

# 2012 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 national forest. 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 affect 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 and bring communities' ideas to the university for further development of the state'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 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, 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 or \$9 a gallon. Research and outreach has 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.

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, 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 other units within UAF, the University of Alaska statewide system, federal and state agencies, nongovernmental organizations, private industry, and through multistate collaborations with other universities. 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. CES brings the university to Alaskans while bringing community concerns and issues back to the university.

**Total Actual Amount of professional FTEs/SYs for this State**

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	35.0	0.0	30.6	0.0
Actual	40.8	0.0	25.6	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 SNRAS/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 will be conducting program impact evaluations and is working with faculty to evaluate individual programs. She is also reviewing how Extension's programs reflect goals stated in our 2010 Strategic Plan. Many of our individual programs are evaluated, including workshops and conferences. Evaluations of a large Master Gardener class done 10 months after the class, for instance, show how gardeners changed their practices during the following summer. Extension will examine particular programs on a more regular basis in the future. An evaluation training for faculty is planned for FY13.

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 renewable 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 metrics in 2010 for the 2011 accreditation of the university by the Northwest Accreditation Commission. The accreditation covers Extension's research, teaching and outreach process, indicators and outcomes. The next round in the accreditation process is developing a strategic plan for the university, where ENGAGE 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 annually as part of its accreditation process.

### **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 and CES Website, Newsletters & Blog)

**Brief explanation.**

SNRAS/AFES has traditionally met 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
- Reindeer Herders Association
- Alaska Northern Forest Cooperative
- Alaska Livestock Producers
- Association of Peonies Growers
- On-demand meetings at the request of stakeholders

These traditional meetings are focal points for listening to and 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 land managers from:

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

State stakeholders include:

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

Extension sponsors many agricultural and horticultural conferences and outreach activities with SNRAS/AFES involvement and Extension gathers formal and informal stakeholder input there. Outreach events in 2012 included the Delta Farm Forum, Harvest Wrap-up, Alaska Produce Growers Conference, Alaska Greenhouse and Nursery Conference, Sustainable Agriculture Conference, Sustainable Livestock Conference and the Alaska Invasive Species Conference. For the third year, Extension hosted the Alaska Peony Growers Association conference.

Extension also relies on advisory groups as an important stakeholder needs assessment process. Extension has a 12-member Statewide Advisory Council and faculty in districts across the state use local advisory committees to provide them with community input related to local program stakeholder needs and interests. The State Advisory Council met in person twice and conducted two audioconference meetings during the year. The Natural Resource and Community Development area sought guidance from its forestry advisory group regarding outreach. In addition, 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. We invited stakeholder participation through more than 20 district, subject area and 4-H Facebook pages, as well as an overall Facebook page.

**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.**

Survey information was collected using formal survey preparation and analysis techniques. Meetings and workshops were scheduled around themes and to gather specific information in meeting minutes and transcripts, which was used in strategic planning of research and Extension programs. The feedback loop provided information to research and outreach programs and from research and outreach programs to stakeholders and individuals.

Extension identifies stakeholders as those who would logically benefit from Extension's services. Other stakeholders are partner agencies that Extension works with and related stakeholder organizations. Individuals and groups have been identified by seeking input from advisory committees, working with agencies that have similar missions, work with community, religious, workforce groups and other schools of the university. For instance, the Anchorage 4-H agent is a member of the Anchorage Youth Development Coalition, which includes 40 youth groups. Many subject area advisory groups, 4-H leaders organization and overall CES Advisory Council provide stakeholder input. Extension agents use advisory or focus groups to collect stakeholder input and needs assessments.

**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 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, Alaska Northern Forest Cooperative, USDA/NRCS, USDA/ARS, US Forest Service, Fairbanks Economic Development Corporation, and industries involved in food, fiber and fuel/energy production.

Members from the public who have participated in or who have an interest in Extension's program offerings represent one segment of the organization's stakeholders. Stakeholders often identify themselves by emailing or calling Extension faculty or staff. Advisory groups 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 Alaska State Legislature, Farm Bureau, Grange, Reindeer Herders Association, Greenhouse Growers, Food Banks of Alaska, 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 SNRAS/AFES and CES Strategic Plan produced by faculty. The Plan reflects ideas and advice given by client user groups, students, expert advisors, state and national peers and cooperators, and UAF administration. During the 2012 reporting period, the four 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 Alaskan job and career demands began to emerge. These focuses were used to set priorities in meeting the many needs for knowledge about Alaska and circumpolar resources and geography. Input was considered in the budget process. Capacity funds were used in response to research needs based on the four emerging focus areas.

Stakeholder needs will continue to be a driving factor in determining Extension priorities and programming. Cooperative Extension is a grass roots-driven program. Agents use the stakeholder input to identify programming needs and work to offer programs and information that meet those needs. Stakeholder input in 2012 led to new work and offerings on indoor air quality and other health programming, increased programming in rural energy options, food security and positive youth development. Input at conferences led to specific topics covered at subsequent conferences. For example, participants in the 2012 Sustainable Agriculture Conference requested more information about soil fertility, which resulted in a panel in the FY13 conference. A forestry advisory group advised on outreach priorities in that area.

**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. Issues pertinent to subsistence and small agriculture carry particular impact for our stakeholders. Food security, energy, climate change, chronic health issues and youth development have risen to the forefront as areas of particular importance for our Alaskan stakeholders and are therefore leading to development of research and Extension programming in those particular areas. In the consumer science area, we learned that stakeholders were interested in more health and nutrition programming, additional classes for parents and child care workers, programs on reducing energy consumption and more programming in the areas of family finance, budgeting and estate planning. We also learned about special programming needs in the mining and forestry areas. After a farmer lost a significant amount of his potato crop to bacterial ring rot, we learned that there was a lack of knowledge about this disease. That led to an agent developing a publication with prevention recommendations and farmers changing sanitation practices.

**IV. Expenditure Summary**

<b>1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)</b>			
<b>Extension</b>		<b>Research</b>	
<b>Smith-Lever 3b &amp; 3c</b>	<b>1890 Extension</b>	<b>Hatch</b>	<b>Evans-Allen</b>
1129946	0	1242600	0

<b>2. Totaled Actual dollars from Planned Programs Inputs</b>				
<b>Extension</b>			<b>Research</b>	
	<b>Smith-Lever 3b &amp; 3c</b>	<b>1890 Extension</b>	<b>Hatch</b>	<b>Evans-Allen</b>
<b>Actual Formula</b>	864618	0	485372	0
<b>Actual Matching</b>	1135333	0	2046918	0
<b>Actual All Other</b>	7420323	0	6878781	0
<b>Total Actual Expended</b>	9420274	0	9411071	0

<b>3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous</b>				
<b>Carryover</b>	307906	0	0	0





## V. Planned Program Table of Content

S. No.	PROGRAM NAME
1	Agriculture and Food Security
2	Natural Resources and Community Development
3	Healthy Individuals, Families and Communities
4	Youth Development
5	Climate Change and Ecosystem Management
6	Sustainable Energy
7	Global Food Security and Hunger
8	Childhood Obesity
9	Food Safety

**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%		10%	
204	Plant Product Quality and Utility (Preharvest)	10%		0%	
205	Plant Management Systems	10%		10%	
213	Weeds Affecting Plants	10%		0%	
216	Integrated Pest Management Systems	10%		0%	
301	Reproductive Performance of Animals	5%		10%	
302	Nutrient Utilization in Animals	0%		1%	
305	Animal Physiological Processes	0%		9%	
307	Animal Management Systems	10%		5%	
308	Improved Animal Products (Before Harvest)	5%		10%	
315	Animal Welfare/Well-Being and Protection	0%		5%	
401	Structures, Facilities, and General Purpose Farm Supplies	0%		10%	
402	Engineering Systems and Equipment	0%		5%	
404	Instrumentation and Control Systems	0%		5%	
405	Drainage and Irrigation Systems and Facilities	0%		5%	
502	New and Improved Food Products	10%		10%	
504	Home and Commercial Food Service	10%		0%	
601	Economics of Agricultural Production and Farm Management	10%		0%	
610	Domestic Policy Analysis	0%		5%	
	<b>Total</b>	100%		100%	

**V(C). Planned Program (Inputs)**

1. Actual amount of FTE/SYs expended this Program

Extension	Research
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Year: 2012	1862		1890	
	1862	1890	1862	1890
Plan	3.0	0.0	1.5	0.0
Actual Paid Professional	5.3	0.0	6.1	0.0
Actual Volunteer	0.0	0.0	4.0	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
190213	0	213193	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
249773	0	899081	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
1632471	0	2287436	0

## V(D). Planned Program (Activity)

### 1. Brief description of the Activity

Research and outreach was integrated to assure that best management practices appropriate to Alaska are provided to the target audiences. 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 agricultural production are taking place. Emphasis was 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 are providing individuals and businesses with important information. Increased reliance on the Internet and distance technology enhanced delivery to more people. Partnerships are important strategies in maintaining pest species below threshold levels. Outreach included classes, workshops, conferences, forums, tours, response 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 says he uses the eXtension search engine on a daily basis and recommends its use to his Master Gardener volunteers. One AFES researcher has learned to utilize eXtension as well.

**V(E). Planned Program (Outputs)**

**1. Standard output measures**

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Actual</b>	15040	283229	3890	6639

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

**Patent Applications Submitted**

Year: 2012  
 Actual: 0

**Patents listed**

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

2012	Extension	Research	Total
<b>Actual</b>	2	12	14

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

- Output Target 1: Faculty will provide non-food 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 Target 2: Faculty will provide non-food 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 Target 3. Horticultural crop research will concentrate on home and commercial varieties appropriate to Alaska. Publications and presentations are the output measures.

<b>Year</b>	<b>Actual</b>
2012	5

**Output #4**

**Output Measure**

- Output Target 4. Controlled environment horticulture will focus on controlled environment technology and technology transfer and appropriate non-food 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 Target 5. Turf research will continue including variety selection and expansion into multiple use. Output measure will be publications, presentations and technology transfer.

<b>Year</b>	<b>Actual</b>
2012	6

**Output #6**

**Output Measure**

- Output Target 6: Faculty will provide agricultural and horticultural workshops, short courses, classes, field days, and conferences including IPM.

<b>Year</b>	<b>Actual</b>
2012	160

**Output #7**

**Output Measure**

- Output Target 7: Faculty will provide agricultural, horticultural and pest management information through one-on-one consultations and consultations with other organizations (in contact hours).

<b>Year</b>	<b>Actual</b>
2012	4882

**Output #8**

**Output Measure**

- Output Target 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.

<b>Year</b>	<b>Actual</b>
2012	313

**Output #9**

**Output Measure**

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

<b>Year</b>	<b>Actual</b>
2012	2

**Output #10**

**Output Measure**

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

<b>Year</b>	<b>Actual</b>
2012	15

**V(G). State Defined Outcomes**

**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	Outcome Target 1: Increase non-food agricultural and horticultural producers' ability to understand and assess optimum production practices.
2	Outcome Target 2: Increase non-food livestock producers' ability to understand and assess optimum production practices.
3	Outcome Target 3: Increase the number of activities that monitor and control invasive species.
4	Outcome Target 4: Increase the number of adopters of new technology and management practices.
5	Outcome Target 5: Increase agricultural and horticultural producers' ability to understand and assess optimum production practices.
6	Outcome Target 6: Increase livestock producers' ability to understand and assess optimum production practices.
7	Outcome Measure 7: Increase agronomic crop producers ability to understand and assess best management practices. Outcome measure is number of producers adopting change.
8	Outcome Measure 8: Increase livestock producers' ability to understand and assess optimum production practices for food animal production.
9	Outcome Measure 9: Improve commercial and home horticulture best management practices. Measure is number of individuals adopting practices.
10	Outcome Measure 10: Increase producers' knowledge of promising new horticultural crops. Outcome measure is number of producers assisted.
11	Outcome Measure 11: Improve and access producers' ability to understand and assess optimum soil. Measure will be workshop participants.



## **Outcome #1**

### **1. Outcome Measures**

Outcome Target 1: Increase non-food 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**

<b>Year</b>	<b>Actual</b>
2012	70

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

Alaska's need to diversify from extractive industries led to a Congressional appropriation on new crop research, which resulted in a budding new industry. Research conducted at the Fairbanks Experiment Farm has shown that peonies can be produced in Alaska when no other peony is available in the world.

#### **What has been done**

Research and Extension are providing best management practices including advice on cultivation, management, post harvest handling, packaging, distribution and marketing. Information is being provided on composting, soil amendments and disease management. Publications are online, articles, blog posts, posters and presentations are available. Extension has provided support to 70 potential and existing growers with site visits, soil analysis, weed management presentations and grower consultations. Herbicide and nonchemical weed control options were tested for effectiveness and cost and results presented at two peony conferences.

#### **Results**

Alaska is poised to enter the competitive world flower trade with Anchorage, AK being the fourth largest air cargo transport hub in the world. There are 67 growers in Alaska and 101,000 peony plants in the ground to date. In 2012 nearly 25,000 Alaskan fresh cut stems were sold in Canada, Taiwan, Hawaii and the contiguous 48 states. Prices average from \$2.75 wholesale to \$5.85 retail. Projected yield by 2015 is over one million stems, which will inject approximately \$2,750,000 into the Alaska economy.

### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
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205	Plant Management Systems
213	Weeds Affecting Plants
216	Integrated Pest Management Systems
601	Economics of Agricultural Production and Farm Management

## **Outcome #2**

### **1. Outcome Measures**

Outcome Target 2: Increase non-food livestock producers' ability to understand and assess optimum production practices.

Not Reporting on this Outcome Measure

## **Outcome #3**

### **1. Outcome Measures**

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

### **2. Associated Institution Types**

- 1862 Extension
- 1862 Research

### **3a. Outcome Type:**

Change in Action Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2012	3

### **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 and agricultural 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**

Agents and integrated pest management (IPM) staff hosted 115 workshops and presentations and worked with producers, agencies and individuals to identify pests and reduce impacts. New outreach included a university class on recreational impacts and a partnership with Anchorage

schools that included student research on moose consumption of the European bird cherry tree. Pest technicians trap for invasive species of concern, including the gypsy moth and emerald ash borer. An invasive species conference brought together researchers, agencies and citizens statewide in Anchorage to discuss research and prevention efforts. CES trained 126 commercial pesticide applicators and 23 weed-free forage inspectors.

**Results**

After the invasive species conference, participants agreed to increase efforts to manage and monitor invasive species. Evaluations showed that participants valued networking with representatives of other agencies and organizations. The annual conference helps bring agencies and individuals to help coordinate invasive plants response and research. Agents developed a publication on bird vetch control because of public and private concern about that invasive plant. The recreation class identified and inventoried invasives along three trails in Alaska, near Gulkana, Anchorage and in Prince William Sound. Nearly 12,000 contacts were made by the IPM staff and additional contacts were made by faculty through educational workshops. Pesticide applicator certification, which is required by the state of Alaska, results in safer and more effective application of pesticides. Of the 97 people who took the state's challenging certification exam, 54 passed. The weed-free forage program helps prevent the spread of noxious weeds to natural ecosystems and provides a higher value market opportunity for farmers.

**4. Associated Knowledge Areas**

KA Code	Knowledge Area
213	Weeds Affecting Plants
216	Integrated Pest Management Systems

**Outcome #4**

**1. Outcome Measures**

Outcome Target 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 Action Outcome Measure

**3b. Quantitative Outcome**

Year	Actual
2012	1

### 3c. Qualitative Outcome or Impact Statement

#### Issue (Who cares and Why)

A researcher is using technology to define an animal unit appropriate to Alaska's environment and to quantify grazing activities in small pastures. The knowledge gained may provide information useful in the debate between federal agencies and Western farmers and ranchers regarding the use of public range land. The Bureaus of Land Management and Fish and Wildlife have made statements that the riparian ecosystem is in danger from overgrazing.

#### What has been done

Satellite collars enabled GPS tracking to map distinctive grazing patterns of cattle in Palmer, AK. Tracking collars have been adapted with rapid chips, which give readings every second instead of the standard tracking of every 10 minutes. Satellite collars currently in use cost approximately \$4,000 each. The adapted collars used in this study cost \$250 each and utilize 4 D-cell batteries making this technology more affordable. Currently this type of collar works well with cattle that are not free ranging.

#### Results

Satellite data suggests that cattle spend little time in riparian areas. Researchers made the common sense observation that since wet areas soften their hoofs, cattle spend only the time necessary in wet environments. If conservationists wish to limit or abolish the use of public lands for cattle grazing they may need to provide a different justification.

### 4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
216	Integrated Pest Management Systems
401	Structures, Facilities, and General Purpose Farm Supplies
601	Economics of Agricultural Production and Farm Management

### Outcome #5

#### 1. Outcome Measures

Outcome Target 5: Increase 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 Knowledge Outcome Measure

**3b. Quantitative Outcome**

Year	Actual
2012	0

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

There is steadily growing interest in small farms, Community Supported Agriculture (CSA) groups and producers interested in supplying grain products. Interest in locally grown food has increased with the recognition that Alaska's three-day grocery supply is heavily dependent on expensive transportation. There is also growing concern about the quality of imported, commercially produced food.

**What has been done**

Educational opportunities and research-based practical advice tailored to Alaska are offered annually to producers to help improve the economic viability of grower operations. A recent event hosted by CES and AFES was held at the Fairbanks Experiment Farm for small grain producers. Fifty people attended a workshop to learn best management practices and compost advice from AFES researchers. The CES kitchen coordinator presented best uses for barley seed and flour and passed out recipes. Articles and blogs were published about the event.

**Results**

The experiment farm, which has researched grains since its inception in 1905, successfully developed a grain that does well in the short growing season and cold soils of Alaska. Sunshine barley can be purchased now from the Alaska Division of Agriculture's Plant Material Center for \$85 for 50 lbs. With ¼ lb of seed, a 100-square foot plot can, in a good year with an experienced grower, produce a 5-10 lb yield. Local industries are now using Alaska grown Sunshine barley to mill into flour. It is also being pelletized for food and straw for animals, and distilled into beer and vodka. CES hosted a grain growers meeting in FY13.

**4. Associated Knowledge Areas**

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
205	Plant Management Systems
213	Weeds Affecting Plants

**Outcome #6**

**1. Outcome Measures**

Outcome Target 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
2012	0

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Consumers increasingly are seeking locally produced, high quality, chemical and hormone-free meat. Reindeer perfectly fill the bill. They are uniquely adapted to the northern climate eating less during the cold season. Reindeer are also an ideal option for 4-H market livestock programs. They are good natured animals responding well to intensive human contact typical of 4-H and FFA livestock projects and are hardy, doing well on commercially available feeds and in farm settings.

**What has been done**

Students, in 4-H market livestock programs, participate in sessions covering all aspects of reindeer husbandry including health, handling, feeding & nutrition, herd management, and facilities design & maintenance. These hands-on sessions provide a sound knowledge base for participating youth and their families. Under the guidance of experienced reindeer handlers, students begin the fundamental work of socializing their calves and building a healthy and safe human-animal relationship. After the completion of these sessions the students are given charge of their animal, which they raise at their own facilities for the next year. Like other market animals, they are managed in a manner consistent with the 4-H livestock program guidelines and shown at the state fairs. They are sold in the market auction at 15 months of age, by which time they are of slaughter size.

**Results**

Almost every major meat distributor in Alaska desires to buy reindeer meat. Reindeer meat is valued because it is tender and tasty while rich in protein, high in minerals and low in fat and cholesterol. Even though reindeer seems expensive at \$25 lb, an average serving is 4 ounces. Market possibilities are high due to demand. Twenty youths in Kenai and 16 in Fairbanks contacted the AFES reindeer herder about starting a 4-H market livestock project with reindeer. The Kenai youth raised their own money to bring him to town. Parents provided housing, meals and local transportation. He presented on raising and managing reindeer and helped them develop a 4-H project. One youth in Kenai and 6 in Fairbanks have purchased calves and remain in close contact with AFES personnel. Discussions are under way to pursue collaboration with CES.

**4. Associated Knowledge Areas**

KA Code	Knowledge Area
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301	Reproductive Performance of Animals
305	Animal Physiological Processes
307	Animal Management Systems
308	Improved Animal Products (Before Harvest)
315	Animal Welfare/Well-Being and Protection
601	Economics of Agricultural Production and Farm Management

## **Outcome #7**

### **1. Outcome Measures**

Outcome Measure 7. Increase agronomic crop producers ability to understand and assess best management practices. Outcome measure is number of producers adopting change.

### **2. Associated Institution Types**

- 1862 Extension
- 1862 Research

### **3a. Outcome Type:**

Change in Action Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2012	53

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

Alaska imports most of its food supply. 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**

After a potato farmer suffered significant losses due to bacterial ring rot, an agent wrote and distributed a bulletin with prevention recommendations. The Delta Farm Forum offered information about a barley flour mill, cooking with barley and food processing regulations. The Harvest Wrap-Up brought AFES and ARS researchers together with farmers to discuss the past crop season and current and future research. Produce Growers Conference included presentations on weeds, diseases and pesticide resistance. Nutrient and pest management plans were provided to producers associated with EQIP long-term contracts.

#### **Results**

Because there is no known pesticide to control ring rot, the disease is managed through proper sanitation, the use of clean, certified seed and vigilance. A dozen of the state's largest potato farmers in Palmer and Delta Junction indicated that they changed their disinfecting practices as a result of the ring rot publication. Through the EQIP program in Delta Junction, 25 participants applied pesticides and nutrients at the specified rates and were educated in weed identification and soil sampling. Five producers at the Harvest Wrap-up have decreased their use of herbicides based on a study that showed herbicides degrade at a slower rate in Alaska's environment. Produce Growers Conference evaluations showed that eight participants of past conferences said they changed their practices regarding variety choice, pesticides and pest management, soil testing and herbicides.

#### 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 #8

##### 1. Outcome Measures

Outcome Measure 8: 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 Knowledge Outcome Measure

##### 3b. Quantitative Outcome

Year	Actual
2012	410

##### 3c. Qualitative Outcome or Impact Statement

###### **Issue (Who cares and Why)**

Livestock production enterprises in Alaska provide 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 ruminant animals.

#### **What has been done**

CES/AFES livestock specialist taught workshops on nutrition, genetics, lactation, reproduction, herd health and disease in seven Alaska communities. Sixty hours were logged consulting with livestock producers and organizations around the state. CES and AFES organized a Sustainable Livestock Conference attended by 80 livestock producers and processors individuals to increase in-state red meat production. Agents taught six classes to 260 individuals with information about raising chickens and egg production and a DVD on raising egg layers in the winter was created and distributed.

#### **Results**

Participants in the livestock workshops provided ideas on what is needed for livestock research and outreach. Participants in artificial insemination classes in three communities demonstrated knowledge gains with pre- and post-test scores averaging 31 and 72 percent respectively. Pre- and post-test scores for a physiology workshop were 18 percent and 67 percent. Sustainable Livestock Production Conference participants included livestock producers and processors. They developed ideas about how Alaska producers could provide a greater share of the red meat consumed in our state. A team will consider ideas with the goal of developing better teaching, research and outreach efforts. The conference resulted in a follow-up conference in FY13 about grazing management and an advisory group for livestock fiber producers. Participants in chicken classes learned how to provide their own meat and eggs safely.

#### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
307	Animal Management Systems
601	Economics of Agricultural Production and Farm Management

#### **Outcome #9**

##### **1. Outcome Measures**

Outcome Measure 9: Improve commercial and home horticulture best management practices. Measure is number of individuals adopting practices.

##### **2. Associated Institution Types**

- 1862 Extension
- 1862 Research

##### **3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2012	413

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Horticulture is the largest agricultural industry in Alaska amounting to 50 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. Three conferences target industry and home horticulture. Greenhouse and Nursery Conference provided information about fertilizer calibration, growing tips, variety selections and marketing. Sustainable Agriculture Conference highlighted solar greenhouses, community gardening, business strategies and plant varieties. The Peony Growers Conference included marketing ideas, CES and AFES presentations on soil testing, weed control options and updates on the phenology project and other research. Nutrient and pest management plans were provided to horticulturalists associated with EQIP long-term contracts.

**Results**

More than 180 Master Gardeners were trained and practiced the techniques they were taught. Eight months after taking the Anchorage class, all 15 respondents said they had used course information, including new varieties or plants, fertilizer practices and pest management techniques. A dozen participants of greenhouse conference incorporated recommendations on lawn care, fertilization, varietal selection as a result of previous conferences. Sixty-one participants of Sustainable Agriculture conference made changes in fertilization, marketing, pest management, grant writing and weed management as a result of previous conferences. CES worked with 142 high tunnel growers, who were educated in weed identification and soil sampling and improved soil conservation.

**4. Associated Knowledge Areas**

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

## **Outcome #10**

### **1. Outcome Measures**

Outcome Measure 10: Increase producers' knowledge of promising new horticultural crops.  
Outcome measure is number of producers assisted.

### **2. Associated Institution Types**

- 1862 Extension

### **3a. Outcome Type:**

Change in Knowledge Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2012	42

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

Growers in the agricultural non-food sector produce bedding plants, cut flowers, landscape ornamentals and forage. They face many of the same growing challenges as food producers, including a short growing season, cold soils and limited soil fertility. Research and outreach education help growers meet challenges and support new markets. Rhodiola rosea production has the potential of being highly profitable for growers.

#### **What has been done**

Rhodiola rosea is a high-value medicinal plant that is native to Siberia and thrives in cold regions. Its roots are used as an ingredient for sports drinks and in skin care products. Agents provided support to 22 Rhodiola rosea growers with site visits, soil analysis, weed management presentations and grower consultations. Greenhouse and nursery conference participants received information about growing rhodiola and a growers school offered hands-on training with experienced growers and information.

#### **Results**

Rhodiola presentations and grower meetings have contributed to modest beginnings of a new Alaska crop. As of summer 2012, 10 Alaska producers had planted commercial quantities of rhodiola, which has the potential to net a farmer \$25,000 to \$40,000 an acre. During the school, 20 potential rhodiola growers learned about plant and row spacing, weed control and nutrient needs.

### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
102	Soil, Plant, Water, Nutrient Relationships
204	Plant Product Quality and Utility (Preharvest)

205 Plant Management Systems  
213 Weeds Affecting Plants

**Outcome #11**

**1. Outcome Measures**

Outcome Measure 11: Improve and access producers' ability to understand and assess optimum soil. Measure will be workshop participants.

**2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

Year	Actual
2012	24

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Building Alaska Garden Soils project, funded by SARE, was designed to get Alaskans growing food in raised-beds and to motivate and educate local producers by teaching them how to build garden soils from locally available materials. A video, "Building Alaska Garden Soils from the Ground Up," is now a teaching tool that gives AFES and CES the opportunity to provide outreach to villages we don't have the personnel to reach. This is one more step toward food security for our state.

**What has been done**

Research focused on soil improvement methodologies, comparing nutrient availability. Producers in five different locations, representing each "region" of Alaska, built four raised-beds and filled them with locally manufactured soils. Two beds were fertilized with local organic nutrient sources and two beds were fertilized with conventional fertilizer. Using potatoes as an indicator crop, biweekly soil samples were evaluated for nutrient availability and potato yield data was collected. After soil data was analyzed, recommendations for further amendments will be given to the producers so they have a guideline for improving crop yields the following growing season.

**Results**

No longer do producers need to barge soil into the state at great expense. The use of local materials and education both provide a solid foundation for sustainable agriculture in Alaska communities. The research done to determine nutrient values of local materials will help producers throughout the state by identifying sources of important plant nutrients. With assistance from UAF Cooperative Extension Service, soil workshops were held in Angoon and Bethel.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships

#### V(H). Planned Program (External Factors)

##### External factors which affected outcomes

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

##### 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 Fairbanks and Kenai area districts did not have a full-time agriculture and horticulture agent for most of the year so programming has decreased in both areas. The cool, rainy summer led to poor growing conditions and contributed to prime conditions for potato pathogens, which affected some producers' ability to market their products. The weather also contributed to increased pests and the incidence of disease in peonies grown in the Kenai area, resulting in the need for future increased disease management research and education for growers.

Since most basic research has been accomplished in the 48 contiguous states, there is little interest in funding work that benefits only one state. Alaska is a state still in desperate need of basic research. At a time when food security is a national priority and Alaska imports most of its food, it is hard to comprehend the decision to remove USDA's Agricultural Research Service entirely from the state. USDA Agricultural Research service closed in Alaska Spring 2012. The loss of ARS shut a door on a long history of research. According to ARS spokeswoman Sandy Miller-Hays in Washington, D.C., for every dollar spent on agricultural research the country sees a return on investment of \$10. UAF graduate students felt the pinch, as many worked for ARS and were mentored by ARS scientists.

The loss of appropriations through Congressional funds severely delayed the very positive outcomes of the new peony industry. Two remarkable attempts to secure peony research competitive funding failed, even though it had well represented nationwide consortium support and support from the floral industry.

The School of Natural Resources and Agricultural Sciences and the Agricultural and Forestry Experiment Station are going through a reorganization and strategic reassessment. The School of Natural Resources and Agricultural Sciences, the Agricultural and Forestry Experiment Station and the Cooperative Extension Service at UAF will continue to serve the

needs of the citizens of the State of Alaska.

## **V(I). Planned Program (Evaluation Studies)**

### **Evaluation Results**

All of our Extension 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. Greenhouse and Nursery Conference evaluations in 2012 provided information on which presentations the participants found most useful and what information they have used from past conferences. A dozen participants of the greenhouse conference said they had incorporated ideas as a result of previous conferences. Subjects included lawn care, fertilization, use of varieties and plant care.

Sixty-one participants of Sustainable Agriculture conference made changes in fertilization, marketing, pest management, grant writing and weed management as a result of previous conferences. Livestock pre and post-tests demonstrated participants' gains in knowledge. Producers' Conference evaluations showed that eight attendees from previous conferences have used information from the conference. Produce Growers Conference evaluations showed that participants of past conferences said they changed their practices regarding variety choice, pesticides and pest management, soil testing and herbicides.

### **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	20%		0%	
122	Management and Control of Forest and Range Fires	10%		0%	
123	Management and Sustainability of Forest Resources	10%		10%	
131	Alternative Uses of Land	10%		0%	
134	Outdoor Recreation	5%		20%	
403	Waste Disposal, Recycling, and Reuse	0%		5%	
404	Instrumentation and Control Systems	5%		0%	
511	New and Improved Non-Food Products and Processes	0%		5%	
605	Natural Resource and Environmental Economics	10%		20%	
608	Community Resource Planning and Development	15%		10%	
610	Domestic Policy Analysis	5%		20%	
805	Community Institutions, Health, and Social Services	0%		10%	
	<b>Total</b>	100%		100%	

**V(C). Planned Program (Inputs)**

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	4.0	0.0	3.9	0.0
Actual Paid Professional	2.9	0.0	2.4	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
103763	0	172896	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
136240	0	729138	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
890439	0	2315960	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, food security, forest sciences and soil 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 there is a feedback loop that will continue to make the 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, and environmental education to teachers and youth. 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 included:

- Providing standards for Alaska woods.
- Developing non-timber forest products with business entrepreneurs.
- Investigating the fuel potential of Alaska's forests.
- Investigating recreation opportunities and impacts in Alaska's ecosystems.

### 2. Brief description of the target audience

This program focused on industry and entrepreneurs including communities, families, and newly forming cooperatives and businesses, nonprofit 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 needing to increase their skill and/or knowledge level, federal and state agencies.



**3. How was eXtension used?**

The AFES/CES specialist worked on the multistate Cooperative eXtension CoP on climate, forests and woodlands to write eXtension content. The water quality expert chaired the national Drinking Water and Human Health eXtension Community of Practice, which is developing content. One of our agents answers Ask an Expert questions using eXtension and two regularly use the search engine.

**V(E). Planned Program (Outputs)**

**1. Standard output measures**

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Actual</b>	5819	30045	8273	755

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

**Patent Applications Submitted**

Year: 2012  
 Actual: 0

**Patents listed**

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

2012	Extension	Research	Total
<b>Actual</b>	4	9	10

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

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

Year	Actual
2012	43

**Output #2**

**Output Measure**

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

<b>Year</b>	<b>Actual</b>
2012	23

**Output #3**

**Output Measure**

- Output Target 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.

<b>Year</b>	<b>Actual</b>
2012	4

**Output #4**

**Output Measure**

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

<b>Year</b>	<b>Actual</b>
2012	4

**Output #5**

**Output Measure**

- Output Target 5. Develop regional economic models for Alaska resource management scenarios. Output will be models, presentations and publications.  
Not reporting on this Output for this Annual Report

**Output #6**

**Output Measure**

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

<b>Year</b>	<b>Actual</b>
2012	11

**Output #7**

**Output Measure**

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

<b>Year</b>	<b>Actual</b>
2012	2

**V(G). State Defined Outcomes**

**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	Outcome Target 1: Increase and maintain partnerships with stakeholder groups, government agencies, and other institutions that will enhance the land grant mission.
2	Outcome Target 2: Increase the number of integrated and multistate research-extension activities.
3	Outcome Target 3: Increase the recruitment and retention of youth appreciating and considering natural resource management careers.
4	Outcome Target 4: Increase public involvement in natural resource and community development issues. Outcome measure will be the increase in number of communities.
5	Outcome Target 5: Increase community development and economic diversification through tourism. Outcome measure will be number of tourism opportunities and communities impacted.
6	Outcome Target 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 Target 7: Improve natural resource management of outdoor recreation. Measurement is publications, presentations or project reports.

## **Outcome #1**

### **1. Outcome Measures**

Outcome Target 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 Extension
- 1862 Research

### **3a. Outcome Type:**

Change in Action Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2012	64

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

Of the 375 million acres of land in Alaska, 44 million are Native lands, 101 million are state lands, and 218 million are federally managed. Approximately 12 million acres are privately owned. AFES seeks to provide 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 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 partnerships for CES included the Alaska Energy Authority, the U.S. Forest Service, Alaska Division of Forestry, the UA Center for Economic Development and Alaska Sea Grant. CES organized the 2012 Alaska Wood Energy Conference for the energy authority and coordinates its Wood Energy Development Task Group. AFES partners included Alaska Energy Authority, the U.S. Forest Service, Alaska Division of Forestry, the UA Center for Economic Development and Alaska Sea Grant. CES organized the 2012 Alaska Wood Energy Conference for the energy authority and coordinates its Wood Energy Development Task Group. AFES partnered with master log home builders, AK Dept of Forestry, University of Washington's Center for International Trade and Dept of Civil and Environmental Engineering, University of Idaho-Inland Empire, Poppert Mill Industry and the Alaska Valley Arts Alliance.

#### **Results**

The wood energy task group explores opportunities to increase the utilization of wood for energy. The wood energy conference, which occurred during the FY13 year, brought multiple agencies, individuals and organizations together to consider community use of wood biomass. Sea Grant's Alaska Center for Ocean Science Education Excellence supported CES salmon and science

literacy training to 18 educators at a three-day in-service. Participants in a cooperative development workshop hosted by CES and the UA Center for Economic Development heard from a variety of successful cooperatives and online cooperatives.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
123	Management and Sustainability of Forest Resources
134	Outdoor Recreation
605	Natural Resource and Environmental Economics
608	Community Resource Planning and Development
610	Domestic Policy Analysis

#### Outcome #2

##### 1. Outcome Measures

Outcome Target 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
2012	10

##### 3c. Qualitative Outcome or Impact Statement

###### **Issue (Who cares and Why)**

The geographic isolation of Alaska and the expense traveling elsewhere present challenges to maintaining multistate relationships. 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 will strengthen our ability to assist Alaskans. Integrated activity between AFES researchers and Extension personnel provide the best possible information for stakeholders in the unique environment of our state.

###### **What has been done**

AFES/CES specialist 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, she is a member of the ANREP initiative on climate science. An agent worked with the University of Minnesota and ESRI to develop a virtual field trip for 4-H'ers. 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 to revise a community development handbook.

**Results**

A partnership with a Palmer arts alliance led to a OneTree program, a birch tree crafted into artwork with 20 artists. A large display on the project drew many visitors at the state fair and the Palmer fair. Forest outreach included a birch tapping workshop and youth outreach. Water quality coordination work shares information among participating Western states and the public. The community development handbook is used with tourism workshops and in a rural development class in Alaska and with tourism and community development seminars in Missouri. Details about the virtual trip are included in Outcome 6. Agent's work with the climate initiative led to a working group to consider regional outreach priorities.

**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
608	Community Resource Planning and Development

**Outcome #3**

**1. Outcome Measures**

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

**2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

Year	Actual
2012	8

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Young people who are introduced to natural resource issues through an organization or agency in their community are more likely to consider natural resource careers.

**What has been done**

The School of Natural Resources & Agricultural Sciences is one of two schools at UAF participating in the Peace Corps Master's International Program (PCMIP). This program provides an opportunity to integrate graduate study with international development practice through Peace Corps field experience in natural resources management or rural development. The program of study is designed to meet individual student needs while taking into consideration the degree requirements and the needs of the Peace Corps host country.

**Results**

Since 2004, eight graduate students have participated in the PCMIP. Three have completed their tour and university studies. They will or have served in El Salvador, Paraguay, Fiji, The Gambia, Ghana, and Honduras. A new opportunity is the Paul D. Coverdell Fellows Program which provides stipend and tuition to a returning Peace Corps volunteer. Our current fellow completed his tour in Mali. These highly competitive programs provide a full stipend with tuition. Stories of the volunteers can be found at the SNRAS/AFES blog <http://snras.blogspot.com/2012/11/snras-welcomes-first-peace-corps-fello.html>. See articles on October, 31, 2011, November 8, 2011, February 22, 2012, and February 27, 2012.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
122	Management and Control of Forest and Range Fires
123	Management and Sustainability of Forest Resources
131	Alternative Uses of Land
403	Waste Disposal, Recycling, and Reuse
608	Community Resource Planning and Development

**Outcome #4**

**1. Outcome Measures**

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

**2. Associated Institution Types**

- 1862 Research

**3a. Outcome Type:**

Change in Action Outcome Measure

### 3b. Quantitative Outcome

Year	Actual
2012	0

### 3c. Qualitative Outcome or Impact Statement

#### Issue (Who cares and Why)

Environmental conservation is a local, regional and global concern. The changes in Namibia are providing inspirations to land managers around the world and in Alaska.

#### What has been done

A recent sabbatical spent in Namibia has broadened understanding of similarities between village corporations and conservancies. Prior to independence Namibians were not allowed to hunt so that poaching had destroyed much of the wildlife. There have been conflicts between hunters in Alaska and villagers concerning use of their lands. A few corporations are running lodges and ecotourism businesses and at least one has an agreement with a professional guide to bring clients onto their land. Introduction of plains and wood bison as well as official permission to harvest moose for funeral potlatches are examples of similar approaches that may be successful examples of conflict resolution.

#### Results

Trophy hunting is not well regarded in most villages in interior Alaska, but in Namibia trophy hunting has proven to have advantages over regular tourism. Hunters are also willing to endure many hardships that regular tourists do not expect to encounter. Hunters do not expect four star accommodation or gourmet cooking. Hunting is less sensitive to changes in the economy, while traditional tourism is vulnerable to even the slightest recession.

### 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
131	Alternative Uses of Land
608	Community Resource Planning and Development

### Outcome #5

#### 1. Outcome Measures

Outcome Target 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

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

Year	Actual
2012	5

**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 its 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**

CES worked to promote tourism in rural Alaska. Staff met with a Prince of Wales visitors committee to promote tourism on the island and CES agent met with Forest Service in Wrangell to discuss climate change and its effects on migratory birds and birding tourism. Cultural host training in Anchorage provided participants with an increased awareness of remote, rural Alaska. The training is designed to benefit the tourism or hospitality industry, teachers and others who work and travel in rural Alaska. A cultural tourism exchange of Japanese to two Alaska communities was based on the stories of early Japanese in Alaska.

**Results**

A 2011 tourism summit succeeded in attracting two small cruise lines to the Prince of Wales Island. One cruise line began once-a-week stops in Klawock and at El Capitan in 2011, and the second cruise line made stops in Kasaan and Thorne Bay in 2012. The cruise line additions provided indirect economic benefits to the communities. Cultural host training increased cultural sensitivity and customer service skills among individuals who work in rural Alaska. Materials developed for the workshop were used in training in four Alaska communities in 2013 FY. Cultural exchange workshops with tourists from Japan visiting Tanana and Anchorage, involved 259 participants, including youth and elders, who exchanged dances and traditions. The exchange brought cultural and economic benefits to two communities.

**4. Associated Knowledge Areas**

KA Code	Knowledge Area
134	Outdoor Recreation
605	Natural Resource and Environmental Economics
608	Community Resource Planning and Development

**Outcome #6**

**1. Outcome Measures**

Outcome Target 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
2012	1019

**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 presentations to students and teachers use the Alaska boreal forest as the basis for learning. CES hosted a classroom salmon incubation project in-service for 18 rural teachers that provided science curriculum and training to run the classroom project. Due to partnership with the University of Minnesota and the Environmental Systems Research Institute (ESRI,) agent developed a virtual field trip for 4-H'ers as he climbed the Western Hemisphere's tallest mountain, Aconcagua. Youth used GIS software to track his progress in real time.

**Results**

Thirty teachers and 19 students were reached in Project Learning Tree presentations. Through hands-on activities, the program trained educators to show students to how to think about complex environmental issues. We know from many teachers who have taken the training twice that they are using it in their classroom. Thirty-five to 40 schools participate annually in the classroom salmon incubation program, which provides a culturally relevant science curriculum to more than 1,200 students. 971 4-H'ers participated in the virtual field trip, viewing data from the agent's GPS beacons and online GIS websites with high-resolution photography. The program was featured at the International GIS Education Conference in San Diego and at the national 4-H conference as a way to promote learning about GPS/GIS software among youth.

**4. Associated Knowledge Areas**

KA Code	Knowledge Area
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112	Watershed Protection and Management
134	Outdoor Recreation
404	Instrumentation and Control Systems
608	Community Resource Planning and Development

**Outcome #7**

**1. Outcome Measures**

Outcome Target 7: Improve natural resource management of outdoor recreation. Measurement is publications, presentations or project reports.

**2. Associated Institution Types**

- 1862 Research

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2012	3

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Research exploring the link between recreation and human well-being has resulted in many advances in recreation management. While our understanding of this has evolved substantially in recent years and management frameworks such as OFM can guide agencies in managing for human well-being, there is still a need to refine our understanding of the relationship between recreation and human well-being and for region-specific studies regarding the benefits of recreation to guide management efforts.

**What has been done**

Several graduate students, in collaboration with the researcher and BLM and the U.S. Forest Service, participated in data gathering. The manuscript resulting from the research provided documentation of which areas might be better suited to provide certain outcomes, resulting in a stronger scientific basis for the RMP. The WMNRA analysis will lead to change in action related to how beneficial outcomes associated with outdoor recreation are measured.

**Results**

Participation in the coordinating committee NECC1011 led to participation in the multistate research project NE1962. This partnership has clarified and strengthened research in Alaska. The results of the 2011 Steese Highway Corridor study resulted in a change of knowledge for BLM planners. The BLM is currently developing a Resource Management Plan (RMP) for the EIFO. As part of the RMP, the BLM must identify outcomes related to community well-being and resilience to be targeted at specific sites within areas they manage. The analysis of the open-ended ARSP

data has provided new insights into differences in perspectives on natural resource management between long-term residents of an area and newer residents which resulted in a change of knowledge with the expectation that it will lead to a change in action in the near future.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
134	Outdoor Recreation

#### 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 drought, which has reduced tree growth and made the forests susceptible to insect predation and forest fire. All communities are struggling with the high price of fuel, and state government wrestles with a burgeoning budget and the drop in oil production. Long distances between rural communities not on a road system and accessible 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.

The School of Natural Resources and Agricultural Sciences and the Agricultural and Forestry Experiment Station are going through a reorganization and strategic reassessment. The School of Natural Resources and Agricultural Sciences, the Agricultural and Forestry Experiment Station and the Cooperative Extension Service at UAF will continue to serve the needs of the citizens of the state of Alaska.

#### V(I). Planned Program (Evaluation Studies)

##### Evaluation Results

Participants in Palmer and Nome mining workshops filled out evaluations. All 15 Palmer participants said the workshop content was either good or excellent and found the content useful. Twelve of 15 participants planned to pursue a prospecting certificate. In the Nome prospecting class, all of the 11 participants thought the workshop content was good or excellent. Five indicated that they would pursue a prospecting certificate.

Teachers participating in the salmon incubation project in-service rated the change in

their knowledge, ideas and skills on a scale from 1 to 5. They rated the workshop at 4.8 overall and 4.7 for increases in their knowledge and skills. Responses averaged between 4.4 and 4.8 for all topic areas, and topics related to salmon incubation and rearing skills rated on average from 4.6 to 4.8.

The 59 legislative process workshop participants in Anchorage and Bethel) were asked whether the workshop met objectives. Their responses ranged from 3 to 5 on a 1-5 highest (5-highest). Participants included Chamber of Commerce members, co-op members and local government representatives. Comments ranged from "cleared up misconceptions on how the process works" to helped to "cultivate strategic thinking."

The outdoor recreation project uses surveys that produce data requested by the National Park Service. It has resulted in a change of knowledge.

### **Key Items of Evaluation**

**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%	
	<b>Total</b>	100%		100%	

**V(C). Planned Program (Inputs)**

**1. Actual amount of FTE/SYs expended this Program**

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	7.5	0.0	0.0	0.0
Actual Paid Professional	7.4	0.0	0.8	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
268029	0	11907	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
351953	0	50216	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
2300300	0	25811	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?

Two of our agents use the Just in Time parenting series as a resource for parents. Two have looked up information on emergency preparedness and another on child development. Three agents have been involved with communities of practice in the areas of parenting, energy and finance. One agent participated in a training on cross-cultural differences.

**V(E). Planned Program (Outputs)**

**1. Standard output measures**

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Actual</b>	13172	824874	3824	43414

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

**Patent Applications Submitted**

Year: 2012  
 Actual: 0

**Patents listed**

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

2012	Extension	Research	Total
<b>Actual</b>	1	0	0

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

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

Year	Actual
2012	192

**Output #2**

**Output Measure**

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

Year	Actual
2012	3



**Output #3**

**Output Measure**

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

<b>Year</b>	<b>Actual</b>
2012	21

**Output #4**

**Output Measure**

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

<b>Year</b>	<b>Actual</b>
2012	68

**Output #5**

**Output Measure**

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

<b>Year</b>	<b>Actual</b>
2012	2

**Output #6**

**Output Measure**

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

<b>Year</b>	<b>Actual</b>
2012	76

**Output #7**

**Output Measure**

- Output Target 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.

<b>Year</b>	<b>Actual</b>
2012	200

**Output #8**

**Output Measure**

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

<b>Year</b>	<b>Actual</b>
2012	493

**Output #9**

**Output Measure**

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

<b>Year</b>	<b>Actual</b>
2012	9

**V(G). State Defined Outcomes**

**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	Outcome Target 1: Participants in healthy lifestyle classes and workshops will adopt knowledge gained to maintain healthy lifestyle practices one year after participation.
2	Outcome Target 2: Participants will use knowledge gained in parent education classes to increase their application of developmentally appropriate practices.
3	Outcome Target 3: Awareness gained in workshops and will result in active energy conservation efforts by 20% each year over 2007 levels.
4	Outcome Target 4: Energy efficiency awareness will result in an increase in collaborations for energy conservation by 25% per year over five years.
5	Outcome Target 5: Participants will increase their knowledge about improving healthy home conditions, including indoor air quality.
6	Outcome Target 6: Participants in food preservation and food safety classes will improve their food preservation and food safety practices.
7	Outcome Target 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 Target 8: Increase youth and parents' understanding of healthy food choices. Counting contacts with youth and parents.
9	Outcome Target 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 Target 10: Increase knowledge, attitudes, skills and aspirations to increase physical activity habits. Counting number of youth.

## **Outcome #1**

### **1. Outcome Measures**

Outcome Target 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**

<b>Year</b>	<b>Actual</b>
2012	382

### **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 205 StrongWomen instructors in Alaska. Thirty-four new instructors were trained in 2012. Three agents led StrongWomen classes or hosted groups and another agent led a yoga class. Our Anchorage agent trained 60 new instructors of Living Well Alaska, a program that teaches individuals how to manage chronic health conditions. Two agents 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. More than 325 participants attended 22 groups and 302 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, 310 Living Well leaders have been trained and have reached more than 2,000 seniors and others with chronic health conditions. A small clinical study done in Alaska shows that this type of self-management education produces better or equivalent results to traditional diabetes self-management education. National evaluations also show benefits such as better pain management, increased physical activity and better depression management. Participants in one Healthy Hearts program lost an average of 3 pounds and decreased their BMI by 1.5, increased their fruit and vegetable intake and their activity level. Half of the participants in a second class decreased their systolic

blood pressure an average of 18 points.

#### 4. Associated Knowledge Areas

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

#### Outcome #2

##### 1. Outcome Measures

Outcome Target 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
2012	93

##### 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 has an ongoing relationship with a day-care center in the community, providing training and support for staff to achieve their childhood development degree. She taught five classes and observed classroom work. A Palmer agent taught a series of positive parenting classes to Head Start parents and individual classes to parents in two other settings. Nebraska Extension agents planned to conduct further parent education training with Alaska agents in December 2012. The training is aimed at families of deployed soldiers.

###### **Results**

Workers in the Nome child care center received training to further their education and to provide better care. Several participants reported using skills they had learned in the child-care center. Head Start parents in Palmer liked the class so much that they requested the program again next

year. On evaluations, Head Start participants said they learned different ways to handle difficult situations and to step away before correcting their children. Participants planned to communicate better, try new strategies they learned and to reword how they say things.

#### 4. Associated Knowledge Areas

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

#### Outcome #3

##### 1. Outcome Measures

Outcome Target 3: Awareness gained in workshops and will result in active energy conservation efforts by 20% each year over 2007 levels.

##### 2. Associated Institution Types

- 1862 Extension

##### 3a. Outcome Type:

Change in Knowledge Outcome Measure

##### 3b. Quantitative Outcome

Year	Actual
2012	619

##### 3c. Qualitative Outcome or Impact Statement

###### **Issue (Who cares and Why)**

Alaska historically has had some of the highest energy prices. 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**

Sustainability coordinator has promoted energy conservation through a newsletter aimed at homebuilders that is e-mailed quarterly to about 500 people. The agent taught 14 solar design, housing retrofit and cold climate homebuilding classes or related lectures to 476 residents in six communities. The agent recorded his cold climate course and it was made available on iTunes University. Bethel has some of the highest energy costs in the state, and an agent developed and published a home electricity audit publication with input from his energy advisory committee.

###### **Results**

As a result of newsletter and the other solar design, housing retrofit and cold climate homebuilding techniques classes, participants increased their knowledge about how to build or

retrofit their homes to increase energy conservation. Getting numbers from iTunes University is difficult, but 50 people viewed the cold-climate course during a 10-day period, so it is likely that hundreds of viewers have viewed the course. Nearly 800 copies of the energy audit publication have been distributed.

#### 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 Target 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
2012	9

##### 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**

A joint presentation with a tribal energy specialist at an Alaska Native shareholders conference in Nome increased the knowledge of participants about current products that are less-expensive energy sources for remote camps. As a result of a collaboration with Interior Weatherization, the agent, for the first time, offered an intensive weeklong training involving his three energy courses to 38 attendees. The American Lung Association collaboration led to a training on how to make a building energy-efficient without making it unhealthy.

###### **Results**

The Nome training has led to a new and continuing relationship with a Native corporation and with the tribal energy specialist. This has extended to a regular offering in remote energy, which has

been favorably received in rural and urban workshops. Offering classes in collaboration with the Interior Weatherization led to a successful new outreach. Staff of the lung association was trained on the factors that are important in making a well-informed decision on keeping a house tight but healthy. Alaska Native Tribal Health Consortium works with a regional health corporation to target at-risk children and do indoor air quality interventions in their homes, such as adding ventilation or replacing leaking wood stoves. Agent participates in an advisory role.

#### 4. Associated Knowledge Areas

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

#### Outcome #5

##### 1. Outcome Measures

Outcome Target 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
2012	424

##### 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. Managing air can also protect the physical structure of the home.

###### **What has been done**

An agent developed a curriculum that prioritizes and 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 have been delivered at large health conferences around the state as well as smaller, focused trainings.



### 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 Alaskan homes. Through this work, the knowledge of indoor air quality and its relationship to human health, has been increased for a wide audience.

### 4. Associated Knowledge Areas

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

### Outcome #6

#### 1. Outcome Measures

Outcome Target 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
2012	839

#### 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 food security.

##### What has been done

Agents taught 76 food preservation and food safety classes in 17 communities. Of those, 70 were hands-on classes in which 839 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 804 pressure canner gauges with an average 19 percent failure rate. Nearly 65 percent of tested gauges required adjustment.

### Results

Clients who practice hands-on food preservation skills will be able to continue to preserve foods safely. A survey sent to 42 food preservation participants 7 to 12 months after classes were offered, showed that half of the respondents said they were very confident in their ability to preserve foods safely and 43 percent said quite confident. Seventy-one percent had processed food for shelf storage. Participants felt more confident using the pressure canner and were more precise with timing. Approximately 152 pressure canner gauges were recommended to be replaced and about 520 required adjustment, resulting in safely canned foods. Flash web modules reached users who may not have access to food preservation classes. Ninety-nine users have filled out surveys. Eighty-nine percent said they planned to use the information and 77 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
502	New and Improved Food Products
504	Home and Commercial Food Service

## Outcome #7

### 1. Outcome Measures

Outcome Target 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
2012	2

### 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 Fairbanks school district's central kitchen and the Farm to School program to modify the district's recipe for hamburger buns and rolls to incorporate flour milled from Alaska-grown hulless barley, which was developed by AFES. CES and Farm to School also collaborated on other recipes for food service professionals, including locally grown microgreens and salmon burgers. CES also did pH testing of products developed by three food producers and developed seven nutrition labels requested by businesses.

**Results**

School districts' ability to use Alaska-grown foods in their breakfast and lunch programs have increased. The Fairbanks school district started making the rolls and buns last fall and expects to buy 2,000 to 2,500 pounds of barley flour milled from the hulless barley during the school year. The new market is expected to increase the producer's sales by \$1,200 to \$1,500. The addition of barley helped the school meet new federal school nutrition guidelines for whole grains and the students haven't noticed any change. The school district is considering the addition of microgreens in the salads it offers. The salmon burger recipe was made available to school districts. Nutrition labels brought producers into compliance with the FDA food-labeling guidelines.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
502	New and Improved Food Products
504	Home and Commercial Food Service

**Outcome #8**

**1. Outcome Measures**

Outcome Target 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**

<b>Year</b>	<b>Actual</b>
2012	5392

**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 are 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**

Family meals presentation emphasized the importance of eating healthy foods in a pleasant environment. Nutrition educators presented USDA-approved Show Me Nutrition in multipart programs in 30 classrooms in Palmer, Bethel, Fairbanks, Tok and Anchorage. Adults in those communities also received nutritional and food budgeting programs in several community venues. Agents provided nutrition information on the MyPlate method to elementary students and classes on cooking with whole grains.

#### **Results**

Nutrition educators with the Alaska Nutrition Education Program (SNAP-Ed) presented nutrition education programs that reached 2,514 youth and 2,765 adults. Feedback from agencies and participants has been very positive. Students in eight classrooms were given a pre- and post-tests on concepts related to MyPyramid and MyPlate. Seven out of eight classrooms surveyed showed an improvement in the percentage of students answering all five questions correctly in the post-test. Students in one classroom said that prior to the program, 29 percent had not eaten vegetables the day before and 47 percent had never read food labels. After the program, those totals dropped to 20 percent and 15 percent. Our data should be better next year because every educator began using the EFNEP pre/post surveys in October 2012 with adults and in January with youth.

#### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
703	Nutrition Education and Behavior
724	Healthy Lifestyle

#### **Outcome #9**

##### **1. Outcome Measures**

Outcome Target 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
2012	2771

### 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

Agent provided training on the importance of eating as a family and providing healthy food choices. Nutrition and hands-on food preparation classes offered training on making yogurt, and preparing and serving whole grains. Our Alaska Nutrition Education Program (SnapEd) teaches individuals who are eligible for food stamps how to eat healthy on a budget. Educators offer 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 adults on hands-on cooking skills on how to prepare nutritious meals on a lean budget. Again, we will have better data from nutrition educators in the FY13 report.

### 4. Associated Knowledge Areas

KA Code	Knowledge Area
504	Home and Commercial Food Service
703	Nutrition Education and Behavior
801	Individual and Family Resource Management

### Outcome #10

#### 1. Outcome Measures

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

#### 2. Associated Institution Types

- 1862 Extension
- 1862 Research

### 3a. Outcome Type:

Change in Knowledge Outcome Measure

### 3b. Quantitative Outcome

Year	Actual
2012	91

### 3c. Qualitative Outcome or Impact Statement

#### Issue (Who cares and Why)

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.

#### What has been done

Ninety-one Alaska Native youth in seven sites were engaged in physical activities and nutrition lessons provided or arranged by 10 mentors. Activities ranged from breakdancing, improv, martial arts, dog mushing, skijoring and classes on energy drinks, hydration and healthy snacks. As part of a multistate Children's Healthy Living Program grant, CES/AFES nutrition specialist and team designed research protocols, and conducted a pilot study measuring physical activity monitoring equipment with 2-5-year-old children, held community planning meetings and defined the larger research project. Community assessment toolkits and food and physical activity logs for parents were developed. A social marketing program is being developed to decrease consumption of sugar-sweetened beverages among children ages 2 to 8.

#### Results

Teachers and parents reported positive behavioral outcomes in the Native youth of the martial arts program, including improvement in listening, decreased disruptive behaviors and overall more positive social interactions with peers and adults. Evaluation of the programs through surveys has proved difficult because of cultural challenges. It has also been difficult to recruit community mentors to coordinate activities but work continues in that area. A volunteer martial arts instructor from California planned to return to a village to continue martial arts training in October 2012, along with two additional volunteers. The communities were supportive of activities involving their youth. Little outreach had been completed in the Children's Healthy Living Program grant but obesity intervention programs are planned for 2013, so it is too early for results for the program, but the goal is to build environments that will promote active play and promote healthy foods to prevent young child obesity.

## 4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior

**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 Home, Health and Family Development Program staff in Alaska is small with six agents in district offices and a specialist at the state office. This translates into agents covering large geographic areas. The Tanana District in the Interior includes an area the size of the state of Montana with one agent on staff to cover the entire area and other districts are huge. 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 unable to travel as often as requested.

Staff vacancies have been an issue. The position in Juneau was filled in FY13 after being vacant for 2.5 years. The energy specialist position was empty for part of FY12 but the former agent filled in while balancing another Extension job as sustainability coordinator. 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 have been able to fill some of the positions this past year. In September of 2012, we had four 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.

- Evaluations with a StrongWomen Healthy Hearts program were part of a research

project so follow-up evaluations were built into the program. Over the 12-week course, participants in one community lost an average of 3 pounds, decreased their BMI by 1.5 points, increased their vegetable and fruit intake by two servings, decreased the amount of time they spent sitting and increased the minutes they spent moving. Half of the participants in another community decreased their systolic blood pressure by an average of 18 points. A survey is being developed to gauge the women's changes a year or more after the program ends.

- 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. About one-third of those contacted answered the survey. Of those, 93 percent felt very confident or quite confident in their ability to preserve foods safely.

- 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). Ninety-one individuals have filled out online surveys for the modules, giving us an idea of how effective the modules are.

### **Key Items of Evaluation**

Evaluation for outcomes is an ongoing challenge. Extension has an evaluation specialist who started work in the fall of 2012 and our agents are working with her to better evaluate their programs.



**V(A). Planned Program (Summary)**

**Program # 4**

**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%	
	<b>Total</b>	100%		0%	

**V(C). Planned Program (Inputs)**

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	8.5	0.0	0.0	0.0
Actual Paid Professional	6.8	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
242091	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
317893	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
2077691	0	0	0

**V(D). Planned Program (Activity)**

1. Brief description of the Activity

- Collaborated with other youth-serving agencies and organizations
- Collaborated with Alaska Native associations
- Trained volunteers, teachers and after-school providers
- Collaborated with military installations, National Guard and Reserve
- Conducted workshops, contests, forums and camps
- Utilized distance technology and social media
- Supported life skill development of youth through experiential learning in science, healthy living and citizenship
  - Offered experiential learning activities at the local, state, regional and national levels

**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?**

Two agents have consulted eXtension for horse-related information and given it out to 4-H parents and 4-H'ers as a resource.

**V(E). Planned Program (Outputs)**

**1. Standard output measures**

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Actual</b>	8650	92053	25404	39451

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

**Patent Applications Submitted**

Year: 2012  
 Actual: 0

**Patents listed**

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

2012	Extension	Research	Total
Actual	0	0	0

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

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

Year	Actual
2012	167

**Output #2**

**Output Measure**

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

Year	Actual
2012	20

**Output #3**

**Output Measure**

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

Year	Actual
2012	25

**Output #4**

**Output Measure**

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

Year	Actual
2012	35

**Output #5**

**Output Measure**

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

<b>Year</b>	<b>Actual</b>
2012	18

**V(G). State Defined Outcomes**

**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	Outcome Target 1: 100% of faculty and staff associated within the program area will understand the Essential Elements of Youth Development
2	Outcome Target 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 Target 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 Target 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**

<b>Year</b>	<b>Actual</b>
2012	15

### **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 biennial state volunteer leader 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 Tanana District club leader received the National 4-H Salute to Excellence Award in October 2012, the third Alaska leader in four years to be recognized with this award. The leader runs a thriving horse club, has involved the community with her activities and she volunteers at district and state levels. She has made a difference in the lives of youth in her community and has been recognized among her peers and Extension staff across the nation for her leadership.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

#### Outcome #2

##### 1. Outcome Measures

Outcome Target 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
2012	191

##### 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 high school senior said 4-H has given her the setting for her confidence to grow. She shared her experience with younger 4-H'ers at a horse camp in Fairbanks. A Kenai 4-H'er said she has learned livestock skills and personal responsibility in 4-H while taking care of her market animal. Filling out record books made filling out college applications easier for her. A group of Kenai teenagers demonstrated generosity and strong community connection for their work bringing attention to the toxic levels of fecal E. coli occurring on public Kenai beaches as a result of waste

left behind by salmon dip-netters. 4-H'ers volunteer in many ways that build responsibility and a sense of belonging in their community and state. Overall, 1154 adult volunteers in 2012 provided opportunities for engagement of all kinds, from gardening to science programming. 4-H also reported 374 youth volunteers.

#### 4. Associated Knowledge Areas

<b>KA Code</b>	<b>Knowledge Area</b>
806	Youth Development

#### Outcome #3

##### 1. Outcome Measures

Outcome Target 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
2012	20

##### 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, nutrition education and activities. An in-service training coordinated by Extension trained 18 rural teachers on a classroom salmon incubation project. 4-H and the City of Bethel operate a youth center, which offers hands-on opportunities. Also, an agent instructed teachers at low-income Anchorage schools how to use 4-H curriculum to develop budget after-school robotics programs.

###### **Results**

Our rural outreach has led to more programming for youth. One-fifth of 4-H participants lived in remote, rural Alaska, and nearly 18 percent overall were Alaska Native or American Indian. The



fitness program has resulted in some behavior changes. The mentor in one village reported of the 15 regular attendees in his martial arts class, all but two showed improvement in punctuality, participation and respect toward others. As a result of our mentoring program, an agent spearheaded a multistate effort to develop a tribal 4-H program that addresses cultural differences in program content, approach and goals. The salmon incubation project showed teachers how to raise salmon in their classrooms and improve math and science literacy with culturally relevant lessons. More than 110 community schools have participated in the project since 1992. Youth who attend the Bethel youth program have a safe haven, something to eat and drink, and caring youth and adults interact with them. The robotics training has a potential to reach 1,500 students in low-income schools.

#### 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. 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 tech, especially in 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

In response to an identified need to collect and analyze data more effectively to package program outcomes for stakeholders, we have purchased an online evaluation system from Washington State University and some agents are incorporating this component in programming.

4-H offers post-activity surveys for almost all 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 completed by the mentor showed that of the 15 regular attendees, all but two showed significant improvement in punctuality, participation and respect towards peers and adults.
- Teachers participating in the salmon incubation project in-service rated the change in their knowledge, ideas and skills on a scale from 1 to 5. They rated the workshop at 4.8 overall and 4.7 for increases in their knowledge and skills. Responses averaged between 4.4 and 4.8 for all topic areas, and topics related to salmon incubation and rearing skills rated on average from 4.6 to 4.8.
- 4-H leaders were surveyed following an online "cyber summit" training. Of the 11 who responded to the evaluation, 91.7 percent said they were favor the online training for workshops and 83.3 percent thought it would be a good way to host meetings.
- After robotics training with adults in Anchorage, Kenai and Fairbanks, evaluations showed that 10 of 13 respondents in Anchorage agreed or strongly agreed that the training had prepared them adequately to present robotics content to youth. In Kenai, 24 of 27 respondents felt the same way. The majority of respondents said they learned how to help students apply the engineering design process and about half the participants in Anchorage and one-third of the participants in Kenai planned on starting a new robotics club.
- Pre and post-program surveys with participants in the Youth in Government show that, after the program, all nine participants felt they had a voice in government. Six felt they knew the governmental process. Participants also felt they listened better and had more control over attaining their own goals.

## 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-Hers participated in an exchange to Japan. Travel is also expensive in state but during the past five years, 68 youth and adults have traveled to Juneau with the Youth in Governance Program to attend legislative committee meetings, be pages for the day and meet with legislators. Despite the distances between districts, youth still participate in state livestock and horse contests. Some travel outside has also occurred. All of the above paid for their own way by fundraising, scholarships or personal funds. Programming will soon be offered to Native youth in the Bristol Bay region. Planning and organizational work led to the creation of a new tribal educator position in Dillingham, which will be filled in FY13. The position is supported by the regional Native association.

**V(A). Planned Program (Summary)**

**Program # 5**

**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%		20%	
102	Soil, Plant, Water, Nutrient Relationships	0%		20%	
122	Management and Control of Forest and Range Fires	15%		20%	
123	Management and Sustainability of Forest Resources	50%		30%	
132	Weather and Climate	15%		0%	
605	Natural Resource and Environmental Economics	10%		10%	
	<b>Total</b>	100%		100%	

**V(C). Planned Program (Inputs)**

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	1.0	0.0	11.4	0.0
Actual Paid Professional	0.4	0.0	7.8	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
17292	0	40419	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
22707	0	170455	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
148406	0	1731190	0

**V(D). Planned Program (Activity)**

**1. Brief description of the Activity**

Research and outreach is primarily carried out through the Agricultural and Forestry Experiment Station located at the University of Alaska Fairbanks. Strategies for research included annual updating databases and management systems for:

- Forest stand characterization of the Alaska boreal and coastal rain forest.
- Long-term ecosystem monitoring and GIS modeling of the boreal forest dynamics.
- Discovery of and complete predictive relationships between weather factors and growth of climate sensitive forest species in Alaska.
  - Remote sensing to investigate temporal patterns of vegetation indexes in boreal Alaska.
  - University of Alaska Forest
  - Photo monitoring of major changes in the boreal forest due to climate change
  - Wood biomass in a changing environment.

High latitude soil research concerned:

- Chronic soil moisture stress in northern forest soils in boreal regions in relation ecosystem function and carbon balance.
- Soils characterization for agricultural crop production.
- Characterization of hydric soils impacted by volcanic ash deposits.

Education and outreach activities include workshops, classes, publications and presentations concerning:

- Correlating land-based information 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 and ecosystems
- Improving STEM teaching and learning outcomes

**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 natural resources that will benefit all citizens and help them adapt and become resilient as the climate changes. Advisors and the target audience

include: Alaska Forest Association, Society of American Foresters, and the Alaska Northern Forest Cooperative. 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, Alaska Division of Forestry, borough governments, and Alaska Native corporations.

**3. How was eXtension used?**

eXtension was not used in this program

**V(E). Planned Program (Outputs)**

**1. Standard output measures**

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Actual</b>	313	20000	25	0

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

**Patent Applications Submitted**

Year: 2012  
 Actual: 0

**Patents listed**

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

2012	Extension	Research	Total
<b>Actual</b>	0	13	13

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

- Output Target 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.

<b>Year</b>	<b>Actual</b>
2012	5

**Output #2**

**Output Measure**

- Output Target 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.

<b>Year</b>	<b>Actual</b>
2012	0

**Output #3**

**Output Measure**

- Output Target 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.

<b>Year</b>	<b>Actual</b>
2012	0

**Output #4**

**Output Measure**

- Output target 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.

<b>Year</b>	<b>Actual</b>
2012	0

**Output #5**

**Output Measure**

- Output Target 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.

<b>Year</b>	<b>Actual</b>
2012	0

**Output #6**

**Output Measure**

- Output Target 6. Research related to product development to include timber products and non-timber products including energy will continue. Forest management specific to fuel/energy demand will be initiated. Measureable outputs will be publications and business starts.

<b>Year</b>	<b>Actual</b>
2012	0

**Output #7**

**Output Measure**

- Output Target 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.

<b>Year</b>	<b>Actual</b>
2012	0

**V(G). State Defined Outcomes**

**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	Outcome Target 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 Target 2. Increase animal producer and wildlife manager knowledge on range use and animal impact. Measurable outcomes are publications, workshops, and conferences.
3	Outcome Target 3. Increase knowledge through classroom and field course delivery. The outcome measures will be curricula delivered and number of students reached.
4	Outcome Target 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 Target 5. Provide research information that leads to product development and recreational opportunities. Outcome measures will be publications, business starts, conferences, and workshops.
6	Outcome Measure 6: To increase knowledge for land owners and managers. Measures are databases, inventories, presentations and consultations.



## **Outcome #1**

### **1. Outcome Measures**

Outcome Target 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**

<b>Year</b>	<b>Actual</b>
2012	8

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

As climate changes, both the history and morphology of soil data becomes increasingly important. Agency personnel at USDA NRCS, USGS, U.S. Fish and Wildlife, the Alaska Science Center and Louisiana State University, as well as international collaborators, are interested in Alaska soil data, especially in terms of hydric soils indicators in some problem areas.

#### **What has been done**

Soil morphological properties are described and evaluated according to the National Cooperative Soil Survey standards and classified accordingly in the Soil Taxonomy. Hydric (wet) soils from areas impacted by volcanic ash deposits under mixed forest in Southcentral Alaska and tundra vegetation in the Aleutian Islands were analyzed with a portable spectrometer.

#### **Results**

The Portable X-ray Fluorescence Spectrometer (PXRF) proved itself by demonstrating accurately the ability to distinguish soil matrix materials. The major findings were that these soils were misidentified as hydric but should be classified as oxyhydric. Also discovered was that the distribution of upland versus lowland vegetation on Adak Island is caused by a cemented tephra layer that impedes drainage and separates the well-drained soils on convex slopes from the poorly drained soils in concave slopes. This information about volcanic soil properties is useful to agency personnel and mining and land managers who are major stakeholders in Alaska.

### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships

**Outcome #2**

**1. Outcome Measures**

Outcome Target 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 Target 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 Action Outcome Measure

**3b. Quantitative Outcome**

Year	Actual
2012	360

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

OneTree Alaska's collaborative approach brings K-12 students and teachers together with scientists, professional artists, artisans, and government-based STEM professionals to investigate diverse aspects of the local boreal forest. Teachers find that introducing science and math concepts via STEAM (STEM plus Art) is highly effective in increasing student engagement and learning outcomes. As a community of learners, students, artists, and scientists have gained a deeper appreciation of the forest while working with local materials and making observations about the natural world.

**What has been done**

In OneTree, K-12 students learn about the forest by conducting experiments with schoolyard trees and by making things with local resources. The project was given significant new life in late September by the Alaska State Legislature, which awarded a three-year, \$1 million Capital Improvement Project (CIP) to the state Division of Forestry. As one of the first initiatives, two courses were offered: a K-12 teacher professional development course and a graduate student

service-learning course. The two cohorts meet to discuss and plan activities that will take place throughout the year, implementing the OneTree philosophy both in and outside the classroom.

**Results**

OneTree is providing the model for the project's K-12 education and outreach component and proceeding as a partnership among UAF's School of Natural Resources and Agricultural Sciences (SNRAS), the Fairbanks North Star Borough School District (FNSBSD), and local artists, artisans, and homeschoolers. This partnership model spans multiple generations, helps develop youths' critical thinking skills and fosters active youth/teacher /scientist/artist partnerships.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
102	Soil, Plant, Water, Nutrient Relationships
122	Management and Control of Forest and Range Fires
123	Management and Sustainability of Forest Resources
132	Weather and Climate

**Outcome #4**

**1. Outcome Measures**

Outcome Target 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**

<b>Year</b>	<b>Actual</b>
2012	24

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

It has long been expected that the Arctic and Subarctic regions would experience climate warming from greenhouse gas processes. Recent syntheses confirm widespread, warming effects across the Arctic and Subarctic in the last 30 years. But change in Alaska is happening at a rapid rate, and coherent and consistent evidence of warming is seen in changes in hydrology, permafrost, forests, disturbances and other features. In recent decades, the Arctic and Subarctic regions have experienced the greatest warming on earth. Everyone--from engineers to wildlife

managers to farmers--will need to take economic change, social change and climate change into account when planning for the future, as well as take advantage of potential opportunities, in order to avoid costly mistakes.

#### **What has been done**

Aerial photos of the boreal forest have been collected since 1989, resulting in a collection of 12,591 pictures. This project captures a rich visual record of many of the major changes in the boreal forest of central Alaska in the past quarter-century, including the transition on burned sites from small tree regeneration to an emerging forest, and the outbreak and now decline of major waves of insect defoliation and tree death, since warm weather anomalies triggered outbreaks following a climate regime shift in the late 1970s.

#### **Results**

The tree regeneration database allows faster data entry, quicker search and retrieval of tree-specific information and fewer errors during data entry and manipulation. The collaboration through the BAKLAP project is assisting in upgrading Alaska forest research data and management practices to improve the value of Alaska's forests and to meet the rapidly expanding demand for wood biomass energy in a changing environment.

#### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
101	Appraisal of Soil Resources
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 Target 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 Measure 6: To increase knowledge for land owners and managers. Measures are databases, inventories, presentations and consultations.

##### **2. Associated Institution Types**

- 1862 Research

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

Year	Actual
2012	14

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Long-term forest measurements increase knowledge available to Alaska's land owners and managers. Climate change, very much apparent in Alaska, is affecting growth and survival of local species. Effects of increasing forest fire frequency, insect infestations and water stress through climate change are monitored.

**What has been done**

The 20-year assessment and inventories were completed on 156 plots and plantations in several locations in the state. Data was provided to the U.S. Forest Service for its Forest Vegetation Simulator program. Data was also shared with the State Division of Forestry inventory program; presentations were made at meetings with the Alaska Resource Managers, the Society of American Foresters, West Valley High School classes, Resource Management Society, UAF and the Matanuska-Susitna Borough. Also, 2800 hours of employment and training was provided to young forest technicians.

**Results**

Applied knowledge of Alaska's northern forests was increased through dissemination of data, analysis and presentation of information. The databases are available to partners on the LTER website <http://www.lter.uaf.edu/>. White spruce cubic foot volume models were distributed to and are in use by land owners and managers in northern Alaska. One Ph.D. student completed his field of study.

**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

## **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**

Alaska is already seeing impacts of the changing climate in its sea ice degradation, the ecology of the boreal forest and its ice-impregnated northern soils. This will influence the thrust of ecosystem management in coming years. Policy and regulation and competing public priorities are already coming to the fore as endangered species affect land use and hence management of forests and rangelands. Programmatic challenges will occur as consideration is given to the management of the forests for fuels to mitigate demands on petroleum and coal supplies. A continuing rise in transportation costs is already drawing attention to regional and local management for energy and other local wood products. Finally, as demographics of the population change and demographics of the forest industry change toward management with a specific product objective as well as an objective of sustainable and resilient northern ecosystems, there will be a need for continuing adult education and higher education to fill workforce vacancies or new positions that are created.

The School of Natural Resources and Agricultural Sciences and the Agricultural and Forestry Experiment Station are going through a reorganization and strategic reassessment. The School of Natural Resources and Agricultural Sciences, the Agricultural and Forestry Experiment Station and the Cooperative Extension Service at UAF will continue to serve the needs of the citizens of the State of Alaska.

SNRAS lost the Forest Measurement research faculty through transfer, although the research is continuing. Also lost through retirement is the Forest Hydrologist position. Replacement of these positions is uncertain.

External factors affecting implementation of the CES climate change theme include the political nature of climate change, the disparate impact from climate change in various parts of Alaska and the large portion of the state not in fee simple private ownership. Climate change impacts are most noticeable along western and northern Alaska coastal areas, along Interior Alaska rivers, near glaciers and where permafrost is melting. Aside from those sparsely populated areas, climate change is more often thought of as weather events, which Alaskans have learned to live with. The limited amount of fee simple private land in Alaska detaches some Alaskans from climate change events impacting the land and natural resources which they have no management or oversight of. 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 Extension climate change programs. One of our agents is working with a climate change initiative, which grew out of an ANREP meeting and a subsequent conference. This working group is working to identify regional priorities.

#### **V(I). Planned Program (Evaluation Studies)**

##### **Evaluation Results**

Basic and applied research will soon be leading to methods of climate change adaptation and mitigation for the benefit of society living in northern ecosystems.

##### **Key Items of Evaluation**

**V(A). Planned Program (Summary)**

**Program # 6**

**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%	
	<b>Total</b>	100%		100%	

**V(C). Planned Program (Inputs)**

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	2.0	0.0
Actual Paid Professional	1.1	0.0	1.4	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
43230	0	46957	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
56767	0	198028	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
371016	0	518384	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. If successful, this research will lead to development of "best practices" management regimes and genetics of bioenergy crops. In the future, we intend to conduct research in remote locations in Alaska to determine the feasibility of various crops in small villages where people often have little experience in agriculture. For this purpose, we will concentrate on crops likely to be successful in these situations, especially woody crops, which will require little agricultural knowledge and simple technology.

AFES researchers continued work on 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 were evaluated for biofuel production via supercritical liquefaction. CES is working with communities on use of biomass products and with producers to develop value-added forest products.

An AFE/CES researcher is assimilating all existing information on the total forest and crop biomass available in Alaska into one database to determine the gaps in the database and the information needed to fill the gaps. This will determine the biological, physical and economic feasibility of using Alaska biomass as biofuels.

**2. Brief description of the target audience**

The target audiences will include producers and consumers, communities, agriculture and forestry businesses, industry leaders, entrepreneurs, individuals and groups concerned about the quality of the Alaska environment; as well as public resource agencies, public and private resource managers, other faculty and researchers, and undergraduate and graduate students. Our efforts were directed toward environmentally and economically sustainable development and conservation of our natural resources to benefit all citizens. Advisors and the target audience included: Alaska farmers; rural and urban communities in Alaska; and a graduate student who has been trained and is performing the catalytic upgrading work as part of his Master of Science thesis project.

**3. How was eXtension used?**

eXtension was not used in this program

**V(E). Planned Program (Outputs)**

**1. Standard output measures**

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Actual</b>	386	1500	0	0

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

**Patent Applications Submitted**

Year: 2012  
 Actual: 0

**Patents listed**

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

2012	Extension	Research	Total
Actual	0	5	5

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

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

Year	Actual
2012	12

**Output #2**

**Output Measure**

- Output Measure 2: Bioenergy crop varieties tested.

Year	Actual
2012	42

**Output #3**

**Output Measure**

- Output Measure 3: Bioenergy research projects conducted.

Year	Actual
2012	12

**Output #4**

**Output Measure**

- Output Measure 4: Bioenergy crop and technology publications.

Year	Actual
2012	5

**Output #5**

**Output Measure**

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

<b>Year</b>	<b>Actual</b>
2012	180

**V(G). State Defined Outcomes**

**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	Outcome Target 1: Identify crops suitable for sustainable production of bio-based energy in Alaska.
2	Outcome Target 2: Identify new value-added by-products from bio-based energy crops and woody species.
3	Outcome Target 3: Compile a forestry biomass database.
4	Outcome Target 4: Adoption of bioenergy technologies.

## **Outcome #1**

### **1. Outcome Measures**

Outcome Target 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**

<b>Year</b>	<b>Actual</b>
2012	42

### **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**

Woody species tested were *Salix alaxensis*, *Populus balsamifera* and *Salix lasiandra*. A trial comparing numerous grass species showed highest yields for smooth bromegrass on well-drained soils. Soil moisture as a yield determinant has been a major consideration. Unfortunately reed canarygrass, which had the highest yield, is considered an invasive species weed in Alaska.

#### **Results**

To date our results indicate biomass yields for both woody shrub and grass species are likely to be considerably lower than those reported in more temperate regions, although we expect yields to be higher in the future with improved management practices and through selection of strains for high biomass yield. However, more research will be required to understand the full potential biomass yield production and the economic feasibility of producing these crops in a subarctic environment.

### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
125	Agroforestry
131	Alternative Uses of Land
205	Plant Management Systems

## **Outcome #2**

### **1. Outcome Measures**

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

### **2. Associated Institution Types**

- 1862 Extension
- 1862 Research

### **3a. Outcome Type:**

Change in Knowledge Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2012	12

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

Using locally sourced feedstocks is of significant importance for rural communities who operate off the power grids. The development of small biorefineries able to use local resources will offset petroleum heating costs, which are often over \$8/gal for diesel fuel.

#### **What has been done**

Noncommercial sources of biomass species were evaluated for their value-added properties for use in the production of liquid and gas fuels.

#### **Results**

The standard used for combustion is white oak and all Alaska species that were tested presented encouraging results. No species underperformed as lignocellulosic species.

### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
123	Management and Sustainability of Forest Resources
125	Agroforestry
131	Alternative Uses of Land
205	Plant Management Systems
511	New and Improved Non-Food Products and Processes

### **Outcome #3**

#### **1. Outcome Measures**

Outcome Target 3: Compile a forestry biomass database.

Not Reporting on this Outcome Measure

### **Outcome #4**

#### **1. Outcome Measures**

Outcome Target 4: Adoption of bioenergy technologies.

#### **2. Associated Institution Types**

- 1862 Extension
- 1862 Research

#### **3a. Outcome Type:**

Change in Knowledge Outcome Measure

#### **3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2012	1

#### **3c. Qualitative Outcome or Impact Statement**

##### **Issue (Who cares and Why)**

On a yearly basis, Alaska's fishing and processing industries produce over 1 million metric tons of fish wastes. The city of Yakutat is ready to embrace technology developed through a collaboration with the Agricultural Research Service and the Agricultural and Forestry Experiment Station.

##### **What has been done**

In order to evaluate the conversion technique and establish a baseline for comparison, raw materials were analyzed for composition, proximate analysis and elemental analysis. As a result, protocols for maximizing the value were developed. A scaled down single reactor catalytic pyrolysis unit was developed so it would fit within a GC/MS instrument interface, resulting in a cost-effective technology that can be deployed from the laboratory to industry.

##### **Results**

Fish waste and coastal alder can now be used to create a functional fuel. Fish processing plants that are usually in rural settings use significant amounts of diesel for food processing. This technology has the capability to offset significant and expensive diesel fuel. Technology

Readiness Levels or TRL's have gone past Levels 3 and 4, which is the proof of concept, and are now at TRL 6 level ready for deployment.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
131	Alternative Uses of Land
511	New and Improved Non-Food Products and Processes

#### 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 Wood Chemistry professor who has been heading this work is in the process of leaving the state. He will maintain a 51% commitment for at least one year. The School of Fisheries and Ocean Sciences who have been collaborating wish to continue the partnership as well as the City of Yakutat.

#### V(I). Planned Program (Evaluation Studies)

##### Evaluation Results

The only quantitative evaluation results to date are scientific results. No official extension work has begun.

##### Key Items of Evaluation



**V(A). Planned Program (Summary)**

**Program # 7**

**1. Name of the Planned Program**

Global Food Security and Hunger

Reporting on this Program

Reason for not reporting

We have addressed this report in the Agriculture and Food Security 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: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	7.0	0.0	10.8	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}
<b>1862 Matching</b>	<b>1890 Matching</b>	<b>1862 Matching</b>	<b>1890 Matching</b>
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
<b>1862 All Other</b>	<b>1890 All Other</b>	<b>1862 All Other</b>	<b>1890 All Other</b>
{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**

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Actual</b>	0	0	0	0

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

**Patent Applications Submitted**

Year: 2012

Actual: {No Data Entered}

**Patents listed**

{No Data Entered}

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

2012	Extension	Research	Total
<b>Actual</b>	1	12	0

## V(F). State Defined Outputs

### Output Target

#### Output #1

##### Output Measure

- Output target 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
2012	0

#### Output #2

##### Output Measure

- Output Target 2: 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 food production (in contact hours).

Year	Actual
2012	0

#### Output #3

##### Output Measure

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

Year	Actual
2012	0

#### Output #4

##### Output Measure

- Output Target 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
2012	0

#### Output #5

##### Output Measure

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

<b>Year</b>	<b>Actual</b>
2012	0

**Output #6**

**Output Measure**

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

<b>Year</b>	<b>Actual</b>
2012	0

**V(G). State Defined Outcomes**

**V. State Defined Outcomes Table of Content**

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

**Outcome #1**

**1. Outcome Measures**

Outcome Target 1: Increase agronomic crop producers' ability to understand and assess best management practices of food crop production.

**2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

Year	Actual
2012	0

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**  
{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 Target 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
2012	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 Target 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
2012	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 Target 4: Increase the number of activities that monitor and control invasive species.

**2. Associated Institution Types**

- 1862 Extension

**3a. Outcome Type:**

Change in Condition Outcome Measure

**3b. Quantitative Outcome**

Year	Actual
2012	0

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**  
{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 Target 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
2012	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 # 8**

**1. Name of the Planned Program**

Childhood Obesity

- Reporting on this Program

Reason for not reporting

We are reporting our work on childhood obesity in the Healthy Individuals, Families and Communities Planned Program. This area is reflected in Outputs 7-9 and Outcomes 8-10 of the planned program. We are not reporting on former Outcome 1 in the old Childhood Obesity 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: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	1.0	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**

Collaboration with other organizations including Public Health, 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**

- teachers and parents of youth
- caregivers
- youth
- college students
- rural community health care givers

**3. How was eXtension used?**

{No Data Entered}

**V(E). Planned Program (Outputs)**

**1. Standard output measures**

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Actual</b>	0	0	0	0

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

**Patent Applications Submitted**

Year: 2012

Actual: {No Data Entered}

**Patents listed**

{No Data Entered}

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

2012	Extension	Research	Total
<b>Actual</b>	0	2	0

**V(F). State Defined Outputs**

## **Output Target**

### **Output #1**

#### **Output Measure**

- Output Measure 1: Field faculty will provide physical activity and nutrition programming for teachers and parents. Output is the number of teachers and parents who are trained.

<b>Year</b>	<b>Actual</b>
2012	0

### **Output #2**

#### **Output Measure**

- Output Measure 2: Field faculty will provide physical activity and nutrition programming through one-on-one consultations and consultations with other organizations.

<b>Year</b>	<b>Actual</b>
2012	0

### **Output #3**

#### **Output Measure**

- Output Measure 3: Faculty will develop educational resources and publications on nutrition.

<b>Year</b>	<b>Actual</b>
2012	0

**V(G). State Defined Outcomes**

**V. State Defined Outcomes Table of Content**

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

**Outcome #1**

**1. Outcome Measures**

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

**2. Associated Institution Types**

- 1862 Extension

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2012	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**

<b>KA Code</b>	<b>Knowledge Area</b>
{No Data}	null

**Outcome #2**

**1. Outcome Measures**

Outcome Measure 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

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2012	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 Measure 3: 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
- 1862 Research

**3a. Outcome Type:**

Change in Action Outcome Measure



**3b. Quantitative Outcome**

Year	Actual
2012	0

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**  
{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 Measure 4: 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
2012	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 Measure 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
2012	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 our work on food safety in the Healthy Individuals, Families and Communities Planned Program. Our former outputs and outcomes from this area are reflected in Outputs 4-6 and Outcomes 6-7.

**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: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	3.0	0.0	0.0	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**

Field 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), 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, and hunters.

**3. How was eXtension used?**

{No Data Entered}

**V(E). Planned Program (Outputs)**

**1. Standard output measures**

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Actual</b>	0	0	0	0

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

**Patent Applications Submitted**

Year: 2012

Actual: {No Data Entered}

**Patents listed**

{No Data Entered}

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

2012	Extension	Research	Total
<b>Actual</b>	0	0	0

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

- Output Measure 1: Extension faculty will offer workshops in harvesting and food preservation techniques.

<b>Year</b>	<b>Actual</b>
2012	0

**Output #2**

**Output Measure**

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

<b>Year</b>	<b>Actual</b>
2012	0

**Output #3**

**Output Measure**

- Output Measure 3: Extension faculty will offer workshops in food safety.

<b>Year</b>	<b>Actual</b>
2012	0

**V(G). State Defined Outcomes**

**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	Output Measure 1: Participants in food preservation and food safety classes will improve their food preservation and food safety practices.
2	Outcome Measure 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.

**Outcome #1**

**1. Outcome Measures**

Output Measure 1: 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
2012	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 Measure 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

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

Year	Actual
2012	0

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**  
{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}