2008 University of Alaska Combined Research and Extension Annual Report of Accomplishments and Results

Status: Accepted
Date Accepted: 06/20/09

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I. Report Overview

1. Executive Summary

The University of Alaska Fairbanks' School of Natural Resources and Agricultural Sciences (SNRAS), Agricultural and Forestry Experiment Station (AFES), and Cooperative Extension Service (CES) are dedicated to providing research, education and outreach relevant to the sustainable development and use of Alaska's natural resources; developing new economic opportunities; and improving the quality of life in Alaska and the circumpolar north. The SNRAS, AFES, and CES carry out the land-grant mission for the University of Alaska Fairbanks.

The land-grant system is a partnership between the federal government and the states through matching funds to universities that agree to maintain programs of research, instruction, and public service in planned programs of agriculture, natural resources, and sustaining individuals, families and communities with activities relevant to that state, the nation, and the world. A special characteristic of land-grant programs is their commitment to develop and apply knowledge important in the real world for the successful long-term management of natural resources to meet both human needs and values.

The School and Experiment Station (SNRAS/AFES) operate major facilities in Fairbanks and Palmer, research sites at Delta Junction, Nome, and Bonanza Creek and manage research projects located throughout Alaska. SNRAS/AFES is organized into four departments: Forest Sciences, Geography, High Latitude Agriculture, and Resources Management.

CES is housed in the Office of the Provost at the Fairbanks campus and operates programs in Agriculture/Horticulture, Natural Resources and Community Development, Home/Health/Family Development, and Positive Youth Development/4-H in eight districts around the state.

AFES and CES are funded by federal capacity funds. All units receive state matching funds, as well as other state appropriations, state and federal grant funds, and private funding. SNRAS/AFES is estimating professional SYs on total capacity funds received that includes Hatch, Hatch Multistate and McIntire-Stennis funding sources. CES estimates FTE's on Smith-Lever 3, B and C funding. Although linkage between the units is not administratively mandated at the University of Alaska Fairbanks, they are linked by federal legislation, joint funding, and this joint Plan of Work.

Alaska is recognized for its immense size and sparse population and its cultural, geographic and environmental diversity. Alaska represents a major region of renewable and non-renewable natural resources in the United States. Its 365 million acres include the nation's largest oil reserves and coal deposits. 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 and fiber 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 and shellfish that support thriving commercial, sport and subsistence fisheries. Alaska's natural resources have historically been the foundation of the state's economy. Thus, 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 non-renewable resources and local and national controversies surrounding resource extraction and related environmental concerns affect the activities of SNRAS/AFES and CES. The University of Alaska Fairbanks in general and SNRAS/AFES and CES in particular, meet the challenges to increasing demands for research, education and engagement relevant to sustainable management of Alaska's resources and bringing communities' ideas to the university for further development of the state's resources.

In the last three decades of the 20th century, Alaska's economy became dependent upon revenues related to petroleum development. To diversify its economy, the state is moving toward non-petroleum 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 by SNRAS/AFES, the University of Alaska Fairbanks, the University of Alaska and other information sources to meet the needs and interests of Alaskans while providing citizens a way to influence future research and education priorities. CES will be a critical partner for the university as a whole in providing a two-way linkage between researchers and producers to deliver the latest research findings and educational and outreach opportunities.

Alaska imports a high percentage of foods and other agricultural products consumed in the state. Growers in the agricultural sector produce products primarily for in-state consumption including fresh market potatoes and vegetables; forages, grains, and manufactured livestock feeds; controlled environment products including bedding plants, florals, landscape ornamentals, short season vegetables and a variety of "niche market" crops. Livestock enterprises include dairy, beef, swine, reindeer, and alternative game animals such as muskoxen, elk, and bison. Producers will require increasing information specific to northern latitudes as consumer demand increases due to changing preference and a growing population. Futhermore, as transport cost increase and Alaska population grows, more food will need to be produced locally.

The mission of SNRAS/AFES is to "generate and provide knowledge and train students for successful long-term management of natural renewable resources in Alaska and the circumpolar world, and to discover, describe, explain, and

interpret the spatial characteristics of the northern regions of the earth." The School and Experiment Station are committed to assisting and training natural resource managers who make and implement decisions to develop, sustain, or protect natural systems to meet human needs and values.

The mission of CES is "to interpret and extend relevant research-based knowledge in an understandable and usable form; to encourage the application of this knowledge to solve the problems and meet the challenges that face the people of Alaska; and to bring the concerns of the community back to the university." CES is committed to promoting the sustainability and economic security of individuals, families and communities by providing practical, non-formal education services that promote the wise use of natural resources, respect for cultural and ethnic diversity, and being responsive to emerging stakeholder needs and interests.

The elements of 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 state-wide system, federal and state agencies, non-governmental organizations, private industry; and through multi-state collaborations with other land-grant universities. They collectively and individually generate and disseminate knowledge to stakeholders who include higher education students, individuals, businesses, industry, government, non-governmental organizations and communities throughout Alaska and the circumpolar north and the nation. CES brings the university to Alaskans while bringing community concerns back to the university.

Programs specific to AFES for purposes of this report include Geographic Information, High Latitude Agriculture, High Latitude Soils, Management of Ecosystems, and Natural Resources Use and Allocation.

GEOGRAPHIC INFORMATION

Work in Geographic Information at AFES has concentrated on remotely sensed data. The use of different pre-fire and post-fire remotely sensed data from different dates substantially changed the fire severity estimates, most likely due to changing plant phenology and solar elevation. Therefore the use of Landsat-based fire severity indices to estimate trends in fire severity in either time or across regions requires extensive field data from each burn to calibrate remotely sensed fire severity indices. Our research with cattle has shown us that distribution patterns and activities demonstrated by cattle in Alaska were not significantly different than those patterns and activities shown by cattle in other locations. Cattle displayed actions associated with thermoregulation, ie. seeking shade under trees, even though ambient air temperature was well within the thermoneutral zone delineated by other studies. Alaskan cattle also showed decreased movements during the late night/early morning hours. Our tests with GPS collars on cattle indicate that a GPS unit attached using a collar performs better and is tolerated by the animals better than one attached using a halter. In our reindeer research, we found that the initial GPS collars preformed well but did not fit the animal's neck well. Later models were modified to fit better. Once additional modifications were made, there are now concerns that the collars may be too heavy for animals to wear safely during certain seasons especially late winter when the animal's fat reserves are depleted and the collars weight may unduly handicap them in escaping predators. For this reason, collars will be deployed in late summer/fall on well-nourished female adult animals and removed before late winter arrives. Initial analysis of reindeer data indicates that calculated solar insulation does not correlate closely with measured temperatures at those ecological sites. We are still trying to determine if either data variable is necessary to refine models assessing the suitability of areas for reindeer calving.

HIGH LATITUDE AGRICULTURE

High Latitude Agriculture focused on new crops and new uses for old crops and continued to expand knowledge of reindeer as an important Alaska livestock species. New crops and species varieties for production in Alaska were identified and growers were organized to better meet market conditions. Research in tillage methods and fertilizer application, greenhouse and field production methods continued. Tillage method and fertilizer rate were shown to directly affect yield and quality of barley and bromegrass. Variety trials for tomatoes, potatoes, snap beans, under hoop house and field conditions and controlled environment production of cut flowers, vegetables, and herbs continue to provide growers with multiple crop production options in Alaska. At least 75 agricultural producers have adopted production of crops identified by AFES researchers as applicable to Alaska growing conditions. An association of peony growers was formed and currently. consists of 35 private growers and 12 businesses. Six rural villages attempted subsistence gardens and produced sufficient output at harvest to distribute food to 30 community elders. Greenhouse, controlled environment, and extended season research identified more than 10 specific varieties for use in commercial production of tomatoes, potatoes, herbs, and beans. AFES researchers have identified new marketable agricultural products for energy production in Alaska. Oilseeds, canola in particular, have been identified as a viable Alaska grown crop. Perennial grasses and woody cellulitic plants for fiber to be used in renewable energy are being established. Vegetable, fruit and berries were evaluated in rural villages and road system locations. More than 500 cultivars of ornimentals, vegetables and herbs were grown in trial plots to determine the usefulness in Alaska landscapes. Reindeer calf growth rate was compared when feed different bromegrass based diets. Use of herbicide induced maturation reduced green seed and hastened maturity of Alaska grown canola. Oil content remains high and is highly usable for biodiesel or human consumption. Based upon project supply and expenditure information, a spreadsheet and an sheet were created for small-scale vegetable production to discern suitability for production by rural villages in Alaska (villages without road access). Information from variety trials has been shared with several commercial seed producers looking at Alaska as a potential market. Moosetard, Inc., a gourmet mustard company is working to use information from these trials to develop an all-Alaska product. Grass feed type effected reindeer milk composition and

quantity produce and therefore effect calf growth rate.

HIGH LATITUDE SOILS

High Latitude Soils concentrated on forest based soils with particular reference to black-spruce forest with additional work in agricultural soils. Baseline data for soils formed under black spruce forest stands has been collected. This is the first time carbon stock data on a pedon basis from actual field measurements has been done. Construction was completed for all snow-melt exclusion structures and ongoing soil measurements were continued. In addition, data has been collected from three years of fertilizer trials with smooth brome grass and is currently being analyzed. The black-spruce forest team works with USDA-NRCS to compile all soil survey pedon data for Alaska including carbon stores by each map unit with the goal to tie all such data to the USDA-NRCS STATSGO database and compile a carbon map for the entire state. In upland, mid-successional forests drought will have more of an effect on the forest ecosystem and carbon balance than in floodplain, mid-successional forests of interior Alaska.

MANAGEMENT OF ECOSYSTEMS

Researchers in the Management of Ecosystems Planned Program concentrated on development of models related to disturbance in the boreal forest and Alaskan lakes. Models have been created to estimate bark thickness of white spruce in Interior Alaska, to estimate fire severity, creek drainages into a evaporating lake, and a temperature model for climate change in interior Alaska. Information has been made available to the public at http://www.faculty.uaf.edu/ffj12; the USFS, state foresters and BLM use the Burn Ratio model to predict fire severity and the climate data temperature model.

NATURAL RESOURCE USE AND ALLOCATION

Work in the Natural Resource Use and Allocation Planned Program ranged from helping peony producers enter national and international markets to critics of state and federal policy on wildlife and land use to helping communities plan their future. To assist peony producers enter national and international markets, an hedonic price model was applied to US peony data. It was designed to help growers understand how basic marketing decisions and cultivar characteristics affect the pricing of cut-flower peonies in US wholesale markets. As a result of our peony production work and economic modeling assistance, 12 new peony producers are ready to bring their product to market in the 2009 season. Alaska growers have learned that they should cultivate relationships with flower growers in the northeastern US and remain focused on double bloom varieties. A work examining the inconcistencies between the state of Alaska's Intensive Management Statute and laws regulating wildlife management on National Park Service lands is completed. The courts failure to correctly apply the term 'scientific' is under investigation in coordination with the U.S. Fish and Wildlife Service. The multiple projects concern ways to involve the public in decisions that affect their lives and improve to ability of natural resource policy makers to seek out and facilitate the involvement of all potentially affected stakeholders. These efforts resulted in improved urban/wildlands interface planning and improved planning for interior Alaska in the face of environmental concerns primarily centered on fuel price fluctuations and atmospheric limitations placed by the U.S. EPA on emissions in the Fairbanks area.

Programs specific to CES for the purposes of this report include Agriculture/Horticulture; Invasive Weeds, Noxious Plants and Pest Management; Youth Development; Sustainable Individuals, Families, and Communities; and, Natural Resource Stewardship.

AGRICULTURE/HORTICULTURE

Agriculture and horticulture outreach includes the areas of animal agriculture, agronomy, agroforestry and horticulture. Alaska imports more than 95 percent of its food supply and with increasing transportation costs, commercial agriculture may become more viable for small and medium-sized crop producers in the state. Constraints include a short growing season, isolation from other producers and markets and high transportation costs. A need exists for educational support and expertise for producers to help make their operations more economically viable. The Agriculture and Horticulture program strives to decrease Alaska dependence on imported food, increase production and economic viability of Alaska crop and livestock farms, improve food production from community gardens and home gardens and to increase production of commercial horticulture enterprises. Extension supports commercial and consumer stakeholders with classes, newsletters, conferences and publications.

Commercial agriculture and horticulture: A variety of conferences in 2008 provided resources to producers, including the Sustainable Agriculture Conference and Organic Growers School, Alaska Greenhouse and Nursery Conference, Delta Farm Forum, Harvest Wrap Up, Potato and Vegetable Conference and Alaska Livestock Producers Conference. Livestock specialist also provided a series of animal science classes aimed at increasing knowledge of producers. This year, Extension provided support to commercial horticulture clients trying to grow a promising new high-value crop, peonies, which mature in Alaska at a time when they are not available elsewhere in the world. Agents also supported producers through phone calls, e-mail and on-site visits. In one case, Extension saved a developer an estimated $50,000 by advising him to a native Alaska grass that is hardy and could be established on a gravel airstrip. Agent who is knowledgable about precision agriculture, introduced Alaska farmers to the technology, which is expected to save farmers money on fertilizer costs.

Consumer horticulture: Most of our horticultural educational outreach emphasis is targeted toward the home gardener. With the high cost of importing food and concerns about food security, the interest in home gardening has increased. Extension trained 148 Master Gardeners in 2008. Home gardeners also attended a variety of composting, seed starting and organic and home gardening classes. An agent taught seed-starting and gardening classes in 12 villages and rural communities. Another agent worked on a grant determining local preferences and crop success for common cold-hardy crops and the viability and winter survivability of certain berry crops in six Interior villages. Through that effort, village residents received garden training and planting supplies and planned community vegetable and berry gardens.

INVASIVE WEEDS, NOXIOUS PLANTS AND PEST MANAGEMENT

The program conducted group and one-on-one educational activities with specific sectors of the pest management industry, the agricultural and horticultural industry and the general public to provide pest identification and management information. The IPM program addressed the public need for pest management education within Alaska with seven seasonal technicians across Alaska and three full-time staff. Altogether, Extension faculty and IPM staff offered 97 workshops. Technicians monitored selected urban and rural communities for the presence of invasive weeds and noxious plants. They worked with partnering agencies to provide a coordinated response to invasive weeds, noxious plants and pest management. Alaska's diverse pest management projects include the IPM technician program, the Pesticide Safety Education Program, Western Region IPM and the Western Plants Diagnostics Network.

The IPM program identifies any organism in question and investigates the individual site and situation. Clients are counseled by IPM staff and by agricultural agents. These CES faculty and staff advise green industry professionals, farmers, gardeners and horticulturists about the least toxic pest management practices.

The Alaska Pest Management Program, funded through USDA/CSREES and the Western IPM Center, continues to be the premiere pesticide use resource for Alaska. More than 2,500 visitors used the program's website at www.alaskapestmanagement.com.

Extension provided information to the Alaska Legislature on the need for a statewide management approach and state weed coordinator position. Legislature approved a bill creating the position, which will allow for federal funding of efforts. In November 2007, UAF CES hosted the eighth annual statewide Alaska Noxious and Invasive Plants Management Workshop and Alaska Invasive Species conference, which bring together a variety of partner agencies and citizens.

NATURAL RESOURCE STEWARDSHIP

Natural Resources and Community Development is UAF Extension's newest program area. It provides outreach education regarding forest resources, mineral resources and mining, water resources, and rural communities. Program faculty and staff partner with a wide variety of local, state and federal governments, local and regional Native Alaskan tribal organizations and non-governmental organizations to address such issues as resource management, economic analysis, public policy education, and rural development.

This program relies heavily on stakeholder input and advisory groups. Three areas of focus identified were climate change, renewable energy and rural leadership. Because of particularly high energy costs in rural Alaska, program has focused on ways to reduce dependence on petroleum sources. Extension worked with two rural communities to develop biomass projects to heat schools. Extension hosted workshops in Juneau and Sitka about responsible wood burning and continued to develop wood heat website with a wealth of information about locations to harvest wood, efficiency of wood and safety issues.

Youth development: The nature of natural resource management is to work in rural and remote areas, which do not have many existing medical personnel. Extension co-sponsored 4-H training as emergency medical services First Responders to provide a link between the medical field and natural resources. 4-H Natural Resource and Youth Development program also supported rural classroom salmon incubation projects as a way to enhance math and science literacy of rural youth, and encourage their involvement in local resource management.

Resource decision-making: Residents of the lower Kuskokwim River are faced with making decisions regarding a large proposed mine in their area. Extension educated a handful of village elders and leaders about the potential impacts and benefits of large-scale mining by taking them on a tour of two large Interior gold mines and speaking with experts.

Pesticide Safety Education: Workers who apply pesticides as part of their workplace activity are required to complete pesticide safety training and pass a state of Alaska Department of Environmental Conservation exam and must be recertified annually. Extension faculty taught eight pesticide applicator safety certification trainings in seven Alaska communities. During those trainings, 113 certifications were received.

Environmental Quality Incentives: Nutrient and pest management conservation practices are two components of most farmers' EQIP long-term contracts that require the assistance of Extension to provide nutrient recommendations, pest scouting and Integrated Pest Management recommendations. Through the EQIP program, 626 clients applied pesticides and nutrients at the specified rates and were educated in weed identification and soil sampling techniques.

SUSTAINABLE INDIVIDUALS, FAMILIES, AND COMMUNITY

Health, Nutritoin and Foods: Alaska has abundant sources of naturally occurring food in our fish, game meat, and wild berries. Many Alaskans supplement their diets with these foods because of their high nutritional value and high antioxidant values

The cost of importing food is high due to shipping costs. Our food preservation program reflects those needs and concerns. Agents taught 65 food preservation and food safety classes in 22 communities, and created the fourth in a 10-part DVD series that focuses on preserving Alaska's foods. Seven online instructional modules with similar information were completed, and Extension ran a food preservation hotline. Seventeen new food products were developed from Alaska grown and gathered foods in the Food Product Development Kitchen. Research has also focused on processing procedures for indigenous foods.

Our programming also supports healthy living. The Alaska senior population is growing faster than all states except Nevada. Extension conducts StrongWomen classes in all seven districts and our Soldotna agent has trained 47 new leaders. We also trained 70 leaders for the Living Well Alaska program, which teaches skills for living with chronic health conditions. Over the past 20 years, diabetes has increased 80 percent among Alaska Native population and has increased in other segments of population. Our Dining with Diabetes classes teach people how to embrace a diabetic diet.

Healthy Lifestyle and Human Development: Early childhood development classes are less available in rural areas. Agents also teach early child development and child language and literacy classes in rural areas.

Consumer Resource Management: Budgeting concerns have come to the forefront in tight times. Agents have taught the cost of credit to more than 200 high school students and budgeting and money management to other youth and adults.

Home and Eneregy: Programming has focused on awareness of energy conservation, cold climate homebuilding techniques, retrofitting homes and solar energy design. Housing and energy specialist developed a retrofit course and began teaching it around the state in January 2008. Agents also provided energy conservation programs and resources to clients, ranging from maximizing gas mileage to reducing appliance energy consumption. Juneau agent provided resources to Juneau residents after the community power line was interrupted for six weeks and backup electricity more than tripled in price.

YOUTH DEVELOPMENT

Alaska 4-H incorporates the Essential Elements through volunteer training, newsletters , videos and handouts. All 4-H activities are grounded in the Essential Elements. 4-H programs focus on developing leadership and competences that translate into effective work skills and interests and advanced education. For instance, 13 youth in the Sitka 4-H Youth First Responders Project have completed their training and are assisting the Sitka Emergency Medical Services staffing stations and emergency and public information booths. Kids who raise and sell market animals learn about showmanship and marketing, and teens who are trained as camp counselors learn leadership skills and management and help run a youth camp. Some kids have started businesses. Altogether, in 2008, more than 13,000 youth participated in clubs, after-school programs and special activities, including camping and video work.

A few highlights:

- 4-H teens and adults taught ATV safety to youth in Glennallen, Fairbanks and Kenny Lake, and the program is expanding to Bethel
- A community service event in Anchorage led to more than 700 pillowcases being made to donate to a variety of institutions, including foster children and needy families. The event brought together volunteers from diverse groups including residents of a youth center and a shelter for homeless youth
- Youth in the Kenai District learned hunting ethics and safety and field dressed and butchered a moose.
- Youth participating in Speak Out Military Kids have talked to legislators and other youth about how their parents' deployment affected them. Two youth created a DVD highlighting activities at a camp for 140 military kids whose parents had been deployed or would be shortly.

Total Actual Amount of professional FTEs/SYs for this State

Year:2008	**Extension**		**Research**	
	1862	**1890**	**1862**	**1890**
Plan	30.0	0.0	17.0	0.0
Actual	48.9	0.0	44.5	0.0

II. Merit Review Process

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

- Internal University Panel
- External University Panel
- Expert Peer Review

2. Brief Explanation

The School of Natural Resources and Agricultural Sciences and the Agricultural and Forestry Experiment Station uses its 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 uses the general review process for this joint POW.

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 POW. All new and revised Hatch (and McIntire-Stennis) project proposals within the Agricultural and Forestry Experiment Station undergo scientific peer review. At present we are using the process established by NSF and NRI. Previously we had used the Hatch and McIntire-Stennis Administrative Manual's Appendix F "Essentials of a Project Proposal", which is less stringent. All proposals are submitted to the Director of the Agricultural and Forestry Experiment Station. The blind peer review panel is composed of a minimum of three members who are appointed by the Director. The panel consists of competent authorities in the discipline of the proposal/publication/annual report or related disciplines and includes at least one authority in a supporting discipline. 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 Director for transmittal to the author(s). The author(s) review all comments and recommendations of the reviewers and make adjustments or explanations in the document. The Director reviews all comments and recommendations from the reviewers along with the revised proposal/publication/report. The signature of the Director on form AD 416 submitted to CSREES, USDA, will indicate approval of the project by the Director and will certify that the proposal has been recommended for approval by a majority of the members of the Peer Review Panel. Scientific peer review of multi-state research projects are carried out for individual projects under the aegis of the Regional Coordinating and Implementation Committee (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. This can be found on-line at http://www.colostate.edu/Orgs/WAAESD/. All faculty in SNRAS/AFES who are participants in Hatch multi-state projects are required to have an approved Hatch General project that is related to the field of study of the Hatch multi-state project in which they are a member. The Associate Director of AFES is a member ofr the RCIC.

Peer review of the Extension components of the POW consist of internal and external reviews. Internal review of the Extension components of the POW are 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, positive youth development and renewable energy as priorities for the future. Collective feedback from reviews are incorporated into the future iterations of the Extension components of the POW.

In the 2008 calendar year, AFES initiated four Hatch funded projects and three special grant projects.

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 traditional stakeholder individuals
- Survey of traditional stakeholder groups
- Survey of traditional stakeholder individuals
- Survey of the general public

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
- Mat-Su Potato and Vegetable Growers
- Delta Farm Forum
- 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.

Extension jointly sponsors many agricultural and horticultural conferences and outreach activities with SNRAS/AFES where the units share mechanisms to gather formal and informal stakeholder input. Extension also relies on advisory groups as an important stakeholder needs assessment process. Extension has a 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 audio-conference meetings regularly throughout the fall, winter and spring. 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.

Extension faculty conducted needs assessments within their districts and focus groups with their stakeholders. In addition, Extension faculty members gathered stakeholder input as part of their program planning and development process as well as surveys both during instructional and conference presentation activities. Extension staff have brought outside participants into a newly developed engagement activity that involves a moderated wiki for communities of interest in energy and leadership, with community members as active moderators encouraging broad participation in the web-based interaction.

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

The SNRAS/AFES Board of Advisors is under redevelopment at this time. When the BOA is reconvened, the Dean and Director, Associate Deans and Director, Department Heads, selected faculty and students will meet with the Board of Advisors for assistance in establishing priorities and developing program direction for SNRAS/AFES in consultation with appropriate constituencies. The membership of the Board of up to 11 members is appointed by the UAF Chancellor on recommendations provided by the Dean and Director and represents a broad range of scientific, industry, governmental, student, and citizen interests. By-laws for the Board of Advisors and minutes of all meetings are available upon request. 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 e-mailing 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, and Future Farmers of America, school districts, electric cooperatives, the Alaska Municipal League, and research service units of the university.

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
- Meeting with traditional Stakeholder individuals
- Survey of the general public
- Meeting with invited selected individuals from the general public

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 agents use advisory or focus groups to collect stakeholder input. Specialists also have specific groups they rely on for information. For example, the housing specialist works closely with the Alaska Building Science Network and the Alaska Housing Finance Corporation for additional input. The food specialists work with small business owners and agency groups to plan programming, workshops and consultations in order to influence the development and marketing of products.

3. A statement of how the input was considered

- In the Budget Process
- To Identify Emerging Issues
- Redirect Extension Programs
- In the Staff Hiring Process
- In the Action Plans
- To Set Priorities
- Other (Underserved populations identified)

Brief Explanation

The SNRAS/AFES joint research and outreach planned programs are directly related to the SNRAS/AFES Strategic Plan that was produced by the faculty of SNRAS and AFES. The Plan reflects ideas and advice given by SNRAS and AFEDS client user groups, students, the board of advisors, expert advisors, state and national peers and cooperators, and UAF administration. During the 2008 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 will be used to set priorities in meeting the many needs for knowledge about Alaska and circumpolar resources and geography. Input will be considered in the budget process. Capacity funds will be used in response to research needs based on the four emerging focus areas.

Needs assessments helped Extension faculty identify emerging issues in the five planned programs, generating plans based on logic models. The faculty used this information to generate their individual work plans. Based upon information generated by the needs assessments, future programming needs related to hiring have been affected. 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 2008 led to increased programming in rural energy options, energy-efficient home construction, health programming and food security.

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 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.

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
996077	0	1027678	0

2. Totaled Actual dollars from Planned Programs Inputs

	Extension		Research	
	Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
Actual Formula	815680	0	1117627	0
Actual Matching	815680	0	1537381	0
Actual All Other	2804503	0	1206080	0
Total Actual Expended	4435863	0	3861088	0

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

Carryover	0	0	0	0

V. Planned Program Table of Content

Program #1

V(A). Planned Program (Summary)

1. Name of the Planned Program

Agriculture and Horticulture

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%		0%	
205	Plant Management Systems	40%		0%	
213	Weeds Affecting Plants	5%		0%	
216	Integrated Pest Management Systems	5%		0%	
302	Nutrient Utilization in Animals	15%		0%	
307	Animal Management Systems	10%		0%	
308	Improved Animal Products (Before Harvest)	10%		0%	
601	Economics of Agricultural Production and Farm Management	5%		0%	
	Total	100%		0%	

V(C). Planned Program (Inputs)

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

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	9.0	0.0	1.5	0.0
Actual	5.2	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
290141	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
290141	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
382147	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Agriculture and horticulture outreach includes the areas of animal agriculture, agronomy, agroforestry and horticulture. Alaska imports more than 95 percent of its food supply and with increasing transportation costs, commercial agriculture may become more viable for small and medium-sized crop producers in the state. Constraints include a short growing season, isolation from other producers and markets and high transportation costs. A need exists for educational support and expertise for producers to help make their operations more economically viable. The Agriculture and Horticulture program strives to decrease Alaska dependence on imported food, increase production and economic viability of Alaska crop and livestock farms, improve food production from community gardens and home gardens and to increase production of commercial horticulture enterprises.

Extension supported commercial and consumer stakeholders in 2008 with classes, newsletters, conferences, consultations and publications.

Commercial agriculture and horticulture: A variety of conferences in 2008 provided resources to producers, including the Sustainable Agriculture Conference and Organic Growers School, Alaska Greenhouse and Nursery Conference, Delta Farm Forum, Harvest Wrap Up, Potato and Vegetable Conference and Alaska Livestock Producers Conference. Livestock specialist also provided a series of animal science classes aimed at increasing knowledge of producers. This year, Extension provided support to commercial horticulture clients trying to grow a promising new high-value crop, peonies, which mature in Alaska at a time when they are not available elsewhere in the world. Agents also supported producers through phone calls, e-mail and on-site visits. In one case, Extension saved a developer an estimated $50,000 by advising him to plant a native Alaska grass that is hardy and could be established on a gravel airstrip. Agent who is knowledgable about precision agriculture, introduced Alaska farmers to the technology, which is expected to save farmers money on fertilizer costs.

Consumer horticulture: Most of our horticultural educational outreach emphasis is targeted toward the home gardener. With the high cost of importing food and concerns about food security, the interest in home gardening has increased. Extension trained 148 Master Gardeners in 2008. Home gardeners also attended a variety of composting, seed starting and organic and home gardening classes. An agent taught seed-starting and gardening classes in 12 villages and rural communities. Another agent worked on a grant determining local preferences and crop success for common cold-hardy crops and the viability and winter survivability of certain berry crops in six Interior villages. Through that effort, village residents received garden training and planting supplies and planned community vegetable and berry gardens.

2. Brief description of the target audience

- Commercial vegetable growers
- Organic vegetable growers
- Commercial greenhouse operators, including chain stores
- Commercial nursery operators, including chain stores
- Greenhouse owners for home consumption
- Community gardeners
- Home gardeners
- Commercial livestock producers
- Livestock owners for home consumption
- Horse owners
- Forage growers
- Forage consumers
- Youth and 4H
- Policy makers

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	3500	16250	4900	6750
2008	17875	2305050	1917	47150

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

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	11	0	11

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Output 1: Extension faculty and staff will offer agricultural and horticultural workshops.

Year	Target	Actual
2008	105	125

Output #2

Output Measure

- Output 2: Extension faculty and staff will provide agricultural and horticultural information through one-on-one consultations and consultations with other organizations. These consultations will be measured in contact hours.

Year	Target	Actual
2008	1600	6100

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Outcome target 1: Increase crop producers' knowledge of food production practices in Alaska.
2	Outcome target 2: Increase livestock producers' knowledge of food production practices in Alaska.
3	Outcome target 3: Increase crop producers' understanding of optimum production practices.
4	Outcome target 4: Increase livestock producers' understanding of optimum production practices.
5	Outcome target 5: Increase crop producers' ability to assess their own production practices.
6	Outcome target 6: Increase livestock producers' ability to assess their own production practices.
7	Outcome target 7: Increase crop producers' application of optimum production practices.
8	Outcome target 8: Increase livestock producers' application of optimum production practices.
9	Outcome target 9: Increase crop producers' production by five percent on a per farm basis over five years or less.
10	Outcome target 10: Increase livestock producers' production by five percent on a per farm basis over a five year or less.
11	Outcome target 11: Increase crop producers' economic viability on a per farm basis as measured by net farm income over five years or less.
12	Outcome target 12: Increase livestock producers' economic viability on a per farm basis as measured by net farm income over a five year or less.
13	Outcome target 13: Individuals who participate in educational activities related to community and home gardening will increase their knowledge of small-scale agricultural production techniques.
14	Outcome target 14: Individuals who participate in educational activities related to small-scale livestock production will increase their knowledge of small-scale agricultural production techniques.
15	Outcome target 15: Individuals who participate in educational activities related to community and home gardening will apply the techniques they learn.
16	Outcome target 16: Individuals who participate in educational activities related to small-scale livestock production will apply the techniques they learn.
17	Outcome target 17: Commercial horticultural producers (greenhouse growers, nurseries, landscapers, garden centers, and other commercial horticulture operations) will increase their productivity.
18	Outcome target 18: Commercial horticultural producers (greenhouse growers, nurseries, landscapers, garden centers, and other commercial horticulture operations) will increase their economic viability.
19	Outcome target 19: Alaska's dependence on imported food will decrease by one percent annually (target measure is 'percent').

Outcome #1

1. Outcome Measures

Outcome target 1: Increase crop producers' knowledge of food production practices in Alaska.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	40	380

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Alaska imports more than 95 percent of its food supply and with increasing transportation costs, commercial agriculture may become more viable for small and medium-sized crop producers in the state. Constraints include a short growing season, isolation from other producers and markets and high transportation costs. A need exists for educational support and expertise for producers to help make their operations more economically viable.

What has been done

CES agriculture and horticulture agents hosted a variety of conferences and events aimed at producers. Collectively, nearly 380 attended.
- Sustainable Agriculture Conference and Organic Growers School presenters talked about cut flower production, small farms economies, marketing, horticultural research and sustainable agriculture.
- Alaska Greenhouse and Nursery Conference speakers talked about importing and exporting restrictions, fern propagation, popular landscape plants, marketing and invasive pests.
- The Delta Farm Forum offered presentations by agriculture agencies as well as updates on the latest area farm research, general crop production and farm management information.
- The Harvest Wrap Up brought agricultural researchers together with Delta area farmers to discuss successes and failures of the past crop season and current and future research.
- Alaska Potato and Vegetable Conference participants received information about their crops around a theme of marketing. Research updates also were provided.

Results

- About 120 participants attended the 2008 Alaska Greenhouse Conference. Participants who finished evaluations rated many speakers good to excellent and particularly liked sessions on retail trends, propagating ferns and commercial herb production. Participants who had attended previous conferences indicated that they tried several new areas, including more organic and IPM practices, or tried new things such as growing fruit trees and small fruits and berries and planting new varieties of annuals and perennials.
- About 90 people attended the 2008 Sustainable Agriculture and Organic Growers School. Producers connected with each other and learned new techniques, research and tips from other producers and experts. Almost all evaluations from about 65 attendees rated about 15 sessions either good or excellent. Favorite sessions included extending the season with hoop houses, grant opportunities, an update on horticultural research and presentations on the Refugee Farmers Market Program and renewable energy.
- The Potato and Vegetable Conference drew 45 participants. Six farmers who attended the conference indicated on the evaluation they would use the information to improve their vegetable growing techniques.

4. Associated Knowledge Areas

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

Outcome #2

1. Outcome Measures

Outcome target 2: Increase livestock producers' knowledge of food production practices in Alaska.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	40	225

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Improving livestock producer knowledge is important because the information will help improve their herd health, the quality of the product and the viability of livestock operations. Improving producer knowledge also impacts the people who buy Alaska-produced meat, milk and fiber products because they receive a better product. Improved livestock operations also could provide an economic benefit to the communities in which livestock producers reside.

What has been done

- The Extension livestock specialist presented Winter Animal Science Series workshops at Kenai, Homer, Palmer, Wasilla and Fairbanks attended by 75 producers and 4-Hers. Topics included animal nutrition, genetics, reproduction, lactation, herd health and disease, animal welfare and well-being.
- The livestock specialist developed and organized the 2008 Alaska Livestock Producer Conference attended by 150 Alaska livestock producers. He worked with a stakeholder group (Alaska Diversified Livestock Association) to develop sessions that served their needs. Sessions included animal health, forage management and agri-tourism. Three guest speakers, all directors or assistant directors of national livestock associations, presented information on elk breeding, deer and bison raising.

Results

- Participants in the Winter Animal Science Series learned information about livestock diseases, nutrition, breeding, and animal well-being. Pre-and post-tests indicate a significant increase of producer knowledge of animal science. These workshops further the knowledge of producers toward optimum care of livestock and their health. Better livestock health contributes to a better product and will make livestock operations more economically viable.
- Attendees of the Livestock Producer conference learned more about elk breeding, and raising deer and bison. As a result of the conference, an Alaska elk producer is working with the elk specialist and the livestock specialist to produce the first elk calf in Alaska resulting from artificial insemination. The biggest benefit of this technology will be the ability to move genetics between farms in the Lower 48 and Alaska without moving live animals, something that will save money for our elk producers, lower the risk of introducing Chronic Wasting disease and improve the genetic quality of Alaskan elk.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems
601	Economics of Agricultural Production and Farm Management
308	Improved Animal Products (Before Harvest)
302	Nutrient Utilization in Animals

Outcome #3

1. Outcome Measures

Outcome target 3: Increase crop producers' understanding of optimum production practices.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	40	65

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

It is hoped that educational opportunities and research-based practical advice offered to producers will help new producers enter the market and improve the economic viability of other operations.

What has been done

- The Anchorage agent helped three refugees grow and sell vegetables for a farmers market, for the second summer. Agent worked with the farmers on their 8,000 sq. ft. plot and taught new growing techniques.
- Following UAF Agricultural and Forestry Experiment Station faculty research and presentations at Extension-hosted Alaska Greenhouse and Nursery conferences, more than two dozen producers have planted peonies, potentially a high-value export crop. They mature here from July-September, at a time they are not available elsewhere in the world. Extension has assisted several of these farmers.
- Agricultural and horticultural agents work with producers across the state, answering questions by phone and providing on-site support.

Results

- A poor growing season, and moose and root maggot damage resulted in a reduction in harvestable produce on the refugee project. The growers earned a total of $2,981 selling at farmers market, and wholesale to a grocer and a food distributor. The farmers learned more gardening skills and improved their marketing and business skills. USDA recognized the project and the agent and one of the participants were asked to present the results of their project to disadvantaged and new farmers and ranchers in Washington, D.C.
- It takes at least three years for peonies to mature to the point of harvest, so few producers have had their first crops. The success of this enterprise can measured largely in plant establishment. So far, the Experiment Farm reports that there are nine larger commercial growers who have 500 or more peonies planted and 18 others are associate growers with fewer than 500 planted. In February 2008, it was estimated that there were 15,000 peonies planted in Alaska.
- Statewide horticulture specialist helped an individual who wanted to begin a peony farm but had minimal business experience. Specialist advised farmer on creating a business plan and provided soils and peony production consulting. The farmer, through backing of an investment group, purchased and prepared the site and the operation planted 8,000 crowns last summer, making it one of the largest peony operations in the state.

4. Associated Knowledge Areas

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

Outcome #4

1. Outcome Measures

Outcome target 4: Increase livestock producers' understanding of optimum production practices.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	40	150

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Because of climate considerations and geographic isolation, Alaska does not have a large livestock industry. Livestock includes beef and reindeer with small numbers of dairy cattle, goat, sheep, yak and musk ox. Since Extension has only one livestock specialist, few opportunities exist for the education of producers. Increased education translates into more commercially viable operations and better herd health.

What has been done

The Alaska Livestock Producers Conference was organized with the assistance of the Alaska Diversified Livestock Association, Inc. (ADLA). The articles of incorporation state that the ADLA is established to promote the responsible development, management, marketing and research for the diversified livestock industry of Alaska. To this end, directors or assistant directors of the North American Deer Farmers Association, the North American Elk Breeders Association and the North American Bison Association were brought to Alaska to speak about optimum production practices. Following the conference, many participants and the guest speakers toured local farms and ranches to view livestock management practices.

Results

Activities associated with the Alaska Livestock Producers Conference including the outside speakers and farm and ranch tours and management practices discussion, have resulted in some farmers and ranchers adopting improved production practices.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems
601	Economics of Agricultural Production and Farm Management
308	Improved Animal Products (Before Harvest)
302	Nutrient Utilization in Animals

Outcome #5

1. Outcome Measures

Outcome target 5: Increase crop producers' ability to assess their own production practices.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	30	626

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The 2002 Farm Bill has brought many Alaskan farmers into Natural Resources Conservation Service (NRCS) field offices to seek participation in programs such as EQIP. Nutrient and pest management conservation practices are two components of most EQIP long-term contracts that require the assistance of Extension to provide nutrient recommendations, pest scouting, and Integrated Pest Management recommendations. This has increased producer interest in the management of nutrients and pesticides.

What has been done

CES had an agreement to assist with the delivery of technical assistance associated with conservation cost-share programs of the Natural Resources Conservation Service in its Delta, Fairbanks, Palmer, Soldotna and Homer Alaska field offices. The Extension Service assisted NRCS in providing technical assistance associated with the implementation of the nutrient and pest management conservation practices as scheduled in EQIP long-term contracts.

Results

Through this project, 626 EQIP participants/farmers applied pesticides and nutrients at the specified rates and were educated in weed identification and soil sampling techniques. EQIP participants maintained field notes records necessary for participation in the NRCS-administered EQIP program and improved soil and water conservation. The program provides incentives to producers/land owners for improving their roles in environmental stewardship.

4. Associated Knowledge Areas

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

Outcome #6

1. Outcome Measures

Outcome target 6: Increase livestock producers' ability to assess their own production practices.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	30	600

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Increased education of producers as well as contacts with the livestock specialist will improve producer abilities to assess their own production practices and will improve production capabilities and animal health and well-being.

What has been done

- The Extension livestock specialist presented a series of animal science workshops in five communities with the largest livestock populations nearby.
- The 2008 Alaska Livestock Producers Conference was organized with the assistance of the Alaska Diversified Livestock Association, Inc. (ADLA). Representatives of the North American deer, elk and bison associations spoke about optimum production practices. Many participants and the guest speakers toured local farms and ranches to view livestock management practices. These industry leaders and the livestock specialist all spoke about assessing farm and ranch operation and solving common livestock management concerns.
- The livestock specialist also consults with livestock producers individually. During the past year, he responded to 410 clients by phone, e-mail, visits to Extension offices and on-site visits to their operations. He recorded 230 hours of work in this area.
- The livestock specialist taught 17 students in NRM 320 Animal Science, a course specifically directed to animal science in Alaska and problem solving associated with animal production in our state.

Results

Through multiple contacts with producers, the livestock specialist has become aware of challenges Alaska livestock producers face. He gives them the understanding and tools to improve their operations, sometimes troubleshooting on site. Helping producers solve their problems increases their ability to assess their production practices in the future.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems
302	Nutrient Utilization in Animals
308	Improved Animal Products (Before Harvest)

Outcome #7

1. Outcome Measures

Outcome target 7: Increase crop producers' application of optimum production practices.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	20	10

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Working directly with producers to implement research-based solutions to production challenges will enhance production, environmental stewardship and the economic viability of operations. One example is precision agriculture, which is very common in the Midwest but has been largely absent in Alaska because UAF had no expertise in the technology and our small farms did not seem to be good candidates for the technology. Higher fertilizer and fuel costs have changed the equation.

What has been done

- Extension offered information on precision agriculture to two groups of 24 farmers in Kenai and in the Palmer area and has encouraged the creation of a cooperative that would lower costs for participants. Precision agriculture uses technology to determine more precise soil analysis and increases crops while decreasing labor, fuel and chemicals, etc.
- With high nitrogen prices, several potato growers were interested in an on-farm trial of adding supplemental nitrogen at hilling time rather than the historic Alaska practice of adding all nitrogen at planting time. Three rates of side-dress nitrogen were added to plots in each of three grower fields.

Results

- Seven farmers began using the precision agriculture techniques, which helps reduce farmer costs for fertilizer. One farmer who adopted the program estimates that it saves him about $10,000 a year.
- Although soil tests indicated enhanced levels of nitrogen in the supplemented plots, poor plant stands resulted in no significant yield differences. The growers are encouraged by the nitrogen management practice and may try again next season.

4. Associated Knowledge Areas

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

Outcome #8

1. Outcome Measures

Outcome target 8: Increase livestock producers' application of optimum production practices.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	20	10

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

General livestock education will increase the knowledge of livestock producers, hopefully improving their operations and their ability to apply optimum practices. This should lead to increased profitability as problems that require veterinary care decrease and production is optimized.

What has been done

The livestock specialist, in addition to offering educational opportunities to livestock producers, consults with them individually. While working with cattle producers in Southcentral Alaska, the livestock specialist became aware that calf death losses during the neonatal period were high. Since many regions of Alaska are selenium deficient, he suggested that producers place SE TM salt blocks on their grazing lease for consumption by pre- and postpartum cows.

Results

Ten livestock producers began including selenium salt blocks as a part of their nutrition management in the spring of 2005. A 2008 confidential survey of those 10 cattle operations indicated increased herd size with each ranch indicating increased number of heifers entering the breeding herd compared to numbers from the previous three years.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems
308	Improved Animal Products (Before Harvest)
601	Economics of Agricultural Production and Farm Management
302	Nutrient Utilization in Animals

Outcome #9

1. Outcome Measures

Outcome target 9: Increase crop producers' production by five percent on a per farm basis over five years or less.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	10	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Note: We cannot estimate actual percentage because we lack the means to do so.

Producers rely on Extension to help them face production challenges. One challenge has been the limiting factor of sulfur deficiency. Another has been decreased acreage and invasive weed problems due to berm piles left from the original clearing of agricultural land in Delta.

What has been done

- Following Extension initiated sulfur deficiency trials in 1996 and educational outreach, the Kenai Peninsula forage grass growers adopted sulfur-enhanced fertilizers as their standard. The accepted timothy hay fertilizer standard among those producers is 400 pounds of 20-10-10 fertilizer per acre. Testing crops for sulfur deficiency continues on the Kenai.
- Delta agent struggled to help farmers control invasive weeds with herbicides and he advocated for financial incentives for berm row removal with state and federal agents for years.

Results

Neither Extension nor the state has measured production on a per farm basis, so it is impossible to point out exact numbers. We do know that hay farmers in the Delta and Kenai areas have increased production due to following fertilizer recommendations to counteract sulfur deficiency. Hay producers who follow recommendations from the sulfur deficiency trials on the Kenai Peninsula often double and triple yields with the addition of 30 and 80 pounds of sulfate sulfur per acre. However, the rising cost of fertilizers and petroleum products have negatively impacted farmers.
- The Salcha-Delta Soil Water Conservation District offered a 100 percent cost coverage program for the farmland. The removal of the berm rows will make available 25-30 percent more farmable acreage for area landowners.

4. Associated Knowledge Areas

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

Outcome #10

1. Outcome Measures

Outcome target 10: Increase livestock producers' production by five percent on a per farm basis over a five year or less.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	10	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Note: The zero in the actual number box means that this is impossible for us to estimate because we lack means to do that.

Improving producer practices and the ability to problem solve on their own should make operations more productive.

What has been done

Several educational and consultation efforts led by the livestock specialist should contribute to improving livestock production, but neither Extension nor the state of Alaska has measured individual production of operations so it is not possible to give this statistic. The livestock specialist knows of a few situations in which particular operations have increased their productivity by solving problems. Recommendation to add selenium blocks to grazing land in Homer solved calf mortality problems for a group of 10 cattle producers in that area.

Results

A 2008 confidential survey of those 10 cattle operations indicated increased herd size with each ranch indicating increased number of heifers entering the breeding herd compared to numbers from the previous three years.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems
308	Improved Animal Products (Before Harvest)
302	Nutrient Utilization in Animals

Outcome #11

1. Outcome Measures

Outcome target 11: Increase crop producers' economic viability on a per farm basis as measured by net farm income over five years or less.

Not reporting on this Outcome for this Annual Report

Outcome #12

1. Outcome Measures

Outcome target 12: Increase livestock producers' economic viability on a per farm basis as measured by net farm income over a five year or less.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	10	4

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Improving producers practices and the ability to problem solve on their own should make operations more economically viable.

What has been done

Alaska Extension does not currently track the economic viability of individual farms, so even estimating this number is impossible. It is reasonable, however, to assume that improved understanding of livestock practices and challenges will lead to improved economic viability of producer operations. One-on-one efforts by the livestock specialist and four ranch families have helped those families begin use of computerized financial record-keeping systems (Quicken). Better financial record-keeping will enhance the likelihood of economic success.

Results

Four ranches now have the knowledge and capability to monitor ranch finances through an up-to-date record-keeping system.

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management

Outcome #13

1. Outcome Measures

Outcome target 13: Individuals who participate in educational activities related to community and home gardening will increase their knowledge of small-scale agricultural production techniques.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	50	148

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Home horticulture in many cases is Alaska's subsistence agriculture. Gardening is one of the state's most important summertime activities. As transportation and fertilizer costs rise, food prices are also expected to increase and more Alaskans are expected to show an interest in gardening to help stay within their food budget. Most of our horticultural educational outreach emphasis is targeted toward the home gardener. Some of the participants in Extension home gardening classes have used the information to become commercial producers.

What has been done

Alaska Extension offers a number of short and longer term gardening classes that teach information that could be applied to small-scale agricultural production.
- Some 141 gardeners in Fairbanks, Palmer, Juneau, Haines and Anchorage and seven others online completed Master Gardener programs. Master Gardeners may continue their education by attending an annual statewide Master Gardener conference; 169 attended last year.
- A rural outreach was undertaken by the Sustainable Communities agent, who had a goal of determining local preferences and crop success for common cold-hardy crops, and to conduct trials on the viability and winter survivability of certain berry crops. Another outcome of the grant was to develop economic models for small-scale production of potatoes. Six villages received garden training and planting supplies and planted community vegetable and berry gardens.
Source of funding: USDA special grant
- Another agent taught seed-starting and gardening classes in 12 villages and rural communities. Seeds, seed starting kits and publications were sent distributed by mail or through workshops to 400 participants in 20 villages.

Results

- Although some participants in gardening workshops have later started small-scale commercial operations, the exact number is not known because Extension has not measured this. Agents know of Master Gardeners who have started commercial operations.
- The village gardening project had mixed results. While the project was implemented well, agent discovered that villagers were primarily interested in personal use gardening as a means to supplement subsistence foods and some villages had difficulties finding volunteers to garden. There was virtually no interest in gardening as small-scale agriculture.
- Gardening interest continues to grow in rural communities.

4. Associated Knowledge Areas

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

Outcome #14

1. Outcome Measures

Outcome target 14: Individuals who participate in educational activities related to small-scale livestock production will increase their knowledge of small-scale agricultural production techniques.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	50	92

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

All Alaska livestock producers are small-sized operations based on the USDA definition of small, medium or large farms. Principles learned by small-scale livestock operators, such as by a 4-Her or a producer with a small operation, also apply to a larger operation if the small operator chooses to grow.

What has been done

4-Hers and small-scale livestock producers also participate in educational workshops offered by the livestock specialist in a variety of communities. The livestock specialist also teaches a 15-week university-level class in animal science, which uses distance teaching technology to offer the class in Palmer, Glennallen and in Fairbanks. Because of his background in livestock agriculture, the livestock specialist brings practical problems from the farm to the classroom. He also takes students out to producer farms where they hear of problems and successes firsthand.

Results

The students receive practical solutions from the producers themselves, and they also become aware of how producers rely on the land grant university and how the university serves the livestock producers. Gaining this knowledge will help these students in the future with their own operations.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems
308	Improved Animal Products (Before Harvest)
302	Nutrient Utilization in Animals

Outcome #15

1. Outcome Measures

Outcome target 15: Individuals who participate in educational activities related to community and home gardening will apply the techniques they learn.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	50	180

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Extension has offered a variety of gardening classes and the value of the classes depends in large part on whether participants use techniques that they were shown. The best way to learn something is to include a hands-on element to the training.

What has been done

Alaska Extension offers a number of short and longer term composting and gardening classes that include hands-on components. Master Gardener program classes also include a hands-on component. Participants also are required to provide 40 hours of volunteer time by providing gardening information to others, demonstrating what they have learned. The volunteer time is dedicated to home garden visits, teaching basic gardening classes, and working with youth and adult groups interested in gardening. About 148 Master Gardeners completed the course in Alaska during the past year.

Results

Eight evaluations returned after a Fairbanks master gardening class indicated that all gardeners intended to plan their garden and fertilize and or lime their soil. Most said they would grow and irrigate their plants and all indicated it increased their knowledge about basic plant growth and development and about plant propagation.
- Of 38 people who attended a composting class, 29 responded to a survey. Nearly 90 percent of the respondents planned to compost in 2008. Almost all who had composted previously were unsuccessful but after taking the class and all but one indicated what they had done wrong.
- Of people who attended an organic vegetable gardening class, five planned to use organic seed and six intended to compost.
- Gardening projects in rural, mostly Alaska Native communities, have encouraged community gardens and gardening skills. One community has had two successful years with a community garden and is talking about resurrecting a community greenhouse for vegetable starts and fresh produce in the spring and fall. Another community garden has brought elders and youth together on the project.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
102	Soil, Plant, Water, Nutrient Relationships

Outcome #16

1. Outcome Measures

Outcome target 16: Individuals who participate in educational activities related to small-scale livestock production will apply the techniques they learn.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	30	75

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Extension hopes that providing education through small classes and other educational opportunities will lead to applying techniques they have learned and thus improving their herd health and their operations.

What has been done

More than 75 small producers, including 4-Hers attended a series of workshops offered by the livestock specialist in five communities. Topics included animal nutrition, genetics and animal breeding, reproductive physiology, physiology of lactation, environmental physiology, ethology, animal behavior, animal welfare and wellbeing. Several livestock problems were raised by participants and the livestock specialist offered research-based solutions to those producers.

Results

One yardstick on whether producers apply what they have learned is that they show an understanding of the topics offered in classes. Producers show that they understood the concepts presented in three classes through surveys undertaken before and after. As an example, mean test scores from two of the workshops offered at five locations showed a much greater understanding of animal science:
- Calf management, 23.1 percent in the pretest to 78.7 percent in the post test.
- Livestock artificial insemination rose from 26.2 percent in the pre-test to 81.4 percent in the post-test.
Livestock specialist has followed up with some producers to find whether the solutions offered have been successful. The livestock specialist became aware of the calf mortality problem through one of these workshops and followed up with recommended solution.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems
308	Improved Animal Products (Before Harvest)
302	Nutrient Utilization in Animals

Outcome #17

1. Outcome Measures

Outcome target 17: Commercial horticultural producers (greenhouse growers, nurseries, landscapers, garden centers, and other commercial horticulture operations) will increase their productivity.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	15	12

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Agriculture in Alaska is a small industry that operates in a limited number of diverse regions in the state. These regions are separated by long distances, differ in climate, soils and topography, and naturally vary in crop adaptation and the mix of crops and livestock produced. Farm size is small, agricultural infrastructure is poorly developed, and market access and availability of production information from agricultural professionals is limited. On the positive side, Alaska produces a small amount of the food consumed here, so there is room for the market to grow and in many areas there is an increasing demand for locally produced food.

What has been done

Two Extension conferences, in particular, relate to industry horticulturalists: the Alaska Greenhouse and Nursery Conference and the Sustainable Agriculture Conference and Organic Growers School.
- During the 27th annual Greenhouse and Nursery Conference, speakers talked about fern propagation, importing and exporting restrictions, popular landscape plants, marketing, topsoil, beneficial insects and consumer-buying preferences. During the previous year, at the conference, growers expressed a strong interest in finding out more about the peony growing, which resulted in a 2008 Division of Agriculture-sponsored peony conference immediately following the greenhouse conference.
- Conference topics at the 2008 SARE conference included cut flower production, small farms economies, marketing, extending the season with hoop houses and horticultural research and sustainable agriculture.

Results

Peony flowers are not harvested for at least three years after planting so it is too early to get production results but buyers are interested when peonies do come online. Of the 31 growers who attended the 2008 Peony Conference, 10 had planted approximately 15,000 peonies and more planned to plant this year. Two of the original growers plan to increase their number of plants and 16 other growers were considering peony production.

4. Associated Knowledge Areas

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

Outcome #18

1. Outcome Measures

Outcome target 18: Commercial horticultural producers (greenhouse growers, nurseries, landscapers, garden centers, and other commercial horticulture operations) will increase their economic viability.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	15	2

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

It is hoped that educational opportunities and Extension support to producers will lead to increased economic viability.

What has been done

Two Extension-hosted conferences provide producers information we hope will make their operations more economically viable: The Alaska Greenhouse and Nursery Conference and the Sustainable Agriculture Conference and Organic Growers School.
Each of our agriculture agents fields calls and provides information to commercial producers, if requested. Each of our agents have stories about how they encouraged commercial horticulture operations, whether advising a turf client or helping a peony farmer set up operations. The Palmer agent responded to a request for help from a developer hoping to build a grass airstrip in the middle of a subdivision in Talkneetna. Based on research at the Matanuska Experiment Station, agent suggested a native Alaska grass that is hardy and could be established on gravel. In another situation, the Palmer horticulture specialist helped a landscaper contractor who was about to lose a job because the grass was not growing well. A soil test and lab analysis showed that the soil was lacking phosphorous. CES and Experiment Station devised a strategy to get phosphorous into the root system with minimal disturbance to the turf.

Results

Two Extension-hosted conferences provide help for producers make their operations more economically viable.
- Topics at the 2007 Sustainable Agriculture conference included running a family organic farm, fertility management, organic certification, farm management and finances, an update on peony farming for export markets, integrated pest management in Alaska, weed control and equipment needs.
- During Greenhouse and Nursery conference, greenhouse and nursery producers got lessons in nursery production, marketing, integrated pest management in greenhouses and new annuals and perennials.
- Grass at the Talkeetna airstrip flourished and the developer did not have to haul in $50,000 in topsoil as he expected. Developer has become enthusiastic proponent of Extension work, and as word of the success traveled, agent was asked to help others with their airstrips.
- The landscape contractor was able to salvage the turf job, which was worth $150,000.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
102	Soil, Plant, Water, Nutrient Relationships

Outcome #19

1. Outcome Measures

Outcome target 19: Alaska's dependence on imported food will decrease by one percent annually (target measure is 'percent').

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	94	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

We cannot give a precise actual number because the statistics don't exist. This outcome has been revised for the 2009 year.

Alaska imports more than 95 percent of its food. Because of rising transportation costs and food security issues, as well as a desire to support local production, Extension has worked with producers to increase their agriculture production and decrease reliance on imported food. Imported food is particularly costly in rural areas.

What has been done

- While Extension does not measure decreases in imported food, Alaska Field Office of the USDA National Agricultural Statistics Service keeps statistics of overall production of produce sold for more than $1,000 by producers.
- Increased interest in home production led to an increase in participants in gardening workshops and Master Gardening classes.
- The Federally Recognized Tribes Extension Program helps rural and predominantly Alaska Native communities become more self-reliant. Extension improves skills and knowledge in gardening and agriculture. Seed-starting and gardening workshops were offered to more than 400 individuals in 13 interior Alaska communities. Agent also worked with tribal councils and Tanana Chiefs Conference to order rototillers, greenhouse kits, fertilizers and seed potatoes with BIA agriculture funds.
Source of funding: Smith-Lever 3d

Results

- The most current statistics from the U.S. National Agricultural Statistic Service are for 2008. Potatoes are the most important Alaska vegetable crop and production decreased from 176,000 hundredweight in 2007 to 135,000 hundredweight in 2008, the result of what Extension potato specialist describes as a generally recognized abysmal farm year because of weather conditions.
- Under the Federally Recognized Tribes Extension Program, agent reports increased interest in village gardening. She helped purchase five greenhouses given to four villages, which will provide infrastructure for future community garden projects and seed-starting workshops.
She also helped purchase seeds and seed potatoes, and additional requests were received for seed starting, community gardening and vegetable gardening workshops.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
205	Plant Management Systems

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

Working through the Plan of Work outcomes, we discovered several measures that we do not have adequate information to report on, particularly regarding the percentage increase of livestock production and profitability per farm and the percentage increase of crop producers' productivity and profitability per farm. Our interim director has revised and simplified outcomes for 2009. 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, the geographic distances between communities and high transportation costs involved in traveling to communities off the road system all present challenges to Extension, which tries to provide a supporting role for horticultural and agricultural production in the state.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- After Only (post program)
- Retrospective (post program)
- Before-After (before and after program)
- During (during program)
- Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- Comparison between locales where the program operates and sites without program intervention

Evaluation Results

It is obvious that we need to improve our evaluation techniques regarding the capture of programmatic efforts and impacts. Most of our agriculture agents do evaluations after an event for recording impacts but our livestock specialist and a number of agents do pre- and posttest surveys to determine what participants in their workshops learn. We are learning through surveys what areas interest clients for future programming. All of our agents used surveys after our major conferences and most agents regularly surveyed following individual classes.

Key Items of Evaluation

Program #2

V(A). Planned Program (Summary)

1. Name of the Planned Program

Invasive Weeds, Noxious Plants and Pest Management

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
212	Pathogens and Nematodes Affecting Plants	5%		5%	
213	Weeds Affecting Plants	20%		20%	
214	Vertebrates, Mollusks, and Other Pests Affecting Plants	5%		5%	
216	Integrated Pest Management Systems	70%		70%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

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

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	3.0	0.0	0.0	0.0
Actual	2.5	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
95801	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
95801	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
424194	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

The program conducted group and one-on-one educational activities with specific sectors of the pest management industry, the agricultural and horticultural industry and the general public to provide pest identification and management information. The IPM program addressed the public need for pest management education within Alaska with seven seasonal technicians across Alaska and three full-time staff. Altogether, Extension faculty and IPM staff offered approximately 100 workshops. Technicians monitored selected urban and rural communities for the presence of exotic insect pests and invasive weeds. They worked with partnering agencies to provide a coordinated response to invasive weeds, noxious plants and pest management. Alaska's diverse pest management projects include the statewide IPM outreach program, the Pesticide Safety Education Program, Western Region IPM and the Western Plants Diagnostics Network.

IPM program: The IPM program identifies any organism in question and investigates the individual site and situation. Clients are counseled by IPM staff and by Extension agents. These CES faculty and staff advise green industry professionals, farmers, gardeners, horticulturists and the general public about pest identification and the least toxic pest management practices.

Alaska Pest Management Program: The Alaska Pest Management Program, funded through USDA/CSREES and the Western IPM Center, continues to be the premiere pesticide use resource for Alaska. More than 2,500 visitors used the program's website at www.alaskapestmanagement.com.

Pesticide Safety Education Program: Workers who apply pesticides as part of their workplace activity are required to complete pesticide safety training and pass a state of Alaska Department of Environmental Conservation exam and must be recertified annually. Extension faculty taught eight pesticide applicator safety certification trainings in seven Alaska communities. During those trainings, 113 certifications were received.

Environmental Quality Incentives Program: Nutrient and pest management conservation practices are two components of most farmers' EQIP long-term contracts that require the assistance of Extension to provide nutrient recommendations, pest scouting and Integrated Pest Management recommendations. Through the EQIP program, 626 clients applied pesticides and nutrients at the specified rates and were educated in weed identification and soil sampling techniques.

Leadership: Extension provided information to the Alaska Legislature on the need for a statewide management approach and state weed coordinator position. Legislature approved a bill creating the position, which will allow for federal funding of efforts. In November 2007, UAF CES hosted the eighth annual statewide Alaska Noxious and Invasive Plants Management Workshop and Alaska Invasive Species conference, which brought together a variety of partner agencies and citizens.

2. Brief description of the target audience

Arborists

Museums & science centers

Botanical garden volunteers

Military base personnel

Child care centers

Pest control operators

Farmers

Property managers

Food service organizations

Public health organizations

Garden and plant associations

Students and teachers in public and private schools

Garden centers

Recreational facilities

Greenhouses, public and commercial

Resort hotels and lodges

Homeowner associations

Rural residents

Landscapers

Local, state and federal parks

Tree services and nurseries

Master Gardeners

Youth groups

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	**Target**	**Target**	**Target**	**Target**
Plan	12500	25000	150	500
2008	11531	1021520	400	51530

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

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	1	0	1

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Output 1: Extension faculty and staff will offer invasive weeds, noxious plants and pest management workshops.

Year	Target	Actual
2008	100	97

Output #2

Output Measure

- Output 2: Extension faculty and staff will provide invasive weed, noxious plant and pest management information through one-on-one consultations and consultations with other organizations. These consultations will be measured in contact hours.

Year	Target	Actual
2008	1000	2730

Output #3

Output Measure

- Output 3: Extension will become the lead agency coordinating Alaska's response to invasive weeds, noxious plants and pest management.

Year	Target	Actual
2008	0	1

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Outcome target 1: Increase knowledge of appropriate pest management practices for use in Alaska.
2	Outcome target 2: People will understand and identify the optimum least-toxic pest management practices.
3	Outcome target 3: People will increase their ability to assess their current pest management practices.
4	Outcome target 4: Pesticide applicators will use the optimum least-toxic pest management practices.
5	Outcome target 5: Decrease commercial crop losses from pests by X% over five years (target measured in 'percent').
6	Outcome target 6: Reduce major pest infestations on ornamentals, including urban trees/timber by 5% on a statewide basis over five years (target measured in 'percent').

Outcome #1

1. Outcome Measures

Outcome target 1: Increase knowledge of appropriate pest management practices for use in Alaska.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	150	234

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Due to lengthening summer seasons, warmer average temperatures, and increased trade and commerce, introduced invasive insects and pathogens have taken a toll on forests and landscaping. Explosions of populations of pests such as the birch leaf miner, bark beetles, aspen leaf miner, alder and larch insect pests can result in misuse and overuse of pesticides. It is critical that land managers, homeowners and farmers receive training in pest identification and pest management practices. Alaskans still have the chance to prevent many infestations before they become so widespread that control is costly and eradication impossible.

What has been done

The Integrated Pest Management program addresses the need for pest management education within Alaska with seven seasonal technicians across Alaska and three full-time staff.
- Agriculture and horticulture agents field pest management questions and teach pest management techniques in workshops for gardeners and farmers, through the Master Gardener program and during conferences.
- The Alaska Pest Management Program, funded through USDA/CSREES and the Western IPM Center, continues to be the premiere pesticide use resource for Alaska.
- Extension is the lead agency for pesticide applicator training in Alaska and participants who pass an exam receive a state certification.
- In November 2007, UAF CES hosted the eighth annual statewide Alaska Noxious and Invasive Plants Management Workshop and Alaska Invasive Species. Participants talked about pest concerns and control measures.

Results

- The Integrated Pest Management program identifies any organism in question and investigates the individual site and situation. After consultation with the IPM staff, a total of 230 clients reported that they would use IPM control measures.
- More than 2,500 visitors used the Alaska Pest Management Program website at www.alaskapestmanagement.com.
- Attendees of the statewide Alaska Noxious and Invasive Plants Management Workshop and Alaska Invasive Species conferences became more aware of invasives issues and control efforts.
- The Extension invasive plant instructor chaired the Alaska Committee for Noxious and Invasive Plant Management board of directors, which is considered the source of invasive weeds expertise by Alaska legislators and policy makers.

4. Associated Knowledge Areas

KA Code	Knowledge Area
214	Vertebrates, Mollusks, and Other Pests Affecting Plants
213	Weeds Affecting Plants
216	Integrated Pest Management Systems
212	Pathogens and Nematodes Affecting Plants

Outcome #2

1. Outcome Measures

Outcome target 2: People will understand and identify the optimum least-toxic pest management practices.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	25	230

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

CES promotes IPM best management practices to pest problems with minimal impact to the environment, human health and non-target organisms. In the case of farmers, pesticide recommendations take into account soil types, leachability or runoff potential of proposed products and other factors to insure minimal environmental impacts. Oftentimes, clientele are seeking a quick solution to a perceived problem. Clients often learn that there is no need for chemical pesticides. Other stakeholders include individuals, professional pest control operators, garden clubs, and homeowner associations.

What has been done

- Clients are counseled by IPM staff in all six districts across the state and by agricultural agents. These CES faculty and staff advise green industry professionals, farmers, gardeners and horticulturists about the least toxic pest management practices.
- Participants in organic gardening and Master Gardening classes and the Sustainable Agriculture Conference also are counseled about the least toxic methods of pest management, as are participants in the pesticide applicator safety training.
- Nutrient and pest management conservation practices are two components of most farmer EQIP long-term contracts that require the assistance of Extension to provide nutrient recommendations, pest scouting and Integrated Pest Management recommendations.

Results

- The Integrated Pest Management program identifies any organism in question and investigates the individual site and situation. After consultation with the IPM staff, a total of 230 clients reported that they would use IPM control measures.
- Through the EQIP program, 626 clients applied pesticides and nutrients at the specified rates and were educated in weed identification and soil sampling techniques.

4. Associated Knowledge Areas

KA Code	Knowledge Area
216	Integrated Pest Management Systems
212	Pathogens and Nematodes Affecting Plants
213	Weeds Affecting Plants
214	Vertebrates, Mollusks, and Other Pests Affecting Plants

Outcome #3

1. Outcome Measures

Outcome target 3: People will increase their ability to assess their current pest management practices.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2	10

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Alaska supports two major international air cargo and seaports and hosts thousands of visitors a year. Alaska also imports most of its food and many horticultural products and agriculture commodities such as hay, straw and field grains, so it remains vulnerable to infestations by imported pests, including invasive plants. Improving citizen, farmer and land manager ability to assess pest management practices is critical. Forty percent of the Alaskan population lives in and around Anchorage and more than 10,000 acres of municipal parkland, parks and trails are heavily used by the public. Although noxious weeds have become a problem in the parks, lack of information coupled with public concern about using chemicals in popular parks led to ineffective control measures.

What has been done

- Professional pest control operators work with IPM staff to learn and apply IPM techniques.
- The Anchorage invasive plants instructor and the statewide IPM technician worked with the Municipality of Anchorage to broaden its noxious weed control strategy. The municipality and others worked with Extension to create a Cooperative Weed Management Area and a Citizen Weeds Warrior program to promote manual weed pulls at strategic times. The municipality control measures now occasionally include chemical treatments as well, only where appropriate.
- CES works with other state and federal agencies discussing proposals for the proper and effective use of herbicides along roadways for control of invasive weeds.
- Extension provided information to the Alaska Legislature on the need for a statewide management approach and state weed coordinator position.
- Through the EQIP program, farmers continue to be educated about the value of accurately scouting fields and keeping notes on weed species and control efforts.

Results

- Professional pest control operators continue to improve their efficacy by evaluating practices and adapting with IPM.
- The Municipality of Anchorage is better able to assess its pest management practices and has learned how to broaden its control methods. The Cooperative Weed Management Area should be sustainable for years to come.
- The Alaska Legislature passed a bill in 2008, which creates a statewide weed coordinator, who will develop a management plan for the state. Many natural resource agencies in Alaska will be able to apply for federal funding, which should support a whole new level of invasive plants prevention and management.
- The EQIP program provides incentives to producers/land owners for improving their roles in environmental stewardship.

4. Associated Knowledge Areas

KA Code	Knowledge Area
216	Integrated Pest Management Systems
212	Pathogens and Nematodes Affecting Plants
213	Weeds Affecting Plants

Outcome #4

1. Outcome Measures

Outcome target 4: Pesticide applicators will use the optimum least-toxic pest management practices.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:
Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2	59

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Extension faculty who teach pesticide applicator safety certification trainings include information about the Integrated Pest Management program, which advocates for a careful analysis of the pest and the least toxic pest management practices. Workers who apply pesticides as part of their workplace activity are required to complete pesticide safety training and pass a state of Alaska Department of Environmental Conservation exam and must be recertified annually.

What has been done

Extension faculty taught eight pesticide applicator safety certification trainings in seven Alaska communities. During those trainings, 113 certifications were received. Of those, 59 were recertifications. The trainings include a segment about the Integrated Pest Management program, which advocates for a careful analysis and identification of pests and the least toxic pest management practices.

Results

Since pesticide applicators are required to take the training annually, they are grounded in the least toxic methods of pest management. Participants in a pesticide applicator training in the Matanuska-Sususitna District, said they had not previously considered a nonchemical means of pest eradication before their training but would now.

4. Associated Knowledge Areas

KA Code	Knowledge Area
216	Integrated Pest Management Systems
212	Pathogens and Nematodes Affecting Plants
213	Weeds Affecting Plants

Outcome #5

1. Outcome Measures
Outcome target 5: Decrease commercial crop losses from pests by X% over five years (target measured in 'percent').

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:
Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	7	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Retail sales of plant materials contaminated with a variety of pests continue to challenge the state. Increasing Alaska invasive weed issues are expected to generate more pest management issues. A late blight infestation in the Mat-Su Valley in 2005 was blamed on the importation of tomatoes from the Pacific Northwest. Since potatoes are the most important Alaska vegetable crop, late blight is a serious threat to the state potato industry. Farmers need to be prepared for future outbreaks.

What has been done

After late blight of potato was discovered in the Mat-Su Valley, a rapid response by Extension led to its containment. Extension communicated with farmers, who either decided to spray to prevent the spread of the late blight or decided to take their losses. A few farmers lost half of their crop. Agents and pest technicians have worked individually with producers to identify pests and the best method for reducing impacts. A greater emphasis has been placed on disease recognition and response at the Alaska Potato and Vegetable Growers Conference. Potato disease experts from Washington State and Oregon were flown in to give presentations on these topics. By updating farmers on current pesticides, agents also hoped to prepare farmers for future outbreaks. Agents also stay alert to continuing threats; they became aware of a large chain store in Wasilla that shipped in uncertified seed potatoes that had the potential to contaminate Alaskan crop.

Results

The response to the late blight containment was successful. Blight did not spread to other areas of the state and in 2006, blight was discovered in only one field and the potatoes were plowed under. No late blight was found in 2007 or 2008. The experience also led to better preparation for future incidence of blight, which has appeared previously in Alaska.Farmers are actively looking for it in their fields. Although farmers have been made aware of available pesticides, many of them have chosen to not make the chemical investment. When disease strikes, they know what to do but may not be currently prepared.
It is difficult to quantify a reduction in crop losses due to pests in this instance. Blight has the potential to destroy the entire crop. Also, other factors, such as cool weather last summer, can reduce the crop. The willingness of agents and technicians to provide information has led to early detection of pests and more effective management. In the case of the uncertified potatoes, agents worked with the store management and the potatoes were removed from Alaska.

4. Associated Knowledge Areas

KA Code	Knowledge Area
216	Integrated Pest Management Systems
212	Pathogens and Nematodes Affecting Plants
213	Weeds Affecting Plants

Outcome #6

1. Outcome Measures

Outcome target 6: Reduce major pest infestations on ornamentals, including urban trees/timber by 5% on a statewide basis over five years (target measured in 'percent').

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Trees, shrubs and other ornamentals introduced into Alaska have the potential to bring with them one or more pests. The industry relies on Extension expertise to support pest management efforts. Gypsy moths are ranked in the top three insect threats to Alaska's forests, and are not yet established here. CES IPM program maintains collaborative partnerships with public outreach for pest in strategic projects with federal, state and local organizations including the U.S. Forest Service, USDA Animal and Plant Health Inspection Service, Alaska Department of Natural Resources and Alaska Department of Environmental Conservation.
Source of funding: USDA/APHIS pass-through funds through Alaska Department of Natural Resources (Division of Agriculture) to IPM program

What has been done

The Alaska IPM team serves as proactive first detectors with monitoring, trapping and educational outreach to help prevent destructive, imported pests from becoming established in Alaska's forests, woodlots, agricultural fields, home gardens and greenhouses. This work facilitates early detection and rapid response. Exotic Lepidoptera and gypsy moth monitoring: IPM staff, again, placed approximately 412 delta traps in 20 communities across the state. Source of funding: Smith Lever 3d and U.S. Forest Service

Results

While Extension has worked to prevent gypsy moth infestation and to prevent other pest infestations, it is difficult or quantify by percentage our impact on a statewide basis. Anchorage, because of its role as a transportation hub, has had to be particularly vigilant. A pest associated with ornamentals, tent caterpillars, and the bacterial disease fire blight, have been detected in Anchorage but have been contained and have not been detected in other areas of the state. IPM & pest identification training for municipal landscape crews continues to provide a successful reduction of imported pests. The IPM Program staff are trained as 'first detectors' in the Western Plant Diagnostic Network system. This is a collaborative partnership with Oregon State University, USDA APHIS, the University of Alaska Fairbanks, and the Alaska Department of Administration. The system is in place across Western states to share information concerning potential insect, plant and disease.
Smith Lever 3d IPM, U.S. Forest Service and Western IPM Center

4. Associated Knowledge Areas

KA Code	Knowledge Area
216	Integrated Pest Management Systems
214	Vertebrates, Mollusks, and Other Pests Affecting Plants
212	Pathogens and Nematodes Affecting Plants
213	Weeds Affecting Plants

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 state offers limited pest control infrastructure outside Anchorage. One of Extension’s agriculture and horticulture agents and an invasive plants instructor have taken leadership roles regarding invasive species management in Alaska. They have responded to ongoing requests for assistance (science and policy background) from legislators and from the state attempting to address the issue. They have done this by planning annual conference, moderating listservs, monthly audios, responding to information request and overseeing two websites. Extension will continue to play an educational role as state agencies and legislators work to develop statutes and regulations addressing invasive species management. Public policy decisions will affect Extension’s pest management efforts. Lengthening summer seasons, warmer average temperatures, and increased trade and commerce Alaska has experienced, contribute to the introduction and spread of introduced invasive insects and pathogens. The high cost of gas and petroleum products have affected farmers’ ability to purchase and apply fertilizers and pesticides. As costs go up, the accurate, effective use of these products is essential.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- After Only (post program)
- Retrospective (post program)
- Before-After (before and after program)
- During (during program)
- Time series (multiple points before and after program)
- Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.

Evaluation Results

Participants in Extension's annual pesticide recertification conference rated it highly. Forty-nine participants completed the annual recertification required by the state, in Anchorage, and 27 completed evaluations. Overall, they rated the training as as 4.44 on a scale of 5; or "very good" to "excellent." The overall relevance and usefulness of the conference was rated at 4.5 and participants gave high ratings for sections pertaining to current pest trends, pesticides and water quality, alternatives to spraying and the Department of Environmental Conservation update.During an end-of-conference brainstorming session, participants of the 2007 conference of the Alaska Invasive Species Working Group agreed to focus on citizen networks and create a "one-stop shopping location" for invasive species information and to plan more activities to get the word out. They also thought that a positive outcomes of AISWG was establishing contacts with out-of-state experts and discussing joint training opportunities.Participants in Extension's annual pesticide recertification conference rated it highly. Forty-nine participants completed the annual recertification required by the state, in Anchorage, and 27 completed evaluations. Overall, they rated the training as as 4.44 on a scale of 5; or "very good" to "excellent." The overall relevance and usefulness of the conference was rated at 4.5 and participants gave high ratings for sections pertaining to current pest trends, pesticides and water quality, alternatives to spraying and the Department of Environmental Conservation update.

During an end-of-conference brainstorming session, participants of the 2007 conference of the Alaska Invasive Species Working Group agreed to focus on citizen networks and create a "one-stop shopping location" for invasive species information and to plan more activities to get the word out. They also thought that a positive outcomes of AISWG was establishing contacts with out-of-state experts and discussing joint training opportunities.

Key Items of Evaluation

Program #3

V(A). Planned Program (Summary)

1. Name of the Planned Program

Geographic Information - AFES

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
121	Management of Range Resources	0%		10%	
122	Management and Control of Forest and Range Fires	0%		20%	
315	Animal Welfare/Well-Being and Protection	0%		10%	
404	Instrumentation and Control Systems	0%		25%	
605	Natural Resource and Environmental Economics	0%		30%	
903	Communication, Education, and Information Delivery	0%		5%	
	Total	0%		100%	

V(C). Planned Program (Inputs)

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

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	0.1	0.0
Actual	0.0	0.0	1.2	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	0	101908	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	166607	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	80840	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Using Remote Sensing to Investigate Landscape Fire Interactions in Black Spruce Ecosystems of Interior Alaska . Landsat sensor data from the 2004 Boundary and Porcupine fires in boreal Alaska to investigate the potential impact of date of Landsat image acquisition on remotely sensed fire severity estimates. Fire severity estimates differed due to pre-fire image acquisition dates, with pre-fire Normalized Burn Ratio (NBR) values consistently decreasing from June to September, most likely associated with a decrease in solar elevation and photosynthetic activity. When post-fire remotely sensed data were used from the same area burned in August, there was a substantial decrease in fire severity estimates as differenced NBR values consistently decreased from August to September. For the Boundary Burn there was substantial artificial variability in the percent area within a high fire severity class. The high fire severity class ranged from 57 to 77 percent, depending on the dates of pre-fire and post-fire remotely sensed data. The Normalized Burn Ratio is routinely applied on Alaska national lands to generate burn severity maps. Preliminary research shows to relationship between the Normalized Burn Ration and tree regeneration 19 years later. Post-fire duff depth information is critical in estimating impacts such as soil erosion, plant regeneration. **Spatially Modeling the Distribution of Beef Cattle and Reindeer** used GPS tracking collars on beef cattle to collect data. Outcomes for this project need to be divided into two different sections; the first section deals with research conducted at the Matanuska Experiment Farm in Palmer modeling the spatial distribution of cattle, and the second deals with research being conducted with reindeer on the Seward Peninsula in cooperation with the Reindeer Research Program (RRP). For the cattle model, this was the last year of visual (videotaped) observations for the collection of model validation data. We collected data for six, composited 24-hour periods for use in testing our cattle distribution model. Data is currently being converted into an electronic, spatially-referenced format. We also tested two prototype, low-cost, GPS tracking devices and achieved mixed results in our testing which helped us modify the design for future tests. For the reindeer model, a graduate student is currently finishing the data analysis of his two year study and writing up his results in a thesis. Using a one-time match of funds and in cooperation with Dr. Pat Clark of the USDA Agricultural Research Service out of Boise Idaho, six prototype GPS tracking collars for reindeer were designed and constructed. These collars can collect data at a rapid acquisition rate (one-second readings) and also have the capability of downloading positional data on schedule using a satellite phone modem. The collars were received late in the season and were tested for fit and performance using reindeer from the RRP herd at the Fairbanks Experiment Farm. **Turfgrass:** The data collected on the different grass cultivars are used to help public and private turf managers learn to grow better turf. The annual turf managers meeting in Palmer is the main outreach with 40 turf managers from all over the state but research is relayed by extension through workshops and to individual producers.

2. Brief description of the target audience

- Wildfire scientists
- Wildlife managers
- University graduate and undersgraduate students, and K-12 students
- Non-native livestock producers
- Native reindeer herders
- Range/animal specialists and researchers
- Public land managers.

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	**Target**	**Target**	**Target**	**Target**
Plan	60	250	0	0
2008	60	250	0	0

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

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	3	
2008	0	3	3

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of databases developed.

Year	Target	Actual
2008	1	2

Output #2

Output Measure

- Number of curricula developed.

Year	Target	Actual
2008	1	3

Output #3

Output Measure

- Models created

Year	Target	Actual
2008	{No Data Entered}	3

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Number of data sets successfully merged with GINA.
2	Number of curricula adopted.
3	Models developed for spatial distribution of cattle and reindeer.

Outcome #1

1. Outcome Measures

Number of data sets successfully merged with GINA.

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2000	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Long and short term landscape level responses to wildfire within black spruce ecosystems are poorly understood in Alaska. Use remote sensing to investigate landscape level responses in relation to burn severity within black spruce ecosystems in Alaska. This research will add new knowledge for land managers and wild fire scientists.

What has been done

Wildfire extent and severity may increase with recent climate warming in boreal Alaska. Annual wildfire extent since 1950 has increased, with the largest and second largest area burned statewide occurring in 2004 and 2005. Since there is a paucity of historic fire severity field data in Alaska, the only plausible method of estimating historic trends in fire severity is by remote sensing. In general, there is a substantial decrease in near-infrared (NIR) reflectance due to plant canopy damage from wildfire and a concurrent substantial increase in short-wave infrared (SWIR) reflectance due to decreased canopy shadows and moisture content. Based on this spectral response pattern, several fire severity indices have been developed and are applicable with remote sensing data from sensors on the Landsat satellites. Thus it is possible to acquire Landsat sensor data from 1982 to present to estimate trends in fire severity. However, it is difficult to acquire Landsat sensor data from exactly the same day over the years due to frequent cloud cover during much of the fire season in Alaska. Thus substantial interannual variations in solar elevation due to different dates of remotely sensed data may affect remotely sensed fire severity estimates. For example, in boreal Alaska, the solar elevation is typically less than 50 degrees and can be less than 30 degrees in September. Remotely sensed fire severity estimates may vary due to variation in solar elevation. Even if acquisition from the same day is possible over several years, interannual variability in phenology is typically substantial in boreal Alaska. For example, in interior Alaska July 2003 was a record month for high precipitation and July 2004 was a record month for low precipitation. Thus interannual variability in phenology may substantially affect pre-fire spectral response, especially in the NIR response from plant canopies which is used from the 2004 Boundary and Porcupine fires in boreal Alaska to investigate the potential impact of date of Landsat image acquisition on remotely sensed fire severity estimates. Fire severity estimates differed due to pre-fire image acquisition dates, with pre-fire Normalized Burn Ratio (NBR) values consistently decreasing from June to September, most likely associated with a decrease in solar elevation and photosynthetic activity. When post-fire remotely sensed data were used from the same area burned in August, there was a substantial decrease in fire severity estimates as differenced NBR values consistently decreased from August to September. For the Boundary Burn there was substantial artificial variability in the percent area within a high fire severity class. The high fire severity class ranged from 57 to 77 percent, depending on the dates of pre-fire and post-fire remotely sensed data.

Results

The use of different pre-fire and post-fire remotely sensed data from different dates substantially changed the fire severity estimates, most likely due to changing plant phenology and solar elevation. Therefore the use of Landsat-based fire severity indices to estimate trends in fire severity in either time or across regions requires extensive field data from each burn to calibrate remotely sensed fire severity indices.

4. Associated Knowledge Areas

KA Code	Knowledge Area
122	Management and Control of Forest and Range Fires
903	Communication, Education, and Information Delivery
605	Natural Resource and Environmental Economics
404	Instrumentation and Control Systems

Outcome #2

1. Outcome Measures

Number of curricula adopted.

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	1	3

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The geography department has increased its breath to become a statewide program which better meets the needs of our students providing options previously unavailable.

What has been done

3 options are now available for students who are interested in pursuing a Bachelor of Science degree in Geography. These options increase the range of opportunities from environmental studies through cultural studies.

Results

Student numbers have increased 50%.

4. Associated Knowledge Areas

KA Code	Knowledge Area
903	Communication, Education, and Information Delivery

Outcome #3

1. Outcome Measures

Models developed for spatial distribution of cattle and reindeer.

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	{No Data Entered}	2

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Alaska imports more than 90 percent of its food supply, including most red meat. With the current market structure, imported food is generally less expensive than Alaska-grown food. This is principally caused by a lack of marketing and distribution infrastructures since existing ranching enterprises cannot support processing, distribution, and marketing investments. Much effort and research is currently being devoted to increasing production of meat animals, thereby stimulating economic development in Alaska. Research findings will be incorporated in curriculum for undergraduate and graduate students, presentations to non-native livestock producers, workshops and curriculum development for native reindeer herders, presentations during professional meetings to other range/animal specialists and public land managers.

What has been done

Outcomes for this project need to be divided into two different sections; the first section deals with research conducted at the Matanuska Experiment Farm in Palmer modeling the spatial distribution of cattle, and the second deals with research being conducted with reindeer on the Seward Peninsula in cooperation with the Reindeer Research Program (RRP). For the cattle model, this was the last year of visual (videotaped) observations for the collection of model validation data. We collected data for six, composited 24-hour periods for use in testing our cattle distribution model. Data are currently being converted into an electronic, spatially-referenced format. We also tested two prototype, low-cost, GPS tracking devices and achieved mixed results in our testing which helped us modify the design for future tests. For the reindeer model, a graduate student is currently finishing the data analysis of his two year study and writing up his results in a thesis. Using a one-time match of funds and in cooperation with Dr. Pat Clark of the USDA Agricultural Research Service out of Boise Idaho, six prototype GPS tracking collars for reindeer were designed and constructed. These collars can collect data at a rapid acquisition rate (one-second readings) and also have the capability of downloading positional data on schedule using a satellite phone modem. The collars were received late in the season and were tested for fit and performance using reindeer from the RRP herd at the Fairbanks Experiment Farm.

Results

Our research with cattle has shown us that distribution patterns and activities demonstrated by cattle in Alaska were not significantly different than those patterns and activities shown by cattle in other locations. Cattle displayed actions associated with thermoregulation, ie. seeking shade under trees, even though ambient air temperature was well within the thermoneutral zone delineated by other studies. Alaskan cattle also showed decreased movements during the late night/early morning hours. Many previous studies suggested that this pattern arose from decreased light levels during these times. However, the long summer daylight photoperiod in Alaska would seem to discount that theory. Our tests with GPS collars on cattle indicate that a GPS unit attached using a collar performs better and is tolerated by the animals better than one attached using a halter. After an initial break-in period, cattle seemed to ignore the units on collars while subject animals never seemed to get use to haltered mounted units. Other cattle in the unit were also more curious about cows carrying halter-mounted units than collar-mounted units and would mob cows with halters until they were able to remove the units using their tongues. Using this knowledge, we are currently modifying our design to obtain a unit that performs better. In our reindeer research, we found that the initial GPS collars preformed well but did not fit the animal's neck well. Later models were modified to fit better. Once additional modifications were made, there are now concerns that the collars may be too heavy for animals to wear safely during certain seasons especially late winter when the animal's fat reserves are depleted and the collars weight may unduly handicap them in escaping predators. For this reason, collars will be deployed in late summer/fall on well-nourished female adult animals and removed before late winter arrives. Initial analysis of reindeer data indicates that calculated solar insulation does not correlate closely with measured temperatures at those ecological sites. We are still trying to determine if either data variable is necessary to refine models assessing the suitability of areas for reindeer calving.

4. Associated Knowledge Areas

KA Code	Knowledge Area
903	Communication, Education, and Information Delivery
404	Instrumentation and Control Systems
315	Animal Welfare/Well-Being and Protection
121	Management of Range Resources
605	Natural Resource and Environmental Economics

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

Brief Explanation

A changing climate and economic conditions present staggering challenges for the state of Alaska at this present time. Our industry needs to diversify for a healthy economy and food security is a critical issue. Most of our land is locked up in federal parks and preserves limiting our ability to have a solid base from which to grow and develop.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Before-After (before and after program)
- During (during program)

Evaluation Results

Key Items of Evaluation

Program #4

V(A). Planned Program (Summary)

1. Name of the Planned Program

Youth Development

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

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

V(C). Planned Program (Inputs)

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

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	9.0	0.0	0.0	0.0
Actual	3.5	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
153282	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
153282	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
338071	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Alaska 4-H incorporates the Essential Elements through volunteer training, newsletters videos and handouts. All 4-H activities are grounded in the Essential Elements. 4-H programs focus on developing leadership and competences that translate into effective work skills and interests and advanced education. For instance, 13 youth in the Sitka 4-H Youth First Responders Project have completed their training and are assisting the Sitka Emergency Medical Services staffing stations and emergency and public information booths. Kids who raise and sell market animals learn about showmanship and marketing, and teens who are trained as camp counselors learn leadership skills and management and help run a youth camp. Some kids have started businesses. Altogether, in 2008, more than 13,000 youth participated in clubs, after-school programs and special activities, including camping and video work.

A few highlights:

- 4-H teens and adults taught ATV safety to youth in Glennallen, Fairbanks and Kenny Lake, and the program is expanding to Bethel
- A community service event in Anchorage led to more than 700 pillowcases being made to donate to a variety of institutions, including foster children and needy families. The event brought together volunteers from diverse groups including residents of a youth center and a shelter for homeless youth
- Youth in the Kenai District learned hunting ethics and safety and field dressed and butchered a moose.
- Youth participating in Speak Out Military Kids have talked to legislators and other youth about how their parents' deployment affected them. Two youth created a DVD highlighting activities at a camp for 140 military kids whose parents had been deployed or would be shortly.
- State Horse Contest, horse bowl, horse judging and demonstration

2. Brief description of the target audience

4-H members grades 3–12 years old
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
Students grades 3 through high school
Community leaders
Federal and state agency representatives
Native corporations and tribal representatives
Youth serving organizations and their representatives
University of Alaska Fairbanks faculty

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	**Target**	**Target**	**Target**	**Target**
Plan	525	2100	11200	15500
2008	19103	352485	19448	151065

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

Patent Applications Submitted

Year	Target
Plan:	0

2008 : 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Output 1: 4-H educators will develop a comprehensive curriculum to train leaders in the Essential Elements of Youth Development.

Year	Target	Actual
2008	1	1

Output #2

Output Measure

- Output 2: 4-H educators will train all 4-H volunteer leaders in the Essential Elements of Youth Development.

Year	Target	Actual
2008	250	279

Output #3

Output Measure

- Output 3: Extension will develop and implement at least three workforce skills projects for 15 to 18 year olds that stress good work habits.

Year	Target	Actual
2008	3	13

Output #4

Output Measure

- Output 4: Extension will use the 4-H club approach in at least three districts to implement an entrepreneurial skills training curriculum for youth that will train them in the skills they need to start their own youth-based businesses. After five years, at least 30 youth per year will be participating in the projects per year.

Year	Target	Actual
2008	15	179

Output #5

Output Measure

- Output 5: Increase the 4-H youth membership retention rate based upon the 2005 ES 237 Report by at least 5 percent per year over five years for each age cohort between the ages of 11 and 18 years old so that more youth have greater exposure to the benefits that accrue from participation in 4-H.

Year	Target	Actual
2008	5	0

Output #6

Output Measure

- Output 6: Extension will increase the number of 4-H programs by 5 percent per year that incorporate CSREES initiatives in Science, technology and engineering; healthy lifestyles; and citizenship.

Year	Target	Actual
2008	5	4

Output #7

Output Measure

- Output 7: Increase the number of intra and inter-district educational and service collaborations by 5 percent per year.

Year	Target	Actual
2008	5	5

Output #8

Output Measure

- Output 8: Increase collaborations and partnerships by 5 percent per year with other organizations, agencies or entities (local, regional, state, federal) that have youth serving or youth related outcome objectives that impact Alaskan youth.

Year	Target	Actual
2008	5	5

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Outcome target 1: All faculty and staff with 4-H youth development responsibilities will be trained and understand the Essential Elements of Youth Development.
2	Outcome target 2: After receiving training in the Essential Elements of Youth Development, 4-H leaders will apply at least two of the Essential in their interactions with youth as part of 4-H programming such that 4-H educators will observe them using these approaches in leaders' activities.
3	Outcome target 3: Youth work skills projects for 15 to 18 year olds will improve participants' work skills.
4	Outcome target 4: Youth who participate in a youth entrepreneurial training project will try to start a youth-based business within three years.

Outcome #1

1. Outcome Measures

Outcome target 1: All faculty and staff with 4-H youth development responsibilities will be trained and understand the Essential Elements of Youth Development.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	9	8

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

If 4-H staff are going to teach 4-H leaders about the Essential Elements, then staff need to have the best understanding of the impacts and program. The Essential Elements are what sets 4-H apart from other youth-serving organizations. The four elements have become a framework for viewing the 4-H program. These elements cover the areas of life skills that youth need to become contributing citizens.

What has been done

All Alaska 4-H staff members and others with 4-H responsibilities have been trained in the description and delivery of the Essential Elements. The Alaska 4-H youth development program uses four primary delivery modes in fostering positive youth development -- club, special interest classes, school enrichment and camping. All are designed using the Essential Elements. Agents and leaders may participate in the 4-H Volunteer Leader Professional Development series, a monthly audio conference on various issues, including Essential Elements, service learning opportunities, volunteer protection and risk management.

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. Using newsletters, videos and handouts, training has been given in these areas as well as it being a part of everyday 4-H language. All 4-H activities are grounded in the Essential Elements.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development
801	Individual and Family Resource Management

Outcome #2

1. Outcome Measures

Outcome target 2: After receiving training in the Essential Elements of Youth Development, 4-H leaders will apply at least two of the Essential in their interactions with youth as part of 4-H programming such that 4-H educators will observe them using these approaches in leaders' activities.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:
Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	150	204

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The four elements have become a framework for viewing the 4-H program. By asking leaders, clubs and youth about something they are doing, we get a larger picture of life skills, leadership as well as citizenship. These four elements also define for volunteer adults the roles they can play in the life 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 new club chartering form includes the identification of Essential Elements in club activity planning. This process is being done all across the state, as well as on military installations.

Results

4-H clubs and activities continue to consider increased relevance, applicability and positive youth development outcomes. The elements have been applied locally as well as globally in terms of current and far-reaching outcomes for the club members. Learning how to accept people can prevent prejudice in the future, and mastering a skill can provide self-esteem as well as a means to earn a living. Being generous can create a view of acting as if what one person does has impacts on many more lives and belonging can create an atmosphere of cooperation and consensus rather than power and bullying that can lead to escalations of hostilities or ego.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #3

1. Outcome Measures
Outcome target 3: Youth work skills projects for 15 to 18 year olds will improve participants' work skills.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:
Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	30	146

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The leadership skills and competencies youth learn in 4-H often translate into effective work skills and interests that lead to vocations and higher education. All of our 4-H staff have examples of kids whose interest in animals led to a spinoff of youth breeding animals or in a few cases, attending veterinary or medical school.

What has been done

Several trainings 4-H offers lead to work skills. Kids who raise and sell market animals learn about showmanship and marketing, and teens who are trained as camp counselors learn leadership skills and management and help run a youth camp.
Other examples:
- Speak Out Military Kids teens worked on presentation skills through different media, including digital. Teens on Eielson Air Force base are working on teen pregnancy awareness issue, an advertising campaign encouraging parents to talk to their teens about pregnancy and sex.
- Ten youth from interior Alaska trained and taught hundreds of youth through the Health Rocks! programming.
- Thirteen youth in the Sitka 4-H Youth First Responders (YFR) Project have completed their First Responder training and are assisting the Sitka Emergency Medical Services staffing stations and emergency and public information booths.

Results

Youth who raise market livestock learned responsibility, marketing and communication skills. One of the Kenai 4-Hers credits his 4-H livestock and butchering experience with doing well in an anatomy class in medical school. He graduated in 2008. The Speak Out Military Kids learned how to use digital media, which is a powerful tool in the work force today. They also learned valuable communication skills. Graduates of the Sitka 4-H First Responders Program, which began four years ago, are now studying health careers in college or emergency medical training.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #4

1. Outcome Measures

Outcome target 4: Youth who participate in a youth entrepreneurial training project will try to start a youth-based business within three years.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	0	8

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Skills learned through 4-H can lead to kids following vocational interests or getting jobs that help support their college education. Employers also look favorably on the work skills gained.

What has been done

- The classic 4-H entrepreneur training involves kids who raise pigs and other market animals for the fair. Several kids who participated in the market livestock program bred and sold pigs and other animals to 4-Hers and others.
- Kids who learned gardening in their clubs later sold produce they grew through farmers markets and through subscription gardening services. Another girl who participated in a horse club started a home business teaching kids how to ride.
- Two teens in Anchorage run small businesses to support their horse project. They make and sell bread, offer violin lessons and knit and crochet items.

Results

Kids learn skills that they used to help support their college education. Some 4-Hers went into business and the livestock training, for instance, led them to a vocational area.

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

Brief Explanation

Vast geographic distances between communities and communities that are available only by air or boat inhibit groups of 4-H youth from different communities getting together as well as program delivery. An external review of the Alaska State 4-H Program in 2006 indicated significant assets including: place-based innovative programs; commitment to positive youth development by agents and volunteers; collaborations and partnerships at local level; program excellence; and satisfaction-pride in results.

The review also indicated several areas needing attention including: having a shared vision and entrepreneurial spirit; development of performance metrics and fiscal accountability tied to priority goals, staffing and program strategies; a consistent management system used across the state; and a method to collect and analyze data more effectively to package program outcomes for stakeholders. Statewide leadership has been limited to a .25 FTE position. This person has been responsible for reports and accountability to national 4-H and CES; liaison for district agents; statewide policy development, management and implementation; along with overall advocacy for 4-H. District staff have been assigned or have volunteered to act on behalf of Alaska 4-H as leads, representatives, and/or points-of-contact for youth programs, 4-H organization conferences, and internal improvement projects.

An important recommendation of the review was to hire a full-time state 4-H program leader located at UAF to provide more effective communications and program relationships with other CES programs and to provide consistent management and leadership. Alaska Cooperative Extension is currently in the process of recruiting to fill this important position by this spring or summer.

Another factor affecting 4-H results is a shift in demographics. Anchorage has a more diverse population without a cultural tradition of 4-H participation. 4-H exists on all military installations in Alaska but the built-in transience of the population holds down the retention rate. Shifting economic factors also have an impact, with more, two-parent or single-parent families working and unable to volunteer or support the program.

Use of video teleconferencing with village schools has helped increase outreach to youth through the Health Rocks! program. Working with non-traditional groups on the military installations has increased participation.

Several agents reports that many adult volunteers were not happy with the chartering and IRS requirements and did not return. New leaders have come forward to some extent and started and took over clubs. Marketing assistance at a statewide level would assist in recruitment and retention of leaders and members.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- After Only (post program)
- Retrospective (post program)
- Before-After (before and after program)
- During (during program)
- Comparisons between program participants (individuals,group,organizations) and non-participants
- Comparison between locales where the program operates and sites without program intervention

Evaluation Results

In almost all of our programs 4-H offers post-activity surveys. For example, the Tanana District periodically does evaluations on programs with the public, such as buyers in the market livestock program. The 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. Our state lacks in guidance in evaluation procedures. One agent noted that all agents are on their feet teaching kids or teaching parents so it's hard for them to come up with a one size fits all evaluation. 4-H has attempted to implement some of the recommendations based on a 2006 program review. Communication has been improved between agents in different communities, for instance. 4-H staff in 2007 communicated by audio regularly, and beginning in January 2008, started a weekly audio. An increase in the number of activities involving multiple districts reflects increasing interchange between the districts.

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. Travel is also expensive in state but a group of six teens from two districts traveled to Juneau to attend legislative committee meetings, be pages for the day and meet with legislators about the need for a full-time program leader for 4-H.

Program #5

V(A). Planned Program (Summary)

1. Name of the Planned Program

Sustainable Individuals, Families, and Communities

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%		5%	
504	Home and Commercial Food Service	20%		20%	
703	Nutrition Education and Behavior	15%		15%	
724	Healthy Lifestyle	20%		20%	
801	Individual and Family Resource Management	10%		10%	
802	Human Development and Family Well-Being	15%		15%	
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures	10%		10%	
805	Community Institutions, Health, and Social Services	5%		5%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

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

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	10.0	0.0	0.3	0.0
Actual	8.0	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
208026	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
208026	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
1256647	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Health, Nutrition and Foods: Alaska has abundant sources of naturally occurring food in our fish, game meat, and wild berries. Many Alaskans supplement their diets with these foods because of their high nutritional value and high antioxidant values The cost of importing food is high due to shipping costs. Our food preservation program reflects those needs and concerns. Agents taught 65 food preservation and food safety classes in 22 communities, and created the fourth in a 10-part DVD series that focuses on preserving Alaska's foods. Seven online instructional modules with similar information were completed, and Extension ran a food preservation hotline. Seventeen new food products were developed from Alaska grown and gathered foods in the Food Product Development Kitchen. Research has also focused on processing procedures for indigenous foods.

Our programming also supports healthy living. The Alaska senior population is growing faster than all states except Nevada. Extension conducts Strong Women classes in all seven districts and our Soldotna agent has trained 47 new leaders. We also trained 70 leaders for the Living Well Alaska program, which teaches skills for living with chronic health conditions. Over the past 20 years, diabetes has increased 80 percent among Alaska Native population and has increased in other segments of population. Our Dining with Diabetes classes teach people how to embrace a diabetic diet.

Healthy Lifestyle and Human Development: Early childhood development classes are less available in rural areas. Agents also teach early child development and child language and literacy classes in rural areas.

Consumer Resource Management: Budgeting concerns have come to the forefront in tight times. Agents have taught the cost of credit to more than 200 high school students and budgeting and money management to other youth and adults.

Home and Energy: Programming has focused on awareness of energy conservation, cold climate homebuilding techniques, retrofitting homes and solar energy design. Housing and energy specialist developed a retrofit course and began teaching it around the state in January 2008. Agents also provided energy conservation programs and resources to clients, ranging from maximizing gas mileage to reducing appliance energy consumption. Juneau agent provided resources to Juneau residents after the community power line was interrupted for six weeks and backup electricity more than tripled in price.

2. Brief description of the target audience

The potential audience of Sustainable Individuals, Families and Communities programming is all Alaskans. Individuals and groups targeted by programming include:

Parents
Care givers of children
School children (public and private)
School teachers (public and private)
Home and building owners
Individuals interested in healthy lifestyles
Individuals and families needing assistance managing their finances
Low income individuals and families, especially women with young children
Individuals interested in a subsistence lifestyle
Individuals interested in food preservation
Individuals and professionals interested in emergency preparedness
Human development and social work professionals
Food banks
Housing and energy authorities and organizations

Individuals or families experiencing life transitions like divorce, retirement, bankruptcy, etc.

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	7150	81400	690	970
2008	11145	1277030	1646	27240

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

Patent Applications Submitted

Year	Target
Plan:	0

2008 : 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan			
2008	1	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

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

Year	Target	Actual
2008	110	195

Output #2

Output Measure

- Output 2: Extension district offices will offer or sponsor emergency preparedness workshops that teach individuals and communities how to be self-reliant during and immediately following a disaster.

Year	Target	Actual
2008	0	0

Output #3

Output Measure

- Output 3: Extension offices will have individualized and up-to-date office emergency plans and staff within the offices will participate in an annual review and update of the plans.

Year	Target	Actual
2008	8	1

Output #4

Output Measure

- Output 4: The number of individual and commercial renewable energy systems will increase by 500 percent over five years increasing the amount of "green" energy available to consumers.

Year	Target	Actual
2008	700	85

Output #5

Output Measure

- Output 5: The number of newly constructed homes using new radon-resistant construction techniques as a means to improve indoor air quality will increase.

Year	Target	Actual
2008	50	25

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Outcome target 1: Participants in food preservation and food safety classes will improve their knowledge of food preservation and food safety practices.
2	Outcome target 2: Participants in food preservation and food safety classes will improve their food preservation and food safety practices.
3	Outcome target 3: Participants in healthy physical lifestyle classes will increase their knowledge of healthy physical lifestyle choices after participating in the class.
4	Outcome target 4: Participants in healthy physical lifestyle classes will adopt and maintain healthy physical lifestyle practices one year after participating in the classes.
5	Outcome target 5: Awareness of the importance of energy conservation will double over 2005 awareness levels over a five-year period.
6	Outcome target 6: One year after participating in an Extension healthy lifestyle class, participants will be practicing learned behaviors to help them achieve or maintain a socially and emotionally healthy lifestyle.
7	Outcome target 7: Participate in a parent education class will increase their knowledge of developmentally appropriate parenting practices
8	Outcome target 8: Participants in a parent education class will increase their application of developmentally appropriate parenting practices.
9	Outcome target 9: Participants in a human relationships classes will increase their knowledge for appropriate human relationship skills.
10	Outcome target 10: Participants in a human relationships classes will increase their application of appropriate human relationship practices.
11	Outcome target 11: As a result of receiving financial management training workshop participants will increase their knowledge of personal financial planning topics.
12	Outcome target 12: Based upon information provided by Extension in financial management workshops, participants will access reliable resources for making sound financial management decisions.
13	Outcome target 13: Participants in financial management workshops will adopt improved financial management practices when making financial management decisions.
14	Outcome target 14: The energy efficiency of the Alaskan housing stock will increase by 5% over three years.
15	Outcome target 15: Awareness of the importance of renewable energy sources will increase by 20 percent per year over five years.

Outcome #1

1. Outcome Measures

Outcome target 1: Participants in food preservation and food safety classes will improve their knowledge of food preservation and food safety practices.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	150	907

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Fish, game meat and berries are plentiful in Alaska and high in nutritional value. Grocery costs are high due to the low availability of locally grown foods and the cost of shipping from the Lower 48. A sizeable percentage of Alaskans live a subsistence lifestyle or supplement their diets with fish and game meat. Alaska has the nation's highest rate of botulism, a food-borne illness that occurs in low acid foods such as fish and game meat. It is particularly important that we teach Alaskans how to safely preserve these staples in the Alaskan diet.

What has been done

- Agents taught 65 food safety and preservation classes in 22 communities
- Agents created the fourth of a 10-part DVD series that focuses on preserving foods available in Alaska. Much was the same information was offered online in seven instructional modules. Funding source: USDA grant
- Agents tested 710 pressure canner gauges during the year with a 15 percent failure rate. Three-quarters required adjustments.
- 24 new entrepreneurs have worked with the small business development specialist to develop or revise products that use food safety and food preservation techniques. Funding source: USDA grant
- Seventeen new food products were developed from Alaska grown and gathered foods in the Food Product Development Kitchen
- 425 clients from 22 Alaska communities called our toll-free food preservation hotline. Additionally, 46 clients from 15 Alaska communities and 10 from outside Alaska used our Ask an Expert resource.
- Monthly newsletters were created in three districts and many published newspaper articles concerned this topic. Nearly 60 Extension food preservations publications are available online and at many distribution points.

Results

- Approximately 100 pressure canner gauges were replaced and more than 500 required adjustment, resulting in safely canned foods
- 50 food-related products were developed or revised by small businesses with 26 more products in the planning stage
- Because of the high number of Alaskans who depend on or supplement their diets with fish and game meat, and Extension history of providing information about food preservation and food safety, people know that Extension is an excellent resource in this area.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
504	Home and Commercial Food Service
502	New and Improved Food Products

Outcome #2

1. Outcome Measures

Outcome target 2: 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	Quantitative Target	Actual
2008	90	290

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Safe practices are essential for preserving foods. It is also important that clients are confident in their abilities to preserve a high quality product. Alaska is a transient state with a large influx of military population, most of whom have not previously canned or preserved game meat or fish. Since many other Alaskans supplement their diets or rely on game meat and fish, it is important to provide hands-on courses for clients to preserve foods safely. Clients who practice these skills will be able to continue preserving foods safely.

What has been done

Participants in hands-on food preservation classes canned meat, fish and kelp, made sausage and jerky, dried fruits and vegetables, made jams and jellies and pickles.

Results

It is difficult to quantify our impact here, but as more Alaskans learn the proper methods of preserving foods safely the risk of botulism decreases. Clients who learn food preservation skills also become more self-sustaining because of the high transportation costs associated with importing food.

4. Associated Knowledge Areas

KA Code	Knowledge Area
504	Home and Commercial Food Service
703	Nutrition Education and Behavior

Outcome #3

1. Outcome Measures

Outcome target 3: Participants in healthy physical lifestyle classes will increase their knowledge of healthy physical lifestyle choices after participating in the class.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	310	396

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Alaska is a land of extremes. Cold weather and short days during the winter result in less opportunity for exercise. At the same time, the population is aging. The Alaska senior population is growing faster than all other states except Nevada. In past decades, people often came to Alaska as young people, retired and moved back south. Now this trend is reversing with more choosing to stay after retirement. Alaska faces the challenge of our senior population remaining active and healthy in a difficult environment.

What has been done

Alaska CES introduced the StrongWomen program in 2004 and during this past year, Extension conducted classes in all seven districts. More than 300 clients have participated in 8- to 12-week sessions of the StrongWoman program. The program targets middle-aged and older women (and men) and offers strength-training exercises and relevant educational information on balance, bone health and nutrition. The Soldotna agent trained 47 leaders from nine communities to continue classes. The program is an ideal exercise program for rural Alaska because a minimum of equipment and space is required. Agents also taught strength-training classes.

Results

Research has demonstrated that strength training can reduce the risk for chronic diseases and positively affect psychological health. The flexibility of the program allows people to increase weights as their bodies strengthen or decrease weights after illness. Several participants report feelings of well-being and improvements in bone density rates. Women, on average lose .5 percent of their bone density each year after menopause. Three participants in an ongoing Fairbanks course report increases in bone density; one reports a 2 percent increase, a second, 1 percent; and a third, a little less than 1 percent.

4. Associated Knowledge Areas

KA Code	Knowledge Area
724	Healthy Lifestyle

Outcome #4

1. Outcome Measures

Outcome target 4: Participants in healthy physical lifestyle classes will adopt and maintain healthy physical lifestyle practices one year after participating in the classes.

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	37	105

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Beginning an exercise program is important but maintaining an active lifestyle is more important. Since strength training has proven health effects, such as reducing the risk for chronic diseases such as diabetes, heart disease, arthritis and osteoporosis, continued participation in an exercise program generates continuing benefits. Participating in a group helps motivate participants even on days that they do not feel like exercising. Strength training also has been shown to contribute to a sense of well-being, so improved mental health is an important side benefit.

What has been done

Forty-seven new StrongWomen leaders have been trained in nine communities and peer leaders are taking over leadership and maintaining groups. Continuing groups with peer leadership exist in Palmer, Bethel, Fairbanks, Kenai, Nome and Anchorage.

Results

Most women who participate report feeling stronger and happier. Several women who participated for a year or more reported increased bone density. One of the Fairbanks participants, who has been going for three years, was not able to lift more than her arms at the start. She now walks more comfortably, uses weights and no longer has the midriff ache she has experienced for years. She has become an advocate for the program. Individuals within the groups have formed new friendships, which are particularly valuable to people who are new to the community. After Extension introduced the program, a number of other organizations now offer StrongWomen classes, including the Kenaitze Indian Tribe, senior centers, churches, Southeast Alaska Regional Health Consortium, hospitals and numerous employee programs. It is estimated these programs reach 400 participants.

4. Associated Knowledge Areas

KA Code	Knowledge Area
724	Healthy Lifestyle

Outcome #5

1. Outcome Measures

Outcome target 5: Awareness of the importance of energy conservation will double over 2005 awareness levels over a five-year period.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	425	828

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

While electricity and heating oil prices have fallen in the past year, Alaska historically has had high energy prices. Interest in energy conservation remains high. It is a pocketbook issue, particularly in rural areas, where energy costs are the highest.

What has been done

The state of Alaska offered a $300 million program aimed at energy conservation and efficiency in 2008. That acted as a great stimulus for information.
- The energy specialist has promoted energy conservation through a variety of media, including a quarterly newsletter aimed at homebuilders.
- Three of his classes promote energy conservation. He developed a retrofit course and began teaching it in January 2008; 359 people attended the workshops around the state. During the past year, 186 people attended solar design workshops and another 271 people attended his cold climate or marine climate homebuilding workshops
- After an avalanche interrupted Juneau's power supply, electricity rates more than tripled for eight weeks. Extension provided a variety of energy conservation resources and information programs.
- Agents provided energy conservation programs and resources to clients, ranging from maximizing gas mileage to reducing appliance energy consumption.

Results

The state's energy rebate program and increased funding to support our education efforts, has had a huge impact on promoting awareness of energy conservation as did high energy prices earlier in 2008. Energy ratings on more than 6,000 homes statewide indicate an intent to retrofit those homes with insulation and various energy conservation technologies and air sealing. Actual retrofits, however, are lagging, but should increase dramatically as this 2009 construction season unfolds.

Because of the state funding and doubling of Extension's energy conservation efforts with state support, we will far exceed the original goals in this area. This program could ultimately be an experience worthy of sharing nationally because of the stimulus packages funds that are being invested in the same programs and energy conservation efforts nationwide.

* Two weeks following the avalanche, the city of Juneau reduced its energy consumption by 20 percent. According to an engineer with Alaska Electric Light and Power, a year later, Juneau continues to use 10 percent less energy than what was being used before the 2008 disaster.

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: One year after participating in an Extension healthy lifestyle class, participants will be practicing learned behaviors to help them achieve or maintain a socially and emotionally healthy lifestyle.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	40	92

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

According to statistics from the state of Alaska, 3.4 percent of the adult population has been diagnosed with diabetes. Over the previous 20 years, diabetes among Alaska Natives has increased by 80 percent. Increases in the prevalence of obesity are expected to lead to even more diabetics. Learning how to deal with a diabetic diet must be learned on a physical, emotional, and mental level. Alaska also has an aging population and many adults over the age of 50 report at least one chronic health condition. The Living Well Alaska program teaches people how to live with chronic conditions. The program fills an important gap in community health education resources.

What has been done

- Agents have taught two Dining with Diabetes classes in cooperation with diabetes educators and registered dieticians. Alaska CES uses a curriculum developed by West Virginia University Services. The goal is to improve the lives of diabetics by increasing knowledge about diabetes and nutrition. Twenty-two clients were trained in methods to prepare healthy foods to maintain a good diabetic diet.

- One of our agents trained 70 leaders for the Living Well Alaska program, which teaches skills for living with chronic health conditions. Funding source: State of Alaska

Results

- Seven of the participants of one class were new to the plate method. All 10 said they would try the herb/spice blends to replace salt usage.

- Living Well Alaska Training led to community classes in Anchorage, Fairbanks, Metlakatla, Kenai, Cordova, King Cove and Ketchikan, including a version taught in Spanish. Research has established that this program promotes better quality of life, reduced disease complications and reduced medical expenses.

4. Associated Knowledge Areas

KA Code	Knowledge Area

724	Healthy Lifestyle
703	Nutrition Education and Behavior

Outcome #7

1. Outcome Measures

Outcome target 7: Participate in a parent education class will increase their knowledge of developmentally appropriate parenting practices

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	80	131

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Early childhood development classes are available in more urban areas of Alaska but are less available in rural Alaska. Employment in the field is available in the rural hub areas and the villages. Some of the students in early childhood development classes offered by the Nome agent have been teen parents or want to improve their skills for when they have a family some day. Understanding the development of children and the impact environment has on development is key to understanding why certain some parenting practices promote development and others can be detrimental.

What has been done

- Skills for working with young children introduces students to the courses listed below. Fifty-six students from mostly from remote communities participated in classes taught by the Nome agent.
- The Nome agent worked with a teacher in Kotzebue to offer a year-long course in child development to 11 students. These students also participated in volunteer experiences in an early childhood setting during the second half of the school year.
- Six students in the Language and Literacy Activities for Young Children class discussed the development of language skills, brain research and child development in general.
- Brain Research & Child Development course covered the importance of the first years of life and how the environment impacts a child development. Fifty-eight students and adults participated.

Results

The six students in the two-week Nome course and 11 students in the year-long Kotzebue course started demonstrating during classroom activities that they were grasping the concepts of working with young children. When they reported to the group they offered appropriate examples of how they handled situations with children. The classroom assignments also showed their growing understanding of early childhood development. It is hoped that students will apply these lessons to their lives and also will provide a foundation for high school students who plan to study a health career in college.

4. Associated Knowledge Areas

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

Outcome #8

1. Outcome Measures

Outcome target 8: Participants in a parent education class will increase their application of developmentally appropriate parenting practices.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	25	17

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Again, the availability of early childhood development classes is limited in rural areas. These classes can lead to employment or an improvement in personal skills that are applicable to families.

What has been done

- The 17 students participating in the Nome and Kotzebue High school classes had real world experience working with young children at their practicum sites.
- Six high school students took a one-credit language and literacy activities for young children class in Nome.
- A new child development curriculum was written by the Nome agent for Kotzebue and the Northwest Arctic borough school board accepted the new curriculum for use in Kotzebue and 11 villages. Twelve high school students started the class and 8 finished. Of this group, six were paid through the youth workforce development program.

Results

- Students gained practical experience and skills that could lead to employment and two earned their first college credits, potentially interesting them in continued education.
- Two students from the Kotzebue class went on to summer employment at the Manilliaq Child Care center in Kotzebue. Through reports from the cooperating teachers, students showed increased abilities with the young children.
- All six students in the language and literacy activities class completed this course for credit. It was the first college-level course they had taken. These students were all from villages in the Bering Straits region. They made wonderful progress working with children at their early childhood education placement.

4. Associated Knowledge Areas

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

Outcome #9

1. Outcome Measures

Outcome target 9: Participants in a human relationships classes will increase their knowledge for appropriate human relationship skills.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	15	27

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Since many Alaska live without the support of extended families, human relationships classes are important but good resources in this area already exist in many communities.

What has been done

Our Nome agent has been teaching early childhood education to Nome area high school students and adults. Her students include pregnant teens and others who want to learn important childhood development skills. Twenty-seven students from mostly from remote communities (villages) participated in classes involving the agent. The students participate in a three-hour volunteer experience in an early childhood setting.

Results

Students learn skills that they can apply in their own lives, and also for employment working with young children.

4. Associated Knowledge Areas

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

Outcome #10

1. Outcome Measures

Outcome target 10: Participants in a human relationships classes will increase their application of appropriate human relationship practices.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	5	27

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Since many Alaska live without the support of extended families, human relationships classes are important but good resources in this area already exist in many communities.

What has been done

Our Nome agent has been teaching early childhood education to Nome area high school students and adults. One class emphasizes language and literacy activity for young children. Six students in this class covered brain research and child development. The class includes 16 hours of classroom instruction combined with 24 hours of work experience in an early childhood education setting: day care, Head Start, kindergarten or preschool.

Results

The 17 students in the Nome course and the Kotzebue course demonstrated during classroom activities that they were grasping the concepts of working with young children. When they reported to the group, they offered appropriate examples of how they handled situations with children.

4. Associated Knowledge Areas

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

Outcome #11

1. Outcome Measures

Outcome target 11: As a result of receiving financial management training workshop participants will increase their knowledge of personal financial planning topics.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	55	260

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The saving rate in America has moved into negative territory. For the first time since the Depression, Americans are spending more than they earn. At the same time youth are faced with the daunting costs of attending college. Credit problems are common and rural residents especially have a more difficult time in maintaining their financial footing. Jobs are scarce and many people live a subsistence lifestyle. Cost of living is high due to shipping costs on everything from electricity to foods to diesel.

What has been done

- 220 high school youth in economic classes were trained in cost of credit classes. Youth were trained to use a financial calculator to calculate the savings rates and the cost of loans for a car, a house and a college education.
- Agents in two districts have taught money management classes to 40 military, foster children and others.
- Fairbanks agent wrote 11 personal finance columns that have been used by agents in other districts.
- Programming was offered to low income individuals through the EFNEP and Alaska Nutrition Education programs that encouraged better budgeting and lessons of eating well on less money. Source of funding: EFNEP: Smith Lever 3-d; ANEP, USDA through State of Alaska

Results

Fifty percent of students taking the cost of credit class expressed an increased understanding of the credit issue and scored better on personal financial issues during regular classroom testing. The additional workshops increased financial literacy. Through the Alaska Nutrition Education Program and the Expanded Food and Nutrition Education programs, 829 adults and 2,208 youth improved skills in financial management of food dollars.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #12

1. Outcome Measures

Outcome target 12: Based upon information provided by Extension in financial management workshops, participants will access reliable resources for making sound financial management decisions.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	15	26

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Knowledge of money management techniques is essential to improved financial fitness. Individuals and families need to know where to turn for sound advice when making personal financial decisions. Reliable resources can be found in the public and private sectors. The purpose of these workshops is to assist the general public in recognizing key differences among services providers.

What has been done

The Juneau district presented information on types of insurance, assessing insurance needs, and other related basics to 18 foster children and Juneau Youth Services residents. Twenty-six high school students (foster care program) participating in an independent living conference practiced money management skills in an interactive workshop. Fairbanks agent taught a class to five members of the military about the economics of raising children.

Results

Of the 26 high school students that participated in the money management skills workshop:
- One has been released from foster care, is a senior in high school, works full-time, and lives independently in an apartment.
- One is attending UA and living in the dorms
- Three have been released from foster care and are working
- One is attending college full-time
- One is living independently and has taken some short college courses
- The remaining students are either still in the program, are still in high school, are not working, status unknown, or have not been successful in living independently.

Students participating in the insurance basics workshop demonstrated a grasp of the information through participation in interactive activities conducted during the workshop.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #13

1. Outcome Measures

Outcome target 13: Participants in financial management workshops will adopt improved financial management practices when making financial management decisions.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	5	26

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Knowledge of money management techniques is essential to improved financial fitness. However, taking the steps of creating a budget/spending plan and paying down debt makes positive steps toward improving the family financial situation.

What has been done

The Juneau agent presented budgeting and money management course to 26 community residents and an insurance basics course to 18 staff and foster children of the Office of Children Service and Office of Youth Services.

Results

Thirty percent of attendees in the money management workshop have graduated out of the foster care program. An informal survey finds that individuals are attending college and living in dorms, or living independently and working full-time jobs, or living independently and taking college short courses, or living independently and completing high school graduation requirements. The insurance workshop participants are still in the foster care program.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #14

1. Outcome Measures

Outcome target 14: The energy efficiency of the Alaskan housing stock will increase by 5% over three years.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	5	5

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The public needs to lower fuel costs and a weatherization retrofit of existing homes is the best assurance to achieve that. The impact of the state $300 million appropriation for weatherization and energy conservation will be profound.

What has been done

Extension had a policy role in advocating for the program approved by the Legislature and a practical role offering energy-efficiency advice to homeowners. Energy specialist developed a retrofitting course last year and began teaching it broadly in January and passing out a new retrofit manual. More than 350 homeowners around the state have attended. Another 186 people attended solar design workshops and 271 people attended his cold climate or marine climate homebuilding workshops. The residential housing manual he developed is used by Alaska Works Apprenticeship and job placement program and is the new basic text for the Cold Climate Homebuilding course.

Results

In the first year of the state energy program, 6,000 energy ratings have been performed, about 7-8 percent of railbelt housing stock. The number of retrofits resulting from the state energy rebate program is not known yet, but the number of homes that have received energy ratings indicate a strong interest in improving the energy efficiency of homes. The housing specialist has continued to try to meet residential energy housing needs as they develop. His workshops have been well attended. The interest in his new retrofit course is expected to lead to increases in the energy efficiency of Alaskan housing stock and his residential housing manual is a crucial and timely addition to teaching materials.

4. Associated Knowledge Areas

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

Outcome #15

1. Outcome Measures

Outcome target 15: Awareness of the importance of renewable energy sources will increase by 20 percent per year over five years.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:
Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	20	8

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The rising cost of heating oil and electricity has led to heightened interest in developing renewable energy sources, including wood heat and solar energy. People are increasingly motivated to not rely on oil for water heating, and solar is proving to be a reliable and effective option.

What has been done

The housing and energy specialist has taught his solar design workshop to 186 individuals in the past year, many of whom also purchased his solar design manual. Although Alaska may not seem like a likely candidate for solar heat, a number of residents are using solar design to lower their electricity bills. Tax credit extensions at the federal level continue to be a strong incentive to install solar water heating.

Results

It is difficult to measure an increase of awareness. Specialist believes that awareness of renewable energy sources is likely less than 10 percent. Although the intent was to do a major revision of the solar design manual during a sabbatical, that was pre-empted by the $300 million program for energy conservation. Still, course attendance in the solar course has increased and clients are asking for more information and a new update of the manual. A follow-up survey is needed to revisit solar workshop participants to check on what they did as the result of courses. The energy specialist notes that more people appear to be installing solar design systems as a business so that's a sign of increasing interest and awareness.

4. Associated Knowledge Areas

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

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

The Home, Health and Family Development Program staff in Alaska is small with seven agents in district offices and three specialists 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. Travel dollars are an issue because air travel is necessary for most agents to travel beyond their district office. If the agent in Juneau presents a program beyond the city, she must ride the ferry or catch a plane. There are no roads to drive to the next location. Travel budgets are limited. This results in agents traveling beyond the district office with less frequency. Though agents have been very successful in partnering with other governmental and private entities to make each travel dollar go farther, they are still are unable to travel as often as requested.

Staff vacancies have been an issue. The position in Bethel was filled in September 2008 after being open for nearly two years. Staff vacancies have also been a factor in the FSNEP and EFNEP program. 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 FSNE 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 October of 2008, we had six of seven FSNE nutrition aide positions filled and four of five positions filled for EFNEP.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- After Only (post program)
- Retrospective (post program)
- Before-After (before and after program)
- During (during program)
- Comparison between locales where the program operates and sites without program intervention

Evaluation Results

We have made strides this year to evaluate our programs better. A pop-up survey has yielded results for the online food preservation modules and surveys have been included in the food preservation DVDs.The survey were 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). One respondent was an Extension agent in Maryland who said she would recommend the modules to her clientele.We have made strides this year to evaluate our programs better. A pop-up survey has yielded results for the online food preservation modules and surveys have been included in the food preservation DVDs.

The survey were 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). One respondent was an Extension agent in Maryland who said she would recommend the modules to her clientele.

Key Items of Evaluation

Program #6

V(A). Planned Program (Summary)

1. Name of the Planned Program

High Latitude Agriculture- AFES

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%		5%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	15%		0%	
204	Plant Product Quality and Utility (Preharvest)	10%		0%	
205	Plant Management Systems	10%		55%	
212	Pathogens and Nematodes Affecting Plants	0%		5%	
301	Reproductive Performance of Animals	20%		5%	
302	Nutrient Utilization in Animals	5%		5%	
306	Environmental Stress in Animals	5%		0%	
307	Animal Management Systems	20%		5%	
401	Structures, Facilities, and General Purpose Farm Supplies	0%		5%	
402	Engineering Systems and Equipment	0%		5%	
405	Drainage and Irrigation Systems and Facilities	0%		5%	
502	New and Improved Food Products	0%		5%	
701	Nutrient Composition of Food	5%		0%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

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

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	6.7	0.0
Actual	0.0	0.0	6.6	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	0	545228	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	837461	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	533433	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

In animal research, **the reproductive performance of domestic ruminants** project the research efforts to date have included muskox and reindeer with emphasis on estrus, breeding and gestation length as well as milk production in reindeer cows and calf growth rate associated with specific milk components. **The feed and forage to optimize reindeer production and meat quality** compared the effects two pasture grasses typically grown in Alaska on feed intake, growth of females and calves, and milk composition. In the **mineral flux in reindeer** project we compared the trace mineral status of blood serum and production in reindeer raised on a milled ration to serum trace mineral concentrations and production of Seward Peninsula reindeer. **Spatially Modeling the Distribution of Beef Cattle and Reindeer** used GPS tracking collars on beef cattle to collect data. In the agricultural/horticultural projects **barley and bromegrass fertilizer trials** soil samples from the tillage plots were analyzed. **Controlled environment horticulture** evaluated six sunflower selections in the ProCut series along with Sunbright and Sunright Supreme for field cut flower production. **Developing and integrating components for commercial greenhouse production** find producing greenhouse lettuce and other crops in high latitude locations is challenging. The greenhouse technology and best management procedures developed in this project e are suitable for dissemination and use in various locations throughout Alaska and other places with similar climates. **Horticultural crop production for Alaska** propagated twelve Alaska native plants from softwood and semi-hardwood stem cuttings collected from late June through August. **Potential perennial lignocellulosic energy crops** being established for study are:from woody species felt-leaf willow, Pacific willow, and balsam poplar, willows, alders, and birch and 14 herbaceous species including native and non-native grasses and forbs. The **season extension for high latitude market garden** project is conducting variety trials and optimization trials along with developing and evaluating high tunnel endwalls that can be easily removed for equipment operation. **Selecting alternative agronomic crops for Alaska** variety trials continued evaluation of spring 6-row feed barley, hard red spring wheat, oilseeds including Polish canola, Argentine canola, Hybrid canola, Oriental and brown mustards, yellow mustard, and Camelina selected from northern Canadian and U.S. sources for testing against the standard Alaska varieties - Otal spring feed barley, Thual hulless barley, Ingal hard red spring wheat, and Reward Polish canola.

2. Brief description of the target audience

The targeted audiences are Alaska producers (reached through various user-oriented publications, producer meetings, field days, and one-on-one consultations), other researchers (reached primarily through scientific journal articles and symposia), extension specialists and agents. Recipients will include the operators and managers of commercial enterprises, urban, rural and village subsistence and home users. Youth programs will be delivered through schools, youth groups, FFA, and 4-H programs. Formal instructional programs will seek students with interest and abilities to succeed in a diverse college atmosphere. Research priorities are determined by joint collaboration with faculty, agricultural and forestry producers, Board of Advisors, and federal and state partners. In 2005, we met with the following stakeholders to assess research priorities for this program:

- Statewide Board of Advisors
- Alaska Farm Bureau
- Potato and Vegetable Growers
- Grain and forage producers
- Reindeer Herders Association
- Alaska Division of Agriculture
- Alaska Northern Forest Cooperative
- Alaska Livestock Producers
- Peony Growers Association

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	115	250	0	0
2008	115	250	0	0

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

Patent Applications Submitted

Year	Target
Plan:	1
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	30	
2008	0	32	32

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Production practice recommendations for intensively managed vegetable, agronomic, and greenhouse/nursery crops

Year	Target	Actual
2008	25	25

Output #2

Output Measure

- Agricultural and forestry production and harvest practices that minimize economic and environmental risks.

Year	Target	Actual
2008	2	8

Output #3

Output Measure

- Sustainable production practices that minimize off-farm and out-of-state inputs for plant and animal nutrition and pest control.

Year	Target	Actual
2008	2	2

Output #4

Output Measure

- Identify high value plant products.

Year	Target	Actual
2008	2	10

Output #5

Output Measure

- Identify new agricultural and forestry products and markets for Alaska producers.

Year	Target	Actual
2008	2	2

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Cost savings by producers utilizing more efficient crop production practices (better varieties, disease control, nutrient management, irrigation, etc.)
2	Cost savingsby utilization of in-state animal feeds
3	Number of producers utilizing recommended practices for agronomic and horticulture crops.
4	Number of new crop and animal markets identified and utilized.
5	Magnitude of in-state inputs used for plant and animal production
6	Number of golf courses using recommended turfgrass cultivars and management practices.
7	Number of new products and new uses of traditional products available for markets.

Outcome #1

1. **Outcome Measures**

Cost savings by producers utilizing more efficient crop production practices (better varieties, disease control, nutrient management, irrigation, etc.)

Not reporting on this Outcome for this Annual Report

Outcome #2

1. **Outcome Measures**

Cost savingsby utilization of in-state animal feeds

Not reporting on this Outcome for this Annual Report

Outcome #3

1. **Outcome Measures**

Number of producers utilizing recommended practices for agronomic and horticulture crops.

Not reporting on this Outcome for this Annual Report

Outcome #4

1. **Outcome Measures**

Number of new crop and animal markets identified and utilized.

2. **Associated Institution Types**

•1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	55	75

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Alaska traditionally has produced only a small number of plant and animal species. Energy and transportation costs increase the need for a safe regional food supply for Alaska. Our stakeholders seek the ability to increase local food production, including year-around and extended season food production with a lower carbon footprint and improved sustainability.

What has been done

New crops and species varieties for production in Alaska were identified and growers were organized to better meet market conditions. Research in tillage methods and fertilizer application, greenhouse and field production methods continued. Tillage method and fertilizer rate were shown to directly affect yield and quality of barley and bromegrass. Variety trials for tomatoes, potatoes, snap beans, under hoop house and field conditions and controlled environment production of cut flowers, vegetables, and herbs continue to provide growers with multiple crop production options in Alaska.

Results

At least 75 agricultural producers have adopted production of crops identified by AFES researchers as applicable to Alaska growing conditions. An association of peony growers was formed and currently. consists of 35 private growers and 12 businesses. Six rural villages attempted subsistence gardens and produced sufficient output at harvest to distribute food to 30 community elders. Greenhouse, controlled environment, and extended season research identified more than 10 specific varieties for use in commercial production of tomatoes, potatoes, herbs, and beans.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
307	Animal Management Systems

Outcome #5

1. Outcome Measures

Magnitude of in-state inputs used for plant and animal production

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	0	20

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Reindeer are traditionally raised in extensive systems of free range grazing systems. Predation losses require new methods of production. Lack of information on no-till methods in high latitude soils requires examination under field conditions.

What has been done

Examination of Alaska grown feeds for use in reindeer rations has provided new information for producers, including identification of the value of two pasture grasses on adult condition and growth of offspring. Use of estrous synchronization for breeding management has been demonstrated to be effective in reindeer females. P location in soil layer were identified under different tillage methods.

Results

Results from these studies were present at two reindeer herder association meetings (Kawerak Reindeer Herders and Island Reinational meeting of the Reindeer Owners and Breeders Association (ROBA). One Alaskan reindeer herder has changed his method of production from traditional free range to raising reindeer behind fence. Several ROBA producers are using estrous sychronization to assist in reproductive management. Proper use of P fertilizer has limited P loss to fresh water systems. Results have disseminated in scientific journals, national conferences and producer meetings.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
306	Environmental Stress in Animals
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
307	Animal Management Systems
302	Nutrient Utilization in Animals
102	Soil, Plant, Water, Nutrient Relationships
701	Nutrient Composition of Food
301	Reproductive Performance of Animals
204	Plant Product Quality and Utility (Preharvest)

Outcome #6

1. Outcome Measures

Number of golf courses using recommended turfgrass cultivars and management practices.

Not reporting on this Outcome for this Annual Report

Outcome #7

1. Outcome Measures

Number of new products and new uses of traditional products available for markets.

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Transportation and energy costs are driving stakeholders to demand a source of local bioenergy. Vegetable, fruit and berries provide potential production and profit production and potential income opportunities for many Alaskans. Reindeer producers need to develop feeding management skills as they move reindeer behind fence to protect them for caribou depredation.

What has been done

AFES researchers have identified new marketable agricultural products for energy production in Alaska. Oilseeds, canola in particular, have been identified as a viable Alaska grown crop. Perennial grasses and woody cellulitic plants for fiber to be used in renewable energy are being established. Vegetable, fruit and berries were evaluated in rural villages and road system locations. More than 500 cultivars of ornimentals, vegetables and herbs were grown in trial plots to determine the usefulness in Alaska landscapes. Reindeer calf growth rate was compared when feed different bromegrass based diets.

Results

Use of herbicide induced maturation reduced green seed and hastened maturity of Alaska grown canola. Oil content remains high and is highly usable for biodiesel or human consumption. Based upon project supply and expenditure information, a spreadsheet and an sheet were created for small-scale vegetable production to discern suitability for production by rural villages in Alaska (villages without road access). Information from variety trials has been shared with several commercial seed producers looking at Alaska as a potential market. Moosetard, Inc., a gourmet mustard company is working to use information from these trials to develop an all-Alaska product. Grass feed type effected reindeer milk composition and quantity produce and therefore effect calf growth rate.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
401	Structures, Facilities, and General Purpose Farm Supplies
402	Engineering Systems and Equipment
502	New and Improved Food Products
302	Nutrient Utilization in Animals
405	Drainage and Irrigation Systems and Facilities
307	Animal Management Systems
701	Nutrient Composition of Food

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 (global climate change)

Brief Explanation

Extreme climate is the most important external factor. The growing season can be dry and hot or wet and rainy in interior Alaska. The Matanuska Valley and the Delta region are subject to high winds year round. Climate change appears to be effecting climate patterns and subsequent temperature and precipitation ranges. The issue of food security has become more important with the fluctuation in the price of oil.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Before-After (before and after program)
- During (during program)

Evaluation Results

Key Items of Evaluation

Program #7

V(A). Planned Program (Summary)

1. Name of the Planned Program

Natural Resource Stewardship

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%		10%	
112	Watershed Protection and Management	20%		20%	
122	Management and Control of Forest and Range Fires	15%		15%	
123	Management and Sustainability of Forest Resources	15%		15%	
131	Alternative Uses of Land	10%		10%	
134	Outdoor Recreation	10%		10%	
605	Natural Resource and Environmental Economics	10%		10%	
608	Community Resource Planning and Development	10%		10%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

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

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	3.0	0.0	1.0	0.0
Actual	1.6	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
68430	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
68430	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
403444	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Natural Resources and Community Development is UAF Extension's newest program area. It provides outreach education regarding forest resources, mineral resources and mining, water resources, and rural communities. Program faculty and staff partner with a wide variety of local, state and federal governments, local and regional Native Alaskan tribal organizations and non-governmental organizations to address such issues as resource management, economic analysis, public policy education, and rural development.

Rural energy: Because of particularly high energy costs in rural Alaska, program has focused on ways to reduce dependence on petroleum sources. Extension worked with two rural communities to develop biomass projects to heat schools. Extension hosted workshops in Juneau and Sitka about responsible wood burning and continued to develop wood heat website with a wealth of information about locations to harvest wood, efficiency of wood and safety issues.

Program development: This program relies heavily on stakeholder input and advisory groups. Three areas of focus for future programming was identified: climate change, renewable energy and rural leadership.

Resource decision-making: Residents of the lower Kuskokwim River are faced with making decisions regarding a large proposed mine in their area. Extension educated a handful of village elders and leaders about the potential impacts and benefits of large-scale mining by taking them on a tour of two large Interior gold mines and speaking with experts.

Youth development: The nature of natural resource management is to work in rural and remote areas, which do not have many existing medical personnel. Extension co-sponsored 4-H training as emergency medical services First Responders to provide a link between the medical field and natural resources. 4-H Natural Resource and Youth Development program also supported rural classroom salmon incubation projects as a way to enhance math and science literacy of rural youth, and encourage their involvement in local resource management.

Water quality: Agent's work focused on water-quality efforts, including home septic safety and homeowner education.

2. Brief description of the target audience

Stakeholders directly impacted by contemporary natural resource issues related to forest resources, mining resources, water resources and rural communities.

Rural Alaskans.

Young adults from rural Alaska wanting entry level skills need for employment in natural resources businesses, agencies or organizations.

Alaska youth aged 9–18 interested in natural resources.

Interested Alaskans not directly affected by contemporary natural resource issues related to forest resources, mining resources, water resources and rural communities.

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	225	600	300	800
2008	3709	187626	60	250

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

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan			
2008	4	0	4

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Output 1: Develop formal partnerships with other land grant institutions, government agencies, stakeholder groups and credible, research based non government organizations that provide stakeholders with research based extension education on natural resource issues that impact stakeholders.

Year	Target	Actual
2008	8	6

Output #2

Output Measure

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

Year	Target	Actual
2008	10	22

Output #3

Output Measure

- Output 3: Develop informal partnerships with land grant institutions, government agencies, stakeholder groups and credible, research-based non-government organizations to deliver posters, power-point presentations, and graphic based presentations on local natural resource issues that impact stakeholders.

Year	Target	Actual
2008	7	6

Output #4

Output Measure

- Output 4: Develop, review, and revise a web site to be the electronic portal for UAF Extension information on natural resources stewardship matters of concern to stakeholders

Year	Target	Actual
2008	1	2

Output #5

Output Measure

- Output 5: Develop new multi-state relationships with other land grant institutions to identify natural resource issues that impact stakeholders.

Year	Target	Actual
2008	2	2

Output #6

Output Measure

- Output 6: Develop integrated research-extension activities with University of Alaska Fairbanks faculty and faculty at other land grant institutions that provide information resources related to natural resource issues impacting stakeholders.

Year	Target	Actual
2008	2	2

Output #7

Output Measure

- Output 7: Conduct at least two formal needs assessments per year of natural resource stakeholder groups

Year	Target	Actual
2008	2	3

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Outcome 1: As a result of participating in a workforce skill training projects for young adults from rural Alaska using a natural resource stewardship context, participants will obtain employment in the natural resource field.
2	Outcome 2: By working with UAF School of Natural Resources, College of Rural and Community Development and other University of Alaska units the number of young Alaskans recruited and trained in natural resource fields will result in an increase in the number of students who earn occupational endorsements and certificates in natural resource fields.
3	Outcome 3: Work with UAF School of Natural Resources, College of Rural and Community Development and other University of Alaska will increase the number of rural Alaskans who graduate with undergraduate degrees in natural resource fields.
4	Outcome target 4: Youth who participate in 4-H youth development natural resource stewardship projects will gain natural resource career job skills.
5	Increase knowledge about potential uses of renewable energy.

Outcome #1

1. Outcome Measures

Outcome 1: As a result of participating in a workforce skill training projects for young adults from rural Alaska using a natural resource stewardship context, participants will obtain employment in the natural resource field.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	25	20

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The nature of natural resource management is to work in rural and remote areas, which do not have many existing medical personnel. Natural resource management employers in remote locations are required by state and federal safety regulations to have emergency medical personnel available. By training young people as First Responders, we are providing a link between natural resources area and the medical field. Training rural teenagers and young adults in emergency medical services also brings immediate and tangible value to communities that lack proper medical facilities and caregivers.

What has been done

Eleven youth in Sitka and nine youth on Prince of Wales Island participated in the 4-H/Youth First Responder (YFR) emergency medical services project cosponsored by CES and SEARHC (Southeast Alaska Regional Health Consortium).

Results

Twenty youth were trained and received 13 certification in 2008. The training prepared youth for the Alaska State Certified Emergency Trauma Technician certification, which can then lead to filling critical EMT-related jobs throughout Alaska.

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development

Outcome #2

1. Outcome Measures

Outcome 2: By working with UAF School of Natural Resources, College of Rural and Community Development and other University of Alaska units the number of young Alaskans recruited and trained in natural resource fields will result in an increase in the number of students who earn occupational endorsements and certificates in natural resource fields.

Not reporting on this Outcome for this Annual Report

Outcome #3

1. Outcome Measures

Outcome 3: Work with UAF School of Natural Resources, College of Rural and Community Development and other University of Alaska will increase the number of rural Alaskans who graduate with undergraduate degrees in natural resource fields.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	5	2

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Increasing rural youth enrollment at UAF has been a high priority for the university for many years. The focus on natural resource fields has the obvious benefit of creating greater possibilities for economic growth and job creation in rural areas, since these areas are inherently rich in natural resources.

What has been done

Two rural high school students, who were participating in a university-sponsored summer program to introduce them to the University of Alaska Fairbanks, worked on Extension fruit tree research trial with Extension forestry specialist.

Results

Both students returned to the university in the fall to study agricultural engineering.

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development

Outcome #4

1. Outcome Measures

Outcome target 4: Youth who participate in 4-H youth development natural resource stewardship projects will gain natural resource career job skills.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	30	1000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Although the more traditional delivery method of 4-H clubs did not prove successful in many Alaska villages, the idea of hands-on, relevant learning tools did. The 4-H Natural Resource and Youth Development program uses natural resource management issues to enhance math and science literacy of rural youth, and to prepare them for a post-high school education and a role in managing their local resources.

What has been done

Despite losing funding that supported a longstanding annual training for rural teachers, the 4-H Natural Resource and Youth Development Program director continued to provide support to about 60 classroom salmon incubation projects that evolved from the training. Support for the incubation project and information about science, fisheries and resource issues were also provided in a quarterly newsletter sent to 75 participating rural schools and tribal councils. The newsletter also includes grant and education opportunities for teachers and for students. The hope is that this resource will be made available to youth.

Results

Agent has heard of students who have sought work at the local aquaculture association, the fish processing plant and continued in higher education in biological sciences. Through the program, educators and students have been more aware of natural resource training and received resources for hands-on, culturally relevant projects.

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management
608	Community Resource Planning and Development

Outcome #5

1. Outcome Measures

Increase knowledge about potential uses of renewable energy.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	{No Data Entered}	1538

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Petroleum-based energy costs, particularly in rural areas, tend to be high because of high transportation costs and a lack of competition. The high costs affect the ability of residents to continue to afford living in rural areas and the ability of businesses to develop.

What has been done

- Extension worked with two rural communities to develop biomass projects. The community of Craig, on Prince of Wales Island, is now heating a pool and two schools with a wood heat gasifier that burns wood waste from a nearby lumber operation. Another project at the Kenny Lake School is in the engineering phase.
- Extension hosted workshops in Juneau and Sitka about responsible wood burning and stove operation attended by 36 people and agent spoke about wood heat at a tribal energy conference
- Extension wood heat website offers a wealth of information about locations to harvest wood, efficiency of wood and safety issues
- Extension resource agent worked with University of Alaska Anchorage on a feasibility study for a renewable energy center, which will provide education and outreach and coordinate research on projects, such as micro or alpine hydroelectric projects.

Results

- The Craig biomass project just came online in spring 2008, but city of Craig expects to save $40,000-$60,000 a year on heating costs.
- As heating costs have been higher, more people have been burning with wood. Juneau, in particular, has experienced air-quality problems. The object of the responsible wood-heating workshop is to increase wood heat safety and to teach residents how to operate stoves in a manner to minimize air pollution.
- Project organizers are looking at property in the Girdwood area, south of Anchorage, for the renewable energy center.

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management
123	Management and Sustainability of Forest Resources
608	Community Resource Planning and Development

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

The Plan of Work for 2010 is revised to address the outcomes that remain problematic for FY08 and 09. The Natural Resources and Community Development Program is new. It takes time to develop a unified stakeholder base, identify problems we can address, develop and deliver Extension education programs. As mentioned above the atmosphere in rural Alaska changed significantly during the past 18 months as the economy spun downward, energy prices skyrocketed and economic opportunities in rural Alaska declined. The Plan of Work for 2010 is revised to address the outcomes that remain problematic for FY08 and 09. The Natural Resources and Community Development Program is new. It takes time to develop a unified stakeholder base, identify problems we can address, develop and deliver Extension education programs. As mentioned above the atmosphere in rural Alaska changed significantly during the past 18 months as the economy spun downward, energy prices skyrocketed and economic opportunities in rural Alaska declined.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- After Only (post program)
- Retrospective (post program)
- Before-After (before and after program)
- Comparisons between program participants (individuals,group,organizations) and non-participants
- Comparison between locales where the program operates and sites without program intervention

Evaluation Results

The Natural Resource and Community Development program is new and faculty and staff are identifying ways to target needs and evaluate the success of new initiatives.

Key Items of Evaluation

Program #8

V(A). Planned Program (Summary)

1. Name of the Planned Program

Management of Ecosystems- AFES

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
121	Management of Range Resources	0%		10%	
122	Management and Control of Forest and Range Fires	0%		20%	
123	Management and Sustainability of Forest Resources	0%		25%	
131	Alternative Uses of Land	0%		10%	
132	Weather and Climate	0%		15%	
136	Conservation of Biological Diversity	0%		20%	
	Total	0%		100%	

V(C). Planned Program (Inputs)

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

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	3.6	0.0
Actual	0.0	0.0	4.6	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	0	150772	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	154964	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	552018	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Forest Stand Characterization and Growth and Yield for the Alaska Northern Forest.

The forest survey and the consequent forest inventory database enables quantification of forest resources in interior Alaska, the knowledge of which is important for social and economic development of Alaska, especially for rural communities. The database also is vital to many natural resource studies in Alaska, such as forest growth and yield, forest management, biomass, agroforestry, mined land reclamation, and fuelwood. Study on large wildland fire suppression expenditures has revealed that federal wildfire suppression expenditures are substantially influenced by private properties within or near the fire perimeter. The results are especially important for fire managers and legislators to adjust current fire fighting policies in order to reduce the skyrocketing suppression expenditures. Study on forest management policies has improved our knowledge on the decision-making in forestry and relevant subjects. This research shows the pros and cons of some existing forest management policies, and explores how to improve these policies to accommodate our needs of renewable energy, and sustainable, diverse, and healthy forest ecosystems.

L**ong-term Ecosystem monitoring and GIS Modeling of the Taiga Forest Dynamics.**

Progress was accomplished on four primary projects during 2008. First, significant progress on establishment of the snowmelt removal studies was accomplished. Treatment structures in all of the upland sites have been constructed. The first year of treatment was initiated, this fall 2008, at the same time the summer throughfall removal treatment was packed away for the winter. The set-up and take-down of the two treatments will be dovetailed for the next five years. This will lead to a detailed understanding of ecosystem dynamics that are tied to the timing of precipitation in the boreal forest. The treatments for the floodplain sites were started but not completed. These will be finished in the current summer (2009) and put in place starting in the fall of 2009. Second, field work on a foliage sampling project was finished. This work was set up to look at the effects of fertilization, and drought treatment on the foliage chemistry on the successional sequence of forest ecosystems in both upland and floodplain landscape positions. The laboratory analysis on the foliage chemistry is currently in progress. The green foliage will be analyzed for C, N, P, K, Ca, and Mg. This will be directly comparable to samples collected in 1990, 1991, 1992 and 1994. Third, the long-term forest growth monitoring program, started in 1968, and tied to a number of thinning and fertilization treatments in white spruce (Picea glauca), aspen (Populus tremuloides) and birch (Betula neoalaskana) stands in a variety of age classes within interior Alaska was continued. This monitoring is being used to address long term impacts of thinning and fertilization treatments within climate change on the growth of trees in stands of various age classes. Four, annual sampling of the log decomposition monitoring was accomplished. All data being collected from these projects will be entered into the BNZ-LTER data catalog.

Evapotranspiration from Boreal Forest Landscapes in Alaska

The outputs of this project continue to include: data, models, and analysis. Lake level data and pan evaporation data were collected for the 2008 summer period. In addition, another set of winter lake level measurements were obtained. The data and preliminary analysis continue to be shared with the State of Alaska Dept. of Natural Resources, the U.S. Natural Resources Conservation Service (NRCS), the Salcha-Delta Soil & Water Conservation District, and the Alaska Dept. of Fish & Game. In May of 2008 a continuous, self-running powerpoint show was shown at the Harding Lake landowner's association annual meeting. On December 2, 2008 representatives of the aforementioned agencies and the Harding Lake Association met with researchers to discuss the status and outlook on lake level recovery. A poster presentation on this aspect of the project has been accepted for the American Water Resources Association Spring Specialty Conference, to be held in Anchorage, AK in May 2009. A model of Harding Lake was used to estimate undocumented contributions of Rogge Creek to the lake in the 1980's. The model was tested against the 5-year lake level measurement data, including periods with and without contributions from Rogge Creek. These results will be useful to Alaska Dept. of Fish & Game who will manage the lake level for pike habitat. One undergraduate Senior Thesis research project was completed this past year.

Climate sensitivity affecting tree growth and ecosystem change:

Forest growth was measured and monitored at Bonanza Creek Long Term Ecological Research site (BNZ LTER) in central Alaska in 6 large (1 or 2 hectare) plots representing 3 forest types (white spruce, aspen, Alaska birch) including an example of mature and of young post-fire regenerating forest of each type. A wave of tree mortality and forest health problems, above the levels of tree death typical of the second half of the 20th century (the period of most observation and records in boreal Alaska) was previously documented in BNZ LTER. The evidence at the Caribou Crossing Research Natural Area (CBX) is consistent with recent forest decline as well. In the Yukon Gulch old-growth white spruce plot at CBX, 18% of the trees alive at the start of monitoring in 1986 died by 2008. A notable number of the largest trees on the plot died and snapped as the result of wood decay in the center of the lower stem. Most of the major factors that it appears were responsible for the high tree mortality, including temperature-induced moisture stress, beetle outbreaks (which inoculate trees with wood-rotting fungi), and snow breakage of tree crowns are either triggered or intensified by warm temperatures. However, summer weather in 2008 provided significant relief from stress generated by recent warmth. Cool July and August temperatures and persistent rain allowed height growth of post-fire (1983) white spruce at RSW plot in BNZ to reach the highest levels in the 21-yr. record. Essentially, at RSW the severe reduction of growth caused by extreme warmth from 2004 through 2007 was overcome and the increase in growth rate expected in young, rapidly-expanding trees was resumed. The termination of recent high temperature stress by cooler weather in 2008 also may have averted an additional wave of accelerated tree death. A large hatch of spruce budworms appeared in early summer 2008, but as predicted by the temperature model, the outbreak collapsed. Heavy budworm defoliation in 2008 would have been the 3rd successive year, and likely would have caused severe reduction in growth and tree

survival. Our analysis of the control of climate over growth of floodplain trees has demonstrated that precipitation explains a significant amount of the residual of the variability in growth not explained by temperature alone. This is the first time that precipitation has been shown to have strong predictive value of growth in Alaska boreal trees, but it is a secondary or supplemental effect. Along the Kuskokwim River black and white spruce tree growth is well-predicted by climate. Absolute rates of mature white spruce growth on the Kuskokwim floodplain is greatest yet measured north of the Alaska Range on a sustained basis. In inland parts of the Kuskokwim watershed, black and white spruce grow least in warm summers and best in cool summers, similar to high-temperature drought stress documented elsewhere in boreal Alaska. In stands located closest to the Bering Sea coast where summers are cooler, tree growth is greatest in warm summers and least in cool summers. Further climate warming will very likely decrease spruce growth in the inland stands and possibly cause increased rates of tree death, while increasing tree growth in the smaller area of coastward stands. Photo monitoring of forest development at BNZ since the 1983 fire suggests that the lateral expansion of white spruce crowns may be an important factor in obtaining an advantage over competing broadleaf trees and shrubs.

2. Brief description of the target audience

The target audiences include producers and consumers of agricultural and forestry products, including communities and small business entrepreneurs, users of land and water resources, individuals and groups concerned about the quality of the Alaska environment, and public resource agencies. Our efforts will be directed toward environmentally and economically sustainable development and conservation of our natural resources that will benefit all citizens. In 2005, we met with the following stakeholders to discuss research priorities for this program:

- Statewide Board of Advisors
- Alaska Forest Association
- Society of American Foresters
- Alaska Farm Bureau
- Alaska Northern Forest Cooperative

From annual reports:

Evapotranspiration: State of Alaska Dept. of Natural Resources, the U.S. Natural Resources Conservation Service (NRCS), Salcha-Delta Soil & Water Conservation District, Alaska Dept. of Fish & Game, Harding Lake Watershed Association, and the Harding Lake landowners association. Forest managers and researchers; Students and educators; Federal, state, and local government agencies; Private landowners; Indigenous people organizations.: High School Summer Research Internship Program (HSSRIP) of the BNZ LTER and the Experimental Program to Stimulate Competitive Research (EPSCoR); UNCF (United Negro College Fund) SEED (Student Excellence Equals Degree) project. Led a summer class of 30 students and 8 instructors from 6 historically black colleges for a 2-day field measurement exercise at Bonanza Creek LTER monitoring plots and UAF Smith Lake Arboretum; conducted a training session for resource management and information staff of Kenai Fiords National Park, April 22; presented a training session for Alaska National Wildlife Refuge Alaska Rural Information Technicians (RIT); RITs are made up of mostly Alaska Natives working in 100 of Alaska's 300 villages and are considered elders in their communities. They also represent the USFWS as tribal meetings and communicate wildlife information to village leaders; field trip to BNZ LTER for Luis Tupas, National Program Leader for Global and Climate Change USDA-CSREES and Diana Jerkins, National Program Leader, Competitive Programs, USDA liaison officers for state Agricultural and Forestry Experiment Stations; Evening Public Lecture, Alaska Public Lands Information Center, August 07, Fairbanks, AK. ; National Association of State Wetlands Managers. ; State Legislature - briefings of 2 members; Alaska Board of Forestry; News Media; Science News, Reuters News Service, ClimateWire, National Public Radio; : These projects are designed for development of basic knowledge on the functioning of boreal forests in interior Alaska. As a result the target audiences are primarily other research folks, and eventually forest managers that will be trying to design management alternatives that will be tied to the changing climate in interior Alaska.

Forest Stand and Yield:

Climate sensitivity

LTER

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	350	2000	0	0
2008	350	2000	0	0

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

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	35	
2008	0	22	22

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Identify agricultural and forestry management practices that minimize environmental risks

Not reporting on this Output for this Annual Report

Output #2

Output Measure

- Models developed

Year	Target	Actual
2008	0	0

Output #3

Output Measure

- Databases for land resources planning, policy, and law as it relates to human activity and annual updates for tourism.

Not reporting on this Output for this Annual Report

Output #4

Output Measure

- Developed a predictive index for severity of budworm population increases based on temperature.

Year	Target	Actual
2008	{No Data Entered}	1

Output #5

Output Measure

- Students and interns who were exposed to ecosystems management issues.

Year	Target	Actual
2008	{No Data Entered}	44

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Changes in land-use patterns that will support sustainable development
2	Adoption of models for ecosystem management.
3	Regulatory agency and private sector adoption of soil and wetlands criteria for Alaska
4	Reduce instances of surface water contamination related to resource development
5	Adoption of criteria for effective conflict resolution

Outcome #1

1. Outcome Measures

Changes in land-use patterns that will support sustainable development

Not reporting on this Outcome for this Annual Report

Outcome #2

1. Outcome Measures

Adoption of models for ecosystem management.

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2	3

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Agency personnel, forest researchers and land managers need information on forest growth and yield, climate change data, lake level information to make informed planning and policy decisions.

What has been done

Models have been created to estimate bark thickness of white spruce in Interior Alaska, to estimate fire severity, creek drainages into a evaporating lake, and a temperature model for climate change in interior Alaska.

Results

Information has been made available to the public at http://www.faculty.uaf.edu/ffj12; the USFS, state foresters and BLM use the Burn Ratio model to predict fire severity and the climate data temperature model.

4. Associated Knowledge Areas

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

Outcome #3

1. Outcome Measures

Regulatory agency and private sector adoption of soil and wetlands criteria for Alaska

Not reporting on this Outcome for this Annual Report

Outcome #4

1. Outcome Measures

Reduce instances of surface water contamination related to resource development

Not reporting on this Outcome for this Annual Report

Outcome #5

1. Outcome Measures

Adoption of criteria for effective conflict resolution

Not reporting on this Outcome for this Annual Report

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

Brief Explanation

Climate change continues to be an external factor which requires research as well as the economy. When fuel oil costs $8.00 a gallon in rural towns and village resource management becomes even more essential.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Before-After (before and after program)
- During (during program)

Evaluation Results

Key Items of Evaluation

Program #9

V(A). Planned Program (Summary)

1. Name of the Planned Program

High Latitude Soils- AFES

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	20%		20%	
104	Protect Soil from Harmful Effects of Natural Elements	20%		20%	
122	Management and Control of Forest and Range Fires	20%		20%	
123	Management and Sustainability of Forest Resources	20%		20%	
125	Agroforestry	20%		20%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

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

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	4.9	0.0
Actual	0.0	0.0	2.8	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	0	168947	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	223385	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	39789	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

High latitude soil research over the next five years will center on the following research topics and activities:

- Characterization of black spruce forest soils in boreal regions of Alaska in terms of the organic carbon pool and relationship with forest management practices. The Arctic and Subarctic zones are expected to sustain the greatest impact in the wake of global climate change. Because of the vast acreage in Alaskaand the potentially high C storage capacity in the boreal forest zone, an understanding of black spruce dominated sites isimportant for both ecological modeling and for land management.
- Study soil carbon balance and nitrogen dynamics following disturbance by wildfire and logging in Interior Alaska. Evaluate whether and how wildfire changes the quality of organic matter remaining at the soil surface.
- Soil respiration following wildfire in lowland black spruce forests, in upland black spruce and mixed hardwood forests.
- Evaluate relationship between local climate and soil carbon balance.
- Evaluate effects of agronomic management practices (fertility, tillage, etc.) on soil carbon levels. Yield and quality of barley and bromegrass will be evaluated as affected by zero/minimum tillage, to determine optimal N fertilizer rate, and cutting practice, and to determine soil carbon quantity and quality affected by different land management and tillage, and to quantify the potential mineralizable N in agricultural land under different management practices.

2. Brief description of the target audience

The audience for this program will include public and private resource managers, Native American Corporations, other faculty and researchers, and undergraduate and graduate students. 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, and borough, governments, and Alaska Native Corporations. Information on impact of fires on soil organic matter will assist the Department of Natural Resource's Division of Forestry and private land owners and managers. Soil, plant, water and nutrient relationships will be of interest to farmers and public agencies that assist farmers.

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

Year	Direct Contacts Adults Target	Indirect Contacts Adults Target	Direct Contacts Youth Target	Indirect Contacts Youth Target
Plan	50	75	0	0
2008	50	75	0	0

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

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	6	
2008	1	16	17

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Development of a climate/soil model for boreal forest regions

Year	Target	Actual
2008	0	0

Output #2

Output Measure

- Development of a soil carbon profile for black spruce forest soils in interior Alaska

Year	Target	Actual
2008	0	1

Output #3

Output Measure

- Develop a model for relating post-fire organic duff depth to soil erosion and eventual stand regeneration.

Year	Target	Actual
2008	1	1

Output #4

Output Measure

- Publication of scientific journal articles and experiment station bulletins summarizing this research.

Year	Target	Actual
2008	5	16

Output #5

Output Measure

- Database listing of development limitations related to soil resources and soil quality.

Year	Target	Actual
2008	1	3

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Number of public and private land managers using these models and publications.
2	Number of land managers that change their practices in response to our research.

Outcome #1

1. Outcome Measures

Number of public and private land managers using these models and publications.

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	5	14

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The USGS Alaska Regional Office is interested in soils data, particularly east-west and north-south transacts. Industry and state and federal agencies can use the knowledge that some black spruce stands possess commercial value and can be managed. Forest ecosystem scientist are seeking to understand how boreal forests respond to manipulations in soil moisture and how they might respond to a drying climate. This information will be of interest to forest land managers seeking to develop management plans. Alaska's farming community will find nitrogen management in crop production critical as fertilizer prices continue to fluctuate.

What has been done

Baseline data for soils formed under black spruce forest stands has been collected. This is the first time carbon stock data on a pedon basis from actual field measurements has been done. Construction was completed for all snow-melt exclusion structures and ongoing soil measurements were continued. In addition, data has been collected from three years of fertilizer trials with smooth brome grass and is currently being analyzed.

Results

The black-spruce forest team works with USDA-NRCS to compile all soil survey pedon data for Alaska including carbon stores by each map unit with the goal to tie all such data to the USDA-NRCS STATSGO database and compile a carbon map for the entire state. In upland, mid-successional forests drought will have more of an effect on the forest ecosystem and carbon balance than in floodplain, mid-successional forests of interior Alaska.

4. Associated Knowledge Areas

KA Code	Knowledge Area
104	Protect Soil from Harmful Effects of Natural Elements
125	Agroforestry
122	Management and Control of Forest and Range Fires
123	Management and Sustainability of Forest Resources
102	Soil, Plant, Water, Nutrient Relationships

Outcome #2

1. Outcome Measures

Number of land managers that change their practices in response to our research.

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	7	3

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The USGS Alaska Regional Office is interested in soils data, particularly east-west and north-south transacts. Industry and state and federal agencies can use the knowledge that some black spruce stands possess commercial value and can be managed. Forest ecosystem scientist are seeking to understand how boreal forests respond to manipulations in soil moisture and how they might respond to a drying climate. This information will be of interest to forest land managers seeking to develop management plans. Alaska's farming community will find nitrogen management in crop production critical as fertilizer prices continue to fluctuate.

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Baseline data for soils formed under black spruce forest stands has been collected. This is the first time carbon stock data on a pedon basis from actual field measurements has been done. Construction was completed for all snow-melt exclusion structures and ongoing soil measurements were continued. Data has been collected from three years of fertilizer trials with smooth brome grass and is currently being analyzed.

Results

The black-spruce forest team works with USDA-NRCS to compile all soil survey pedon data for Alaska including carbon stores by each map unit with the goal to tie all such data to the USDA-NRCS STATSGO database and compile a carbon map for the entire state. In upland, mid-successional forests drought will have more of an effect on the forest ecosystem and carbon balance than in floodplain, mid-successional forests of interior Alaska.

4. Associated Knowledge Areas

KA Code	Knowledge Area
125	Agroforestry
123	Management and Sustainability of Forest Resources
104	Protect Soil from Harmful Effects of Natural Elements
102	Soil, Plant, Water, Nutrient Relationships
122	Management and Control of Forest and Range Fires

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 (global climate change)

Brief Explanation

All of the research programs in the high latitude soils planned program depend on variations in weather for their successful completion. Shorter field seasons and changes in snow or rainfall particularly have an effect on nutrient dynamics in the soil regime. Thus, there is a necessity to set up long-term studies to ameliorate these effects. Climate change has effected arctic and sub-arctic regions more significantly than more temperate regions. Demand for information about effects of climate on frozen soils, on draught effects on the boreal forests, and how changes in soil moisture and temperature might affect the nitrogen regime in agricultural soils are increasing. It is preferable to have a long-term data base before making recommendations. However, we are releasing our results on a yearly to three-year basis to allow our clientele to adjust their long-range planning that will effect appropriations, public policy changes, government regulations and competing public priorities. This is a programmatic challenge, however it may be the only mode of operation possible as we continue to collect long-term information and formulate models and provide data basis for our stakeholders.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- After Only (post program)
- Retrospective (post program)
- Comparison between locales where the program operates and sites without program intervention

Evaluation Results

Sixteen publications resulted from the studies; three graduate students were in the process of completing their thesis, and one experiential class was taught using the boreal forest draught-study research area.

Key Items of Evaluation

Publications, students, classes taught.

Program #10

V(A). Planned Program (Summary)

1. Name of the Planned Program

Natural Resource Use and Allocation- AFES

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
134	Outdoor Recreation	25%		25%	
605	Natural Resource and Environmental Economics	25%		25%	
608	Community Resource Planning and Development	25%		25%	
610	Domestic Policy Analysis	25%		25%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

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

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	1.7	0.0
Actual	0.0	0.0	3.2	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	0	150772	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	154964	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Products will center on providing research supported information (models) to agency and government decision makers in resource planning, economic and environmental impact of natural resource use, market and non-market value of resources, and conflict resolution in rural communities and villages, as well as resource use impact on public law and policy. Measurable outcomes will include peer reviewed publications, lay publications, village business/development plans, and citizen participation.

2. Brief description of the target audience

This program will focus on industry and entrepreneurs including communities, families, and newly forming cooperatives and businesses, non-profit and for-profit development corporations. Efforts will be made to address problems of the traditionally underserved rural populations within the limit of resources available. Federal and state legislators will be recipients of our work on ecosystem services and natural resource use as they pertain to existing policy and regulation and changes that may be necessitated in the future.

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	350	500	0	0
2008	350	500	0	0

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

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	25	
2008	0	3	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of communities that adapt economic models which provide information that enables leaders to assess the direction they wish to take in economic development.

Year	Target	Actual
2008	6	2

Output #2

Output Measure

- Attendance and participation in various discussions related to use of natural resources in rural Alaska.

Year	Target	Actual
2008	300	300

Output #3

Output Measure

- Identification of projected policy changes on communities and families

Year	Target	Actual
2008	0	3

Output #4

Output Measure

- Number of business or development plans implemented

Year	Target	Actual
2008	0	4

Output #5

Output Measure

- surveys

Year	Target	Actual
2008	2	1

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Increased employment opportunities
2	Increased recreational use.
3	New policy/regulations directed toward appropriate resources development
4	Increased local businesses and job opportunities in rural communities and villages
5	Energy-efficient technology adopted in rural communities
6	Increased community opportunities through community and resource planning.

Outcome #1

1. Outcome Measures

Increased employment opportunities

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	0	12

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The Alaska peony industry is new to the state. It represents a case where location may provide a market advantage. As a new endeavor there are many unknows that must be addressed. Peony producers are the recipients of research and outreach being conducted reaching from basic production practices to economics of production to marketing.

What has been done

To assist peony producers enter national and international markets, an hedonic price model was applied to US peony data. It was designed to help growers understand how basic marketing decisions and cultivar characteristics affect the pricing of cut-flower peonies in US wholesale markets.

Results

As a result of our peony production work and economic modeling assistance, 12 new peony producers are ready to bring their product to market in the 2009 season. Alaska growers have learned that they should cultivate relationships with flower growers in the northeastern US and remain focused on double bloom varieties.

4. Associated Knowledge Areas

KA Code	Knowledge Area
605	Natural Resource and Environmental Economics

Outcome #2

1. Outcome Measures

Increased recreational use.

Not reporting on this Outcome for this Annual Report

Outcome #3

1. Outcome Measures

New policy/regulations directed toward appropriate resources development

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	0	3

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

There are several inconsistencies in the implementation of the Marine Mammal Protection Act regarding the native Alaskan hunting exemption and the meaning of the term 'waste'. This could affect native use of a traditional resource. The failure to interpret 'scientific' in the 'Best Scientific Data Available' standard has resource management repercussions as does the issue of Assisted Migration of flora and fauna in the ecosystem landscape.

What has been done

A work examining the inconcistencies between the state of Alaska's Intensive Management Statute and laws regulating wildlife management on National Park Service lands is completed. The courts failure to correctly apply the term 'scientific' is under investigation in coordination with the U.S. Fish and Wildlife Service.

Results

The work on inconsistencies in implementation of the Marine Mammal Protection Act was heard by the Alaska Chapter of the Wildlife Society and is under consideration by the National Park Service. The case of whether data is 'scientific' or not can have significant management repercussions and is currently debated in the implementation of the ESA.

4. Associated Knowledge Areas

KA Code	Knowledge Area
610	Domestic Policy Analysis

Outcome #4

1. Outcome Measures

Increased local businesses and job opportunities in rural communities and villages

Not reporting on this Outcome for this Annual Report

Outcome #5

1. Outcome Measures

Energy-efficient technology adopted in rural communities

Not reporting on this Outcome for this Annual Report

Outcome #6

1. Outcome Measures

Increased community opportunities through community and resource planning.

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	{No Data Entered}	3

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Fire management agencies will care about the new bulletin 'Wildland Fire in Alaska'. As a result, public meetings were facilitated on what could be done to improve the Alaska Fire Service's response to wildland fires near urban areas. The 'Survey of Greenmaps' enable the Fairbanks area to look at its environmental assets and liabilities. The Fairbanks Downtown Anti-Sprawl Effort is being used by the Downtown Association to develop a 'Smart Growth Plan.'

What has been done

A senior level planning class facilitated meetings concerning wildfire management resulting in an improved fire-response plan for the Alaska Fire Service. The Survey of Greenmaps was the basis of a project with the Fairbanks North Star Borough 'Empowering Citizens through Community Mapping' that developed a data base of 600 assets and liabilities for the Borough.

Results

The multiple projects concern ways to involve the public in decisions that affect their lives and improve to ability of natural resource policy makers to seek out and facilitate the involvement of all potentially affected stakeholders. These efforts resulted in improved urban/wildlands interface planning and improved planning for interior Alaska in the face of environmental concerns primarily centered on fuel price fluctuations and atmospheric limitations placed by the U.S. EPA on emissions in the Fairbanks area.

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

This planned program is targeted toward looking at the effects of external factors that affect resource management. It has progressed on schedule and has been well received by the greater Alaskan community.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Retrospective (post program)
- Before-After (before and after program)
- During (during program)
- Case Study

Evaluation Results

Three planning projects resulted in two plans that are in place; fire management at the urban/wildland interface and the Fairbanks downtown anti-sprawl effort within a 20-block area of the downtown core. Policy changes are suggested in two publications concerning the use of Alaska's resources and that use in relationship to the definition of 'waste' in wildlife harvest and and 'science' in policy implementation. The planning projects were conducted by classes in natural resource planning that were participating in a 'community learning' experiential pedegogy.

Key Items of Evaluation

Plans that have been adopted and are being implemented, facilitation sessions conducted, classes involved.