2007 University of Alaska Combined Research and Extension Plan of Work

High Latitude Agriculture- AFES

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

- 102 10% Soil, Plant, Water, Nutrient Relationships
- 203 15% Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 204 10% Plant Product Quality and Utility (Preharvest)
- 205 10% Plant Management Systems
- 301 20% Reproductive Performance of Animals
- 302 5% Nutrient Utilization in Animals
- 306 5% Environmental Stress in Animals
- 307 20% Animal Management Systems
- 701 5% Nutrient Composition of Food

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

1. Situation and priorities

Viable pockets of commercial agriculture exist in Alaska. Cash receipts for commercial agricultural production have been flat over the past five years. Alaska's population, particularly in Anchorage and the Railbelt is growing as are the markets for Alaska grown products. Land suitable for agriculture in south-central Alaska is falling prey to residential and business development and land costs are rapidly becoming prohibitive for crops other than high value products. However, in spite of this horticultural enterprises including greenhouses, nurseries, landscaping, ornamental vegetable and fruit production and turf related products are examples of an expanding horticulture industry. Turfgrass for lawns, golf courses, and sports field are increasing in demand and are directly linked to population. Priorities for research and outreach have transitioned from conventional animal/feed crop farms of the mid-to-late 20th century to producing for the more urban population of the new century. Research priorities identified by producers and consumers clearly point to new crops ranging from new uses of conventional vegetable and fruit crops to value-added food and forest products. We will continue to leverage Hatch funds to obtain additional new crop and new market grant funding.

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

1. Assumptions made for the Program

Alaska's population will continue to grow primarily in urban and suburban regions
These populations will demand healthier plant-based diets and lifestyle amenities that are supported by a diverse horticulture industry
A rural population that will require continuing research and outreach for subsistence lifestyles of both Alaska native and nonnative populations
A knowledge base of past research, present or current projects, and Alaska based agricultural experience
An assumption of a minimum level of base funds on which to build a grant funded program
Maintenance of faculty expertise that can address the major research topics outlined.

2. Ultimate goal(s) of this Program

Ultimate goalsThe goal of this program is to develop new knowledge for best management practices for producing safe, healthy, and marketable food products and plant materials having aesthetic as well as functional value. Programs that contribute to this goal include:
To annually increase new and value-added commodities for Alaska markets
Develop alternative crops with high cash value for northern climates
Improve nutrient utilization, reproductive performance, and reduce environmental stress in animals
Control plant pathogens affecting plants
Improve plant product quality through cultivar selection, developing best management practices, and developing market strategies.

V(F). Planned Program (Activity)

1. Activity for the Program

Agricultural research over the next five years will center around the following research topics and activities:
Greenhouse production systems: Alaska’s far north location results in extreme temperature and light fluctuations. Outputs from this program will include information for growers to manipulate natural and supplemental light and temperature to extend growing seasons, increase productivity, improve quality and allow local production once considered infeasible at high latitudes.

Controlled environment production systems: Controlled environment production systems. Temporary low maintenance greenhouses or high tunnels offer an opportunity to enhance and extend seasonal crop production for commercial and subsistence growers.
Field research associated with the Georgeson Botanical Garden will be conducted in Fairbanks that will evaluate woody perennials, herbaceous perennials, annual flowers, herbs and vegetables for high latitude production.
Field research at Palmer with potatoes and selected vegetables will evaluate cultivars and management practices, including disease control, for commercial and subsistence production for southcentral Alaska
Alternative crops and/or crop derived products with high cash value.
Field research on perennial legumes and other alternative forage and grain crops that will provide all-important on-farm sources of protein for Alaska livestock enterprises.
Field research on soil nutrient management to improve production efficiency and yields of subarctic plants
Field research in methodology for baling high moisture hay in Alaska.
Turfgrass research to address winter survival of northern adapted cultivars, management practices that improve aesthetic and functional value of turf, and address environmental impact of fertilizer and pesticide use.
Livestock research will include reproductive performance in both domestic and alternative livestock species, local feed and forage for reindeer production and meat quality, and mineral flux in reindeer health
Improved production techniques for reindeer as domestic livestock to add to the expanding market of healthy low fat meats.
Develop market strategies for and investigation of quality characteristics of Alaska Grown products
marketing, quality, and acceptance of Alaska agricultural products .
Plant materials for reclamation of disturbed lands .
Agricultural and forestry production and harvest practices that minimize economic and environmental risks
Sustainable production practices that minimize off-farm and out-of-state inputs for plants and animal nutrition and pest control.
Identify new agricultural products and markets for Alaska producers.
Global change effects on northern plant materials.