, which is providing data on biomass capabilities in Interior Alaska.

What has been done
Two graduate students are researching the effects of harvesting and regeneration. One sampled 27 harvest units to study regeneration after harvest over the long term while the other counted and measured the height of 16,000 trees on 4 1/2 acres after fire disturbance. Six different treatments for regenerating white spruce were used, from leaving everything alone to planting seedlings.

Results
The data for a sustained yield program after harvest and for regeneration of white spruce after fire disturbance is now accessible. Best management practices provide guidance and clarify tradeoffs. This information will be used by state foresters to establish best management practices for sustainable harvests for biomass energy needs.

4. Associated Knowledge Areas

KA Code	Knowledge Area
123	Management and Sustainability of Forest Resources

Outcome #4

1. Outcome Measures

Outcome 4: Monitor adoption of bioenergy technologies.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Biomass research for energy is needed in Alaska. Carrying out this fundamental and applied research at a microscale and cost allows Alaska specific feedstocks and catalysts to be evaluated, laying the foundation for future scale up, applications and design that is cost efficient.

What has been done
A microscale pyrolysis and catalytic upgrading reactor system for the production of pyrolysis products (bio-oil, syngas, bio-char) was created. The evaluation of bio-oils using transition metal and products from microscale pyrolysis unit have been compared with gasoline and diesel fuels based on gas chromatography analysis successfully.

Results
A review paper written by a graduate student and researcher in collaboration dealt with catalytic upgrading of pyrolysis bio-oil. This paper was directed toward research scientists and engineers working in the development of biofuels from lignocellulosic biomass within academia and in private companies worldwide. The work was also shared with representatives of the Alaska Energy Authority and used in course delivery at UAF.

4. Associated Knowledge Areas

KA Code	Knowledge Area
511	New and Improved Non-Food Products and Processes

Outcome #5

1. Outcome Measures

Outcome 5: Increase community awareness about the use of biomass.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Energy costs remain high, particularly in rural communities. Biomass can offer lower-cost sources of heat in areas where the forest supply is plentiful.

What has been done
CES coordinated and hosted the 2012 Alaska Wood Energy Conference, which focused on community biomass usage. The Ketchikan conference highlighted success stories of Alaska communities that have implemented biomass projects. Other topics included the sustainability and environmental impacts of biomass harvest, new biomass technologies, biobrick fabrication and micro pellet mills. Project financing was also discussed. Some participants toured a pellet mill and a successful biomass project at the Ketchikan library.

Results
The conference was attended by 133 technical providers, facility managers, foresters and community leaders. The conference was essentially a professional development training but public awareness and interest increased as a result of media coverage. Participants who filled out evaluations cited the session content (46 percent) and networking (25 percent) as their top reasons for attending and the "most useful" sessions were on biomass use in Southeast, biomass burners and local experience with chunks, chips and pellets. The conference evaluations also provided suggested topics at the next conference, in FY14.

4. Associated Knowledge Areas

KA Code	Knowledge Area
123	Management and Sustainability of Forest Resources

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

Brief Explanation

Due to university downsizing, the wood chemistry researcher who conducted the biofuel work has moved and the agronomy researcher who addressed biomass crops will retire soon will not be replaced in the near future. Until replacements are in place this work will be on hold.

The production of oil has decreased and the calcuation of oil revenues to the state has changed, creating funding stream losses that are negatively affecting higher education. Until revenues are replaced, research support through the state will be less than previously enjoyed.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

The biomass and bio-oil research is in its infancy. Evaluation is limited to research findings held in databases and in published articles.

About one-quarter (29) of the 133 participants in the October 2012 Alaska Wood Energy Conference filled out evaluations. Of those, 29.6 percent said the content was good and 70.4 percent rated it as excellent. The conference highlighted community use of biomass. The top reasons given for attending the conference were content (46 percent) and networking (25 percent). The sessions found most "useful" were on biomass use in Southeast, providing a supply of biomass, biomass impacts, biomass burners and local experiences with chunks, chips and pellets. Participants provided suggestions for topics for upcoming wood energy conferences. Responses showed a diverse audience, which included researchers, educators, manufacturers, agency representatives and consumers of firewood. The responses, including suggested topics for presentations, were used to plan the next conference, in April 2014.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 8

1. Name of the Planned Program

Childhood Obesity

☐ Reporting on this Program

Reason for not reporting

We are reporting on the childhood obesity outputs and outcomes in the Healthy Individuals, Families and Communities Planned Program.

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	1.6	0.0	0.3	0.0
Actual Paid Professional	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
Actual Volunteer	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
1862 Matching	1890 Matching	1862 Matching	1890 Matching
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
1862 All Other	1890 All Other	1862 All Other	1890 All Other
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

V(D). Planned Program (Activity)

1. Brief description of the Activity

Collaboration with other organizations includingstate, public health agencies, schools, day care facilities, 4-H, community organizations, tribal organizations, and youth groups to offer programming on childhood obesity will focus on physical activity and nutrition. Programming will be conducted with parents

in choosing nutritional foods and preparing meals for their families. Group and one-on-one educational activities with day care providers and parents will provide individuals with information necessary to increase physical activity of children.

2. Brief description of the target audience

Research target audiences include: the university community, educators, nutritionists, stakeholders in local food systems, state and federal agencies, and state, jurisdictional and federal policy makers. Outreach target audiences include: teachers and parents of youth, caregivers, youth, college students and the rural community health care givers.

3. How was eXtension used?

{No Data Entered}

V(E). Planned Program (Outputs)

1. Standard output measures

2013	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: 2013

Actual: {No Data Entered}

Patents listed

{No Data Entered}

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	0	2	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Output 1: Provide physical activity and nutrition programming for teachers and parents. Output is the number of teachers and parents who are trained.

Year	Actual
2013	0

Output #2

Output Measure

- Output 2: Provide physical activity and nutrition programming through one-on-one consultations and consultations with other organizations.

Year	Actual
2013	0

Output #3

Output Measure

- Output 3: Develop educational resources and publications on nutrition.

Year	Actual
2013	0

Output #4

Output Measure

- Output 4: Conduct local program inventories and needs assessments using community based participatory approaches in order to identify culturally and economically sustainable approaches to affect community, family, and child healthy food intake and active play/ physical activity behavior.

Year	Actual
2013	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Outcome 1: Increase physical activity during a school day. Measure will be number of classrooms participating.
2	Outcome 2: Increase youth and parents' understanding of healthy food choices. Measure will be number of meetings with youth and parents.
3	Outcome 3: Youth and families have a more positive attitude toward healthful foods and/or are willing to try new foods. Measure will be number of families.
4	Outcome 4: Increase knowledge, attitudes, skills and aspirations to increase physical activity habits. Measure will be number of youth, assessments conducted, and publications.
5	Outcome 5: Increase knowledge, attitudes and skills on individual and family nutrition. Measure will be class enrollment and publications.

Outcome #1

1. Outcome Measures

Outcome 1: Increase physical activity during a school day. Measure will be number of classrooms participating.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #2

1. Outcome Measures

Outcome 2: Increase youth and parents' understanding of healthy food choices. Measure will be number of meetings with youth and parents.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #3

1. Outcome Measures

Outcome 3: Youth and families have a more positive attitude toward healthful foods and/or are willing to try new foods. Measure will be number of families.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #4

1. Outcome Measures

Outcome 4: Increase knowledge, attitudes, skills and aspirations to increase physical activity habits. Measure will be number of youth, assessments conducted, and publications.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #5

1. Outcome Measures

Outcome 5: Increase knowledge, attitudes and skills on individual and family nutrition. Measure will be class enrollment and publications.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

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

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 9

1. Name of the Planned Program

Food Safety

☐ Reporting on this Program

Reason for not reporting

We are reporting on food safety in the Healthy Individuals, Families and Communities area.

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	3.0	0.0	0.5	0.0
Actual Paid Professional	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
Actual Volunteer	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
1862 Matching	1890 Matching	1862 Matching	1890 Matching
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
1862 All Other	1890 All Other	1862 All Other	1890 All Other
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

V(D). Planned Program (Activity)

1. Brief description of the Activity

Faculty will conduct workshops and meetings, deliver educational services, provide training, and conduct consultations with clientele. Researchers will develop products, curricula and resources, provide training and conduct consultations with clientele Educators and researchers will conduct needs assessments, work with the media, partner with other agencies and organizations, write articles,

publications and fact sheets, and facilitate events, activities, and teachable moments.

2. Brief description of the target audience

The target audience will include food preparers in homes and schools, school teachers (public and private), small processors, individuals interested in healthy lifestyles, low- income individuals and families, especially women with young children, individuals interested in a subsistence lifestyle, individuals interested in food preservation, home food growers, hunters, chefs at high end restaurants and university food service employees.

3. How was eXtension used?

{No Data Entered}

V(E). Planned Program (Outputs)

1. Standard output measures

2013	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: 2013

Actual: {No Data Entered}

Patents listed

{No Data Entered}

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Output 1: Faculty will offer workshops and classes in harvesting and food preservation techniques.

Year	Actual
2013	0

Output #2

Output Measure

- Output 2: New food products will be developed using Alaska-produced ingredients.

Year	Actual
2013	0

Output #3

Output Measure

- Output 3: Faculty will offer workshops in food safety.

Year	Actual
2013	0

Output #4

Output Measure

- Output 4: Research and extension faculty will develop curricula.

Year	Actual
2013	0

Output #5

Output Measure

- Output 5: Research and extension faculty will conduct and evaluate needs assessments.

Year	Actual
2013	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Output 1: Participants in food preservation and food safety classes will improve their food preservation and food safety practices. Measurement will be enrollment numbers.
2	Outcome 2: New varieties and new uses of animal and plant products will result in increased production of Alaska-based products. Outcome is number of products and publications.
3	Outcome 3: Partnerships developed will increase collaborative efforts and knowledge about food safety. Measure will be number of partnerships.

Outcome #1

1. Outcome Measures

Output 1: Participants in food preservation and food safety classes will improve their food preservation and food safety practices. Measurement will be enrollment numbers.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #2

1. Outcome Measures

Outcome 2: New varieties and new uses of animal and plant products will result in increased production of Alaska-based products. Outcome is number of products and publications.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #3

1. Outcome Measures

Outcome 3: Partnerships developed will increase collaborative efforts and knowledge about food safety. Measure will be number of partnerships.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Government Regulations
- Competing Programmatic Challenges

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}