V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Agriculture and Food Security

2. Brief summary about Planned Program

The Agriculture and Food Security Planned Program provides information about high latitude agriculture and horticulture and is increasingly sought by urban Alaskans, those in traditional farming areas, rural communities and new agriculture-based businesses, primarily in horticulture and landscaping. These are also areas of close collaboration between the Agricultural and Forestry Experiment Station and the Cooperative Extension Service. Areas of emphasis are agronomic practices of crops, landscape and turf materials, and controlled environment/extended season and field horticulture, including bedding plants and floral crops. Home and community gardening outreach is another important area of emphasis. The concentration of research and outreach is in best management practices for production during the short subarctic growing season and resilience and adaptation to impacts of climate change. Agriculture and horticulture outreach includes the areas of animal agriculture, agronomy, agroforestry and horticulture. Agroforestry includes tree production for windbreaks, biofuels and other nontimber forest products. Horticulture includes commercial and consumer horticulture. Commercial horticulture includes commercial floriculture production, nursery production of woody and herbaceous ornamentals, greenhouse production of bedding plants, hanging baskets and potted plants, as well as turf for golf courses, sports fields and runways, and commercial lawn management and maintenance.

Consumer horticulture includes home and community gardening, landscaping and lawn maintenance by the homeowner. Another important focus in outreach is pest management for community forestry, home and commercial horticulture, invasive plants, greenhouse production, structural pests, and turf, tree and ornamental plant producers. Integrated pest management (IPM) is the primary approach, in collaboration with other agencies, to assist its stakeholders when providing pest management information and educational outreach. The IPM team will work closely with Master Gardeners and Community Tree Stewards to increase pest management education. Collaboration includes IPM, Pesticide Safety Education Program, Western Region IPM (WRIPM), Western Plants Diagnostics Network (WPDN), Natural Resources Conservation Service (NRCS), USDA Farm Service Agency (FSA), Rural Development, Western Rural Development Center (WRDC) and Pacific Land Grant Association (PLGA).

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	10%		10%	
205	Plant Management Systems	25%		40%	
213	Weeds Affecting Plants	15%		0%	
216	Integrated Pest Management Systems	33%		5%	
301	Reproductive Performance of Animals	0%		15%	
305	Animal Physiological Processes	2%		0%	
401	Structures, Facilities, and General Purpose Farm Supplies	5%		10%	
405	Drainage and Irrigation Systems and Facilities	5%		10%	
601	Economics of Agricultural Production and Farm Management	5%		10%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Alaska has minimal agricultural infrastructure and servicing capability. Agricultural lands in Alaska include both continental and maritime zones. On average the growing season is 100 days, soils are cool, the day length is approximately 22 hours in some areas and the sun angle is low. Bedding plants and landscape materials are produced in structures that extend the growing season and dominate the farm-gate value of horticultural crops. Hanging baskets and other floriculture may occupy these structures after the bedding-plant season. Horticultural produce moves to the consumer through the wholesale/retail chain. All other products go directly to retail markets that include grocery chains. Organic farming presents challenges to research and outreach. Horticulture is a high-demand workforce industry and there currently is not a trained labor force in the state. Controlled environment agriculture (CEA) research aims to increase horticulture crop production in Alaska. There is a potential for production of energy crops, including grasses and woody species for energy. Lands that are nearing the end of enrollment in CRP present a potential area for production of these crops. The horse owner market is believed to be the largest consumer of Alaska-grown hay. Resilience to climate change with potential changes in season length and water supply are critical additions to new research and outreach. There is a growing interest in hardy varieties of landscape crops that respond to low fertilizer, water and pesticide uses, including native species. Sports turf is an economic opportunity with work continuing on golf greens and fairways and for ball fields. Sustainability of sports turf is an important consideration as energy and input costs rise. Home garden production, including home floral production and sales through farmers markets, is increasing. Outreach to these producers concerning best varieties and best-management practices are critical. There are many horses and dogs in Alaska and interest in raising chickens has increased in many areas. Appropriate outreach information from research centers outside Alaska is provided. There is a demand for veterinary practitioners/technicians throughout the state and a new vet med program has been added to UAA and UAF. We will support the program through pre-vet academic classes and formal outreach.

2. Scope of the Program

- In-State Extension
- In-State Research
- Multistate Research
- Multistate Extension
- Integrated Research and Extension
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

Limited food and feed resources are a challenge for a large state with a small population that is concentrated in the road/Railbelt and scattered in the remainder of the state among remote rural and village communities. This makes support for research, education and outreach in food security difficult. The challenges are more similar to Pacific Island communities than more traditional operations in the contiguous United States.

Possible changes in the status of Conservation Reserve Program lands in Alaska may precipitate assistance to landowners. If producers desire to move into new food or feed crops or potential energy crops, this will be a good time.

Regional food supply in the face of rising transportation costs and from the aspect of food safety will be important in Alaska, a state where imports are estimated at over 90% of its food supplies and local processing is still in its infancy. Interest in locally grown and processed foods is increasing. To support these new directions, education and training of youth and adults will be critical to supply a newly shaped workforce. A challenge for the large number of horse owners is limited locally produced feed and high transportation costs. Energy will be a growing concern in food, feed and fuel production.

2. Ultimate goal(s) of this Program

It is critical to communicate awareness of the food security problem to the entire population of Alaska, including individuals, families and communities, as well as state and federal entities and nonprofit organizations that provide food for their clients such as school systems, hospitals, military bases and food banks. Challenges exist for the State of Alaska as a government that would be called upon to assist in case of a disaster and eventually for the federal government that would also be called on for assistance. It is a wide-reaching problem, the breadth and depth of which is beginning to be understood by Alaskans.

Solutions must be sought to expand of the agricultural system in Alaska for community security, including marketing, processing and transportation. Small-scale agriculture for home and professional growers will remain focus areas as will research in agricultural science and system development, which includes pesticide education, crop development and farming efficiencies for individuals, families, businesses, communities and the agricultural sector as a whole.

Sustainable practices for agriculture and horticulture will continue to be a high priority in the next five years. The IPM program will continue to provide up-to-date information to mitigate loss from native and invasive pest species, keeping pest species below economic threshold levels. Resilience and adaptability to climate change will be a focus in rural and urban areas as it affects Alaska's lands and forests. Finally, youth and adult continuing education will continue as an integrated component to fill an increasing demand for the labor force in Alaska as workers retire and new opportunities become available.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2015	3.0	0.0	3.1	0.0
2016	2.0	0.0	3.1	0.0
2017	2.0	0.0	3.1	0.0
2018	6.0	0.0	3.1	0.0
2019	6.0	0.0	3.1	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Research and outreach will continue to assure that best management practices appropriate to Alaska are provided to target audiences. There will be new directions in resilience and adaptability of crops and animals as changes in the subarctic and arctic climate occur with revitalization in research and Extension programs relevant to regional and local agricultural production. An emphasis will also be placed on educating and training youth and adults in new fields opening in the Alaska workforce.. Group and one-on-one educational activities with specific sectors of the pest management industry, the agricultural community and the horticultural industry will provide individuals and businesses with important information. Increased reliance on the Internet and technology will enhance communication with more people. Increasing and maintaining partnerships will remain important strategies in keeping pest species below threshold levels. Outreach will include conferences, workshops, forums, tours and consultations with stakeholders.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods
● Education Class	● Public Service Announcement
● Workshop	● Newsletters
● Group Discussion	● TV Media Programs
● One-on-One Intervention	● Web sites other than eXtension
● Demonstrations	● Other 1 (Publications)
● Other 1 (Consultations)	

3. Description of targeted audience

The target audiences include 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 include 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 include: Alaska Farm Bureau, and the USDA Natural Resource Conservation Service, the USDA Forest Service, the Alaska Department of Natural Resources, borough governments and Alaska Native corporations.

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Output 1: Faculty will provide agricultural and horticultural workshops, short courses, classes, field days and conferences, including IPM.
- 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.
- Output 3. Horticultural crop research will concentrate on home and commercial varieties appropriate to Alaska. Publications and presentations are the output measures.
- 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.
- Output 5. Focus will be on best management practices for livestock management and production. Output measures will be publications and presentations.

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

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.
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.

Outcome # 1

1. Outcome Target

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

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 205 - Plant Management Systems
- 213 - Weeds Affecting Plants
- 216 - Integrated Pest Management Systems

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 2

1. Outcome Target

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

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 301 - Reproductive Performance of Animals
- 305 - Animal Physiological Processes

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 3

1. Outcome Target

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

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

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

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 4

1. Outcome Target

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

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 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

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 5

1. Outcome Target

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. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 205 - Plant Management Systems
- 213 - Weeds Affecting Plants
- 216 - Integrated Pest Management Systems
- 305 - Animal Physiological Processes

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect 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.)

Description

Alaska is experiencing impacts of the changing climate in its sea ice degradation, the ecology of the boreal forest and the melting of its ice-impregnated northern soils. This will influence the thrust of agriculture in coming years.

Policy and regulation and competing public priorities are already coming to the fore as endangered species affect land use and slow -growing forests are increasingly used for fuels. As climate changes, water stress and increasing pests effect crop production. Programmatic challenges will occur as consideration is given to the production of crops and the management of the forests for fuels to mitigate demands on petroleum and coal supplies. A continuing rise in transportation costs impacts regional and local food production and processing.

Finally, as demographics of population and the agricultural industry change, there will be a need for continuing adult and higher education to fill workforce vacancies and new positions created to meet demands in energy and resource management fields.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

The objective of the AFES and CES is to continue the communication that provides information to our clientele and bring clientele input back to us, enabling continued adjustments to our work. Evaluations will follow major agricultural and invasive species conferences and many workshops to determine the effectiveness of presentations and whether clients have used information from past educational events.