

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

**Program # 1**

**1. Name of the Planned Program**

Agriculture and Food Security

Reporting on this Program

**V(B). Program Knowledge Area(s)**

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	10%		20%	
205	Plant Management Systems	25%		22%	
212	Diseases and Nematodes Affecting Plants	0%		3%	
213	Weeds Affecting Plants	15%		0%	
216	Integrated Pest Management Systems	28%		0%	
301	Reproductive Performance of Animals	5%		10%	
302	Nutrient Utilization in Animals	5%		10%	
305	Animal Physiological Processes	2%		10%	
401	Structures, Facilities, and General Purpose Farm Supplies	5%		5%	
405	Drainage and Irrigation Systems and Facilities	0%		5%	
601	Economics of Agricultural Production and Farm Management	5%		0%	
903	Communication, Education, and Information Delivery	0%		15%	
	<b>Total</b>	100%		100%	

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

1. Actual amount of FTE/SYs expended this Program

Year: 2016	Extension		Research	
	1862	1890	1862	1890
<b>Plan</b>	8.0	0.0	11.0	0.0
<b>Actual Paid</b>	8.6	0.0	9.0	0.0
<b>Actual Volunteer</b>	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
418220	0	950855	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
457513	0	507629	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
2149826	0	0	0

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

### 1. Brief description of the Activity

Research and outreach continued to assure that best management practices appropriate to Alaska are provided to target audiences. Growing trials provided new directions on the resilience and adaptability of crops as changes in the subarctic and arctic climate occur. Research and Extension programs continued to be revitalized to remain relevant to regional and local agricultural production. Group and one-on-one educational activities with specific sectors of the pest management industry, the agricultural community and the horticultural industry provided individuals and businesses with important information. Increased reliance on the Internet and technology enhanced communication with more people, as faculty and staff utilized distance education platforms. Increasing and maintaining partnerships was an important strategy in keeping pest species below threshold levels. Outreach included conferences, workshops, forums, tours and consultations with stakeholders.

### 2. Brief description of the target audience

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

### 3. How was eXtension used?

Increased use of eXtension resources in FY16 has been very valuable to Extension outreach in Alaska. In FY16, five agriculture faculty and staff answered a total of 86 questions submitted through eXtension's Ask an Expert interface. Eighty-eight percent of the questions were asked by Alaskans. Question topics ranged from lawn care, tree and pest IDs to hydroponics, agribusiness and cattle vaccination. A member of the communications unit now serves as a question wrangler for the state to assist in assigning the inquiries. Agent and educator memberships in communities of practice included Citizen Science, Invasive Species, Farm Bill Education Learning Network, Community, Local and Regional Food Systems, and Extension Master Gardener Coordinators. Agents have used eXtension-provided Qualtrics access for needs assessments and documenting changes in knowledge and behavior. The Extension veterinarian was a

2016 i-Three Issue Corps member. A tribes Extension educator is an Innovation Partner developing a mobile app for citizen scientists to contribute to crop variety research.

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

**1. Standard output measures**

2016	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Actual</b>	14373	208324	2059	10964

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

**Patent Applications Submitted**

Year: 2016  
 Actual: 0

**Patents listed**

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

**Number of Peer Reviewed Publications**

2016	Extension	Research	Total
<b>Actual</b>	0	5	5

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

**Output Target**

**Output #1**

**Output Measure**

- Output 1: Faculty will provide agricultural and horticultural workshops, short courses, classes, field days and conferences, including IPM.

Year	Actual
2016	126

**Output #2**

**Output Measure**

- Output 2: Faculty will provide agricultural, horticultural and pest management information through one-on-one consultations and consultations with other organizations. Output measure will be contact hours.

Year	Actual
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2016 4821

**Output #3**

**Output Measure**

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

<b>Year</b>	<b>Actual</b>
2016	23

**Output #4**

**Output Measure**

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

<b>Year</b>	<b>Actual</b>
2016	6

**Output #5**

**Output Measure**

- Output 5. Focus will be on best management practices for livestock management and production. Output measures will be publications and presentations.

<b>Year</b>	<b>Actual</b>
2016	25

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

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

O. No.	OUTCOME NAME
1	Outcome 1: Increase agronomic crop producers' ability to understand and assess best management practices of crop production. Measure will be number of producers who adopt practices.
2	Outcome 2: Increase livestock producers' ability to understand and assess optimum production practices. Measure will be number of producers.
3	Outcome 3: Increase participants' commercial and home horticulture best management practices. Measure will be number of individuals who adopt better management practices.
4	Outcome 4: Increase the number of adopters of new technology and management practices.
5	Outcome 5: Increase the number of activities that monitor and control invasive species and pests. Measure will be the number of outreach activities and publications.
6	Outcome 6: Increase reindeer producers' ability to understand and assess optimum production practices. Measure will be number of producers.
7	Outcome 7: Increase the number of youth appreciating agriculture and considering agricultural careers. Measure is number of youth contacts.
8	Outcome 8: Provide support for emerging agricultural industries. Measure will be number of presentations and consultations.

## **Outcome #1**

### **1. Outcome Measures**

Outcome 1: Increase agronomic crop producers' ability to understand and assess best management practices of crop production. Measure will be number of producers who adopt practices.

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

- 1862 Extension
- 1862 Research

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

Change in Knowledge Outcome Measure

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

<b>Year</b>	<b>Actual</b>
2016	20

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

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

Alaska, with 6,640 miles of coastline, is already seeing changes in its landscape due to variations in water and soil temperatures. Climate change is an important issue to growers because of the impact of climate on agricultural performance. Planning for crop and animal management is highly influenced by climate predictions. Research and outreach is needed regarding adaptability during climate variability. Strengthening our ability to observe, report, and promote climate adaptation options is key to supporting continued crop and livestock production in Alaska.

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

In 2016, barley, oats, wheat and oilseeds were grown and evaluated at both the Matanuska Experiment Farm and Fairbanks Experiment Farm. In addition, in cooperation with Washington State University Mount Vernon Research and Extension, globally collected wheat lines were compared to six standard Alaska varieties at the Fairbanks Experiment Farm. Climate data for both sites was collected during the growing season as well as comparisons of crop yields.

#### **Results**

Warmer temperatures than the long-term average were observed at both farms, and more precipitation than the long-term average was observed in Fairbanks. This resulted in more Growing Degree Days (GDD) available for the crops. However, a majority of the 73 wheat lines could not reach maturity. The 17 wheat lines that did reach maturity had yields similar to the standard variety. Researchers tracked which breeding selections fared best, as well as crop responses to dryland farming and harvest methods. In sum, researchers were able to observe GDD limitations for varieties in Alaska and identify better-adapted crop varieties. Results were disseminated to 20 adults at an annual Harvest Wrap-Up meeting in the fall. The climate and variety tracking can provide a comparison point for local producers to assess the economic

viability of the recommended crops. Future work is planned to use the results to run crop model simulations.

#### 4. Associated Knowledge Areas

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

#### Outcome #2

##### 1. Outcome Measures

Outcome 2: Increase livestock producers' ability to understand and assess optimum production practices. Measure will be number of producers.

##### 2. Associated Institution Types

- 1862 Extension
- 1862 Research

##### 3a. Outcome Type:

Change in Action Outcome Measure

##### 3b. Quantitative Outcome

Year	Actual
2016	235

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

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

Many Alaskans do not live near easily accessible services. Those involved in farming and ranching have a need for information on how to best monitor the health of their flock and herd so that they can identify problems early, where there will be time for navigating the logistics of getting veterinarian and other expert help in more remote areas. There are also concerns over food security and high costs of living. Livestock raised in Alaska also provides food products for both home and commercial use. There is continued interest in raising chickens for backyard flocks as a source of both meat and eggs.

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

In the second year of a pest scouting and mapping project, 13 livestock farms received an on-site visit from a trained IPM scout. The program Chicken University was held four times in two different locations and was successful in educating 150 adults and two youth about protecting

chickens from frostbite. An animal health workshop in Soldotna reached 27 adults and 20 youth. The Extension veterinarian presented to 23 people on issues regarding small ruminants and camelids.

**Results**

The scouts oversaw the inspection of 549 cattle, sheep and goats for signs of parasitism and helped with fecal sampling of about 10% of each farm's herd, and trained producers to perform a "5-point check" to score body conditioning and monitor for the presence of gastrointestinal parasites. Producers reported high agreement on measures of feeling prepared to do checks on their own and intent to adopt the practices. Qualitative fecal analysis was performed on 59 composite samples from the farms as well, and results were reported back to the producer. Educational information was provided regarding strategic deworming strategies and legal use of anthelmintics. Before the Chicken University, approximately a third of small flock owners in the Mat-Su Valley area had cases of chickens losing toes to frostbite. Now in its seventh year, the program has helped reduce such loss in the area to a rarity.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
216	Integrated Pest Management Systems
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
305	Animal Physiological Processes
401	Structures, Facilities, and General Purpose Farm Supplies

**Outcome #3**

**1. Outcome Measures**

Outcome 3: Increase participants' commercial and home horticulture best management practices. Measure will be number of individuals who adopt better management practices.

**2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2016	858

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



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

Horticulture is the largest agricultural industry in Alaska amounting to more than 50 percent of cash receipts for all agricultural crops. Alaska imports most of its food and costs are high, particularly in rural areas. Dependence on imports poses a food security risk if supply lines are interrupted. Teaching more residents how to garden or grow horticultural crops increases the quality of food available to consumers and can lower the risk of food insecurity.

### **What has been done**

Extension agents trained 146 Master Gardeners in Anchorage, Big Lake, Fairbanks, Juneau and online. The Kenai agent held a hay producer's workshop for 35 participants, and distance delivered an agricultural training program series to five Kodiak villages with 14 attendees. The Alaska Growers School for Alaska Native-owned farms and ranches was taught to 17 students through distance education. Introductory classes on gardening and soils were offered by multiple agents in Big Lake, Sutton, Palmer, and Soldotna reaching 210 people. Four classes on managing weeds and invasive species reached 80 people. Pesticide Safety education courses were completed by 114 people statewide. Seven classes on soil fertility, testing, and results interpretation reached 242 participants.

### **Results**

Master Gardeners contribute greatly to community capacity; they agree to 40 hours of service in their communities, and some of them have continued volunteering for 20 years or more. Thirteen of 16 respondents to an Advanced Master Gardener entomology course agreed the course helped make them more aware of insects in their environment and five developed and used IPM plans. Fifty-one respondents at the Master Gardener conference rated their overall impression of the conference as 4.7 on a five-point scale. Post-workshop surveys in Kenai indicated overall increases in participant ability to understand and/or follow best management practices. All participants in the Alaska Growers School rated their knowledge as moderate or considerable and the majority of 11 respondents indicated an intention to start, continue, or increase using the skills they learned. Five participants stated an intention within a year to write a business plan or start a farm or ranch in Alaska.

## **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
102	Soil, Plant, Water, Nutrient Relationships
205	Plant Management Systems
212	Diseases and Nematodes Affecting Plants
213	Weeds Affecting Plants
216	Integrated Pest Management Systems
401	Structures, Facilities, and General Purpose Farm Supplies
405	Drainage and Irrigation Systems and Facilities
601	Economics of Agricultural Production and Farm Management
903	Communication, Education, and Information Delivery

## **Outcome #4**

### **1. Outcome Measures**

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

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

- 1862 Extension
- 1862 Research

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

Change in Knowledge Outcome Measure

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

<b>Year</b>	<b>Actual</b>
2016	2989

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

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

New technologies help everyone in the agriculture field stay up-to-date through information sharing, diagnostics, and other improvements and efficiencies related to growing and managing crops. Alaskans need more opportunities for reporting and identifying invasive plants or pests in real-time, sharing observations from experienced growers, and watching demonstrations of best practices for managing animal and plant production. Increased exposure to new technology and practices raises the possibility Alaskans will adopt such tools.

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

A researcher also made presentations at a renewable energy fair on LED lighting for greenhouses and light quality impacts on transplants. The Extension invasive plants instructor worked with the University of Georgia in FY15 to develop the Alaska Weeds Identification application, which continued to be offered for both iPhone and Android devices in FY16. The tribes extension educator did development work in FY16 on an application to allow a citizen science approach to tracking the success of agricultural varieties in Alaska gardens. The tribes educator also published a guide on growing garlic in Alaska, supplemented by a YouTube video demonstration and explanatory web page.

#### **Results**

The horticulture researcher maintained a partnership with a local greenhouse that has helped managers identify appropriate crops, production techniques and scheduling. A partnership with a local lodge has provided opportunities for students to receive hands-on training and summer jobs. Sixty people attended the presentations on lighting. The YouTube video on garlic has received 434 views. The garlic web page had over 1400 unique views, with the publication downloaded by 259 people. The grower app was piloted with 30 people. The invasive plants instructor consulted with about 125 people through presenting a plan to increase usage of the application's reporting

function at the Alaska Invasive Species Conference, and working with relevant state and federal agencies to get buy-in of statewide field staff regarding the application's utility for invasive plants inventory. The weed identification application had 681 new downloads in FY16.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
216	Integrated Pest Management Systems
301	Reproductive Performance of Animals
305	Animal Physiological Processes
401	Structures, Facilities, and General Purpose Farm Supplies
405	Drainage and Irrigation Systems and Facilities
903	Communication, Education, and Information Delivery

#### Outcome #5

##### 1. Outcome Measures

Outcome 5: Increase the number of activities that monitor and control invasive species and pests. Measure will be the number of outreach activities and publications.

##### 2. Associated Institution Types

- 1862 Extension
- 1862 Research

##### 3a. Outcome Type:

Change in Knowledge Outcome Measure

##### 3b. Quantitative Outcome

Year	Actual
2016	82

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

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

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

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

Integrated pest management (IPM) staff conducted 30 workshops and 30 presentations and worked with producers, agencies and individuals to identify or diagnose insect, plant and disease specimens. Other SNRE personnel conducted 11 workshops and presented 7 times on topics including pesticides, herbicides and weeds, and an invasive species conference was hosted in Fairbanks. Extension provided training through the pesticide safety education program (PSEP) to 114 individuals.

**Results**

Seasonal IPM technicians and permanent staff, with support from faculty, provided community education and technical assistance in five district offices across Alaska. The IPM program answered over 900 requests for plant and insect identification and maintained and reporting web portal where the public submitted digital photos. A new outreach publication on the control of orange hawkweed was made available for download online in May 2016 and provides color photos for identification and research-based management strategies.

**4. Associated Knowledge Areas**

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

**Outcome #6**

**1. Outcome Measures**

Outcome 6: Increase reindeer producers' ability to understand and assess optimum production practices. Measure will be number of producers.

**2. Associated Institution Types**

- 1862 Research

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

Year	Actual
2016	59

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

**Issue (Who cares and Why)**

Livestock raised in Alaska provides food products for both home and commercial use. Educating livestock producers facilitates the development of sustainable, high-latitude livestock production. Alaska only produces 5% of its red meat food supply, leaving residents vulnerable to high prices,

shortages, and product demands in other markets. Some villages in Alaska have seen their subsistence harvests decline, and are looking for more reliable ways to feed their communities. Domestic reindeer (*Rangifer Tarandus tarandus*) are very well adapted to cold climate and have the potential to become a commercial red meat source for Alaskans.

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

Research continues on best management practices of reindeer herds, including feed ration development, herd health management and meat production. Collaborations continue with the Kawerak Reindeer Herders Association, the Reindeer Breeders and Owners Association, and others that reached at least 50 producers. The manager of the reindeer research program spent over 20 hours consulting three members of Alaska's Department of Environmental Conservation on reindeer health and the slaughtering process. In May 2016, the Reindeer Research Program offered an intensive animal husbandry course to six residents of Stevens Village, whose tribal council is considering adding reindeer to their existing buffalo farm because they see a higher demand for reindeer meat than buffalo meat in their area. Attendees were given the opportunity to observe herding, weighing and hoof trimming on site.

#### **Results**

Reindeer meat continues to be sought for use in restaurants and grocery stores, and SNRE expertise has been key to its safe supply. There are roughly 3,000 reindeer on St. Lawrence island and about 500 on St. Paul island. The reindeer research program is working with tribal entities on the islands to increase their skills to hygienically field slaughter and process meats into steaks and other cuts that can be sold through the local store. With this help the tribes are applying for state certification for processing operations. The program manager says wholesalers buy reindeer meat for \$5 a pound and sell it retail for triple the price. It will benefit local economies to have the retail processing done in rural villages. In Stevens Village, the attendees increased their knowledge of reindeer feed and nutrition, first aid, tagging, calving, halter training, handling, record keeping, and meat production. This will allow them to make a more informed decision about adding to their farm.

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

<b>KA Code</b>	<b>Knowledge Area</b>
301	Reproductive Performance of Animals
305	Animal Physiological Processes
401	Structures, Facilities, and General Purpose Farm Supplies
601	Economics of Agricultural Production and Farm Management

#### **Outcome #7**

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

Outcome 7: Increase the number of youth appreciating agriculture and considering agricultural careers. Measure is number of youth contacts.

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

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

Year	Actual
2016	1812

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

**Issue (Who cares and Why)**

A graying population combined with increases in new technologies make outreach to younger generations critical to maintaining agricultural infrastructure. Farmers on average are over a decade older than other work groups in America. We need ongoing engagement with young people to inspire the next generation of growers, stewards and scientists. SNRE is in a position to reach out to youth of all age ranges to communicate the value of agricultural careers.

**What has been done**

An Alaska Agriculture Appreciation Day was held at the experiment farm with several activities that gave around 600 youth an opportunity to interact with plants and animals. SNRE faculty and staff speak at events like high school meetings and camps about opportunities in agriculture, and promote education about agriculture through farm tours, state fairs and other public venues. The Extension veterinarian assisted the FFA program and wrote two chapters for the American Youth Horse Council's manual. A researcher presented on careers in agriculture to a group of 14 on campus. A reindeer research professional gave presentations, tours and virtual tours to over 270 youth.

**Results**

SNRE not only shared knowledge that raise awareness of agriculture, it also provided research-based information that was put into practice. The Extension veterinarian developed a comprehensive FFA/4-H study guide that was used for the veterinary medicine contest. SNRE facilitated livestock auctions at local fairs. Many youth attending the agriculture appreciation activities got hands-on experience harvesting potatoes, beets and broccoli. Tours of farms allowed campers, conference attendees, and high school students to see operations firsthand, which increased engagement. Through 4-H, six youth participated in Agriculture in the Classroom activities. There were also 912 animal projects that allowed youth to gain firsthand knowledge and experience of raising livestock in Alaska. Several school gardens continue to thrive with support from SNRE faculty and staff or trained volunteers.

**4. Associated Knowledge Areas**

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management
903	Communication, Education, and Information Delivery

## **Outcome #8**

### **1. Outcome Measures**

Outcome 8: Provide support for emerging agricultural industries. Measure will be number of presentations and consultations.

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

- 1862 Extension
- 1862 Research

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

Change in Knowledge Outcome Measure

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

<b>Year</b>	<b>Actual</b>
2016	189

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

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

Commercial and home growers face many production challenges including a short growing season, cold soils and limited soil fertility. Some crops also need several years of growth before they become harvestable. Rhodiola rosea and peonies are two such crops. Rhodiola rosea, harvested for the compound rosavin found in its roots, is a viable high value crop for Alaska, with dried roots selling for \$25/pound. Peonies also continue to be in demand from Alaska growers. It is important that growers receive support for the longevity of these newer industries.

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

Extension provided ongoing support to rhodiola growers and peony growers. There were 130 hours of estimated consultations with members of Alaska Rhodiola Products and 89.5 hours of consultation with the Alaska Peony Growers Association, peony farmers and other interested members of the public. Integrated Pest Management (IPM) technicians visited farms to provide pest identification and recommendations. Seven presentations included advice on varieties and nutrient management. Peony growers participated in events like the state Master Gardener Conference.

#### **Results**

Peony growers continued to have successful harvests, selling flowers at local farmers markets and shipping orders to wholesalers in the Lower 48. The Fairbanks area 4-H agent presented to a national audience regarding a peony root sale that raised funds for youth programming, and a researcher presented at the annual Alaska Peony Growers Conference. There are about 100 peony farms in Alaska. Rhodiola has proven to be hardy in Alaska but may take up to a decade to prove profitable. Extension estimates that rhodiola is growing on about 25 to 30 acres of land from up in Nome down to the Mat-Su Valley and the Kenai Peninsula. A Delta Junction farmer planted 2,600 plants in 2009 for a first harvest in 2014. Another farmer has 50,000 plants over

five acres on Anchor Point.

#### 4. Associated Knowledge Areas

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

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

##### External factors which affected outcomes

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

##### Brief Explanation

Alaska has been severely impacted by the falling price of crude oil. The state provides a significant portion of the university's funds, and the university has experienced several consecutive years of reductions. Almost half of SNRE funding comes from the state. The overall university budget gap of \$20 million in FY16 dramatically affected programs. SNRE, in particular, has faced difficulties with the combination of budget cuts and fixed cost increases. The merger between AFES and CES and the addition of an agriculture agent in Soldotna have helped maintain research and service, but both units have heavy workloads as we try to keep our productivity high in challenging times.

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

##### Evaluation Results

Post-event surveys for the annual Sustainable Agriculture Conference showed overall satisfaction with the sessions offered. Of 29 returning attendees responding, 24 said they have made changes to their practices as a result of the conferences, including their gardening and water collection practices, weed management approaches, cover cropping practices, and more proactive use of fertilization. Sixteen of 17 returning agricultural educators said they had shared information from a past conference with others. Over 89% rated the speakers as good or excellent. Eight-one percent said they would attend a future conference, with the other 19% saying it depended on factors like content, location and funding. Feedback was gathered on desired topics, speakers and scheduling will be used to



improve future conferences. Comments mentioned a desire for discussion of more innovative technologies and techniques. Many respondents were interested in the emerging fiber industry.

A post-course survey for the Alaska Growers School indicated a noticeable shift in participant knowledge. Respondents rated their understanding before and after of items like how to develop a business plan, how to evaluate start-up risk, what assistance programs are available to help socially disadvantaged farmers, and how to determine eligibility and navigate regulations. The majority of ratings of "before" knowledge were at "non-existent" and "minimal" for all eight questions, while the "after" ratings showed a shift to a majority of the ratings being in the "moderate" and "considerable" column. In fact, five out of eight items had no ratings left in the "non-existent" or "minimal" columns after the school. For example, when retrospectively rating their knowledge before the program on a four-point scale, seven of 10 respondents indicated their ability to manage production risks associated with vegetables, fruits etc. was "non-existent." After the program, all the respondents rated their knowledge as either "moderate" or "considerable." The majority of 11 respondents also indicated an intention to start, continue, or increase skill use. This included five participants who intend, within a year, to write a whole farm business plan, incorporate risk management into it, and/or start a farm or ranch in Alaska.

The Kenai agent collected feedback from participants in five soil and vegetation workshops taking place between Homer and Soldotna. The delivery equipment was unchanged across locations, but instruction happened either in-person or via distance. Post-workshop surveys rated the quality of the presentations and information learned. Although both methods were found to be effective, there was a statistically significant difference ( $p < .001$ ) on all five rated factors such that in-person workshops received higher ratings. Thirteen miles was the average round-trip distance that participants traveled to attend; clients who have to travel farther may show different preferences. The agent plans to make improvements to audio and video technology to see if ratings become more similar across delivery methods.

### **Key Items of Evaluation**

Conferences continue to provide high value, with the majority of returning attendees indicating a change in practices since the last conference due to information or skills gained.

A post-course survey for the Alaska Growers School indicated a noticeable shift in participant knowledge, and the majority of participants indicated intent to use the information to write business plans or start farms or ranches.

Agents continue to evaluate new technology use to best meet client needs. Stakeholders are, on average, satisfied with distance education but tended to rate in-person delivery higher when asked about preferences.