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ACCESSION NO: 0197969 **SUBFILE:** CRIS**PROJ NO:** ALK-03-11 **AGENCY:** NIFA ALK**PROJ TYPE:** SPECIAL GRANT **PROJ STATUS:** TERMINATED**CONTRACT/GRANT/AGREEMENT NO:** 2003-34518-14044 **PROPOSAL NO:** 2003-06303**START:** 15 SEP 2003 **TERM:** 01 FEB 2006 **FY:** 2006 **GRANT YR:** 2003**GRANT AMT:** \$301,834**INVESTIGATOR:** Lewis, C. E.**PERFORMING INSTITUTION:**

SCHOOL OF AGRICULTURE & LAND RESOURCES MANAGEMENT

UNIVERSITY OF ALASKA

FAIRBANKS, ALASKA 99775

ALASKA SEED GROWER'S ASSISTANCE PROGRAM

NON-TECHNICAL SUMMARY: The native seed industry is in a fledgling stage. Presently, the commercial growers are producing approximately fifteen to twenty percent of the statewide demand. This percentage can easily be increased through a cooperative effort between government and industry.

OBJECTIVES: The basic objective is the development of a program to educate growers and users in the most effective and efficient methods of commercially producing and using seed of the native plants developed for use in **Alaska**.

APPROACH: 1). Provide On-Farm assistance for commercial seed producers based on the best available information already developed and being developed at the Plant Materials Center, proven methods successfully used on various seed farms in **Alaska**, and techniques developed in other seed growing regions, including Canada and Iceland. 2) Publish manuals for seed growers and potential Growers in the art of efficient and effective seed production. These will be modeled after manuals in use elsewhere. 3) Provide education programs for primary users of **Alaska** produced seed while determining their needs, problems and program limitations. 4) Publish a statewide revegetation manual (consideration will be given to an electronic format) that will provide users of **Alaska** produced seed clear, concise, and up-to-date information on methods, seed availability and species adaptation. 5) Publish informative brochures on the various species/varieties being produced or nearing production in **Alaska**, for the potential users of seed. The targeted audience will include the primary users, various state and Federal agencies and public at large who may have an interest in revegetation or landscaping with native species/**Alaska** produced plant material.

PROGRESS: 2003/09 TO 2006/02

The objective for this program is to disseminate effective state-of-the-art Alaska native plant seed technology to potential and existing Alaska seed growers with an end result of enhancing commercial production of native plants in Alaska. To accomplish this, the Plant

Materials Center (PMC) generates numerous products including informative plant flyers, public presentations, farm visits, individual consultations, seed evaluation, and written plant science information. During 2005, we published twelve new plant flyers, making a total of twenty-six interpretive, attractive, and very marketable publications available for Alaska native seed growers on the web. The 2005 publications represent some of the newly released germplasms collected from Alaska - tested and evaluated by PMC for many years. These are: Adak Germplasm arctic bluegrass, Andrew Bay Germplasm large-glume bluegrass, Casco Cove Germplasm beach lovage, Clam Lagoon Germplasm beach fleabane, Henderson Ridge Germplasm red fescue, Kotzebue Germplasm arctic wild chamomile, Lowell Point Germplasm meadow barley, Nelchina Germplasm spike trisetum, Teller Germplasm alpine bluegrass, Tin City Germplasm arctic bluegrass, Tok Germplasm Jakutsk snowparsley, and Twenty Mile Germplasm boreal yarrow. Our website now presents eighty-eight scanned publications (in full text) originating from the thirty-five years of research and education. Also included in the topical listing are other publications by the PMC staff, which were copyrighted or published elsewhere. Other publications this year include an updated Native Plant Directory and the 2004 PMC Annual Report. Also new in 2005 are ten new professional exhibits to educated people on some of the PMCs major programs. Updated Field Maps were designed, along with photographic field labels (with the plants common, scientific, and cultivar name), enabling visitors (and workers) visually to evaluate more than 100 field-grown plants at the Center. On-going assistance to Alaska Seed Growers includes an educational List-Serve; visits to farmers in the Fairbanks, Kenai, and Matanuska Valley regions; seed testing (germination, purity, noxious, tetrazolium, moisture) of seed lots (652) from all over Alaska; and hundreds of digital pictures for illustration in our publications. Answers were provided daily covering the gamut of questions from what revegetation seed mixes to use where, how to propagate specific plants, plant regulations, noxious weed eradication, seeding rates, costs and availability of seed, landscape suggestions, and even identification of an alien moss invader for a local newspaper! The revegetation manual is in progress-many requests from agencies and contractors are speeding up its production. The rye experiment to evaluate the allelopathic effects on native grass seed production continued this year. The plant production manual is started with topics for each plant on techniques, planting times, harvest and seed processing included.

IMPACT: 2003/09 TO 2006/02

This program impacts Alaskans daily by providing expert advice, knowledge, and assistance to individuals, agencies, and permitting professionals. During a sample 2 week period we received inquiries from the AK Department of Transportation (Beach Wild Rye for Nome, AK and what seed mix should be used to revegetate a disturbed tundra area); NW Landscape Inc. (what native plants are appropriate for Privilof, AK); 3 individuals (what is the availability and costs for various seed); and 2 agency individuals (information about grass native to the Aleutians, and plant regulations.) Web publications provide accurate information based on our 35 years of evaluations on native plants in Alaska. The Program continues educational and extension components through weekly summer farm tours. Two college interns spent this summer learning how we provide assistance to seed growers. One was featured nationally in the NRCS Plant Materials Program Seasonal Workers article (7/29/2005). One created plant identification markers for the farm tours, designed innovative exhibits, took hundreds of digital photographs for our publications, and scanned 88 full text publications for the web site. Another intern assisted our seed analyst in testing 112 seed lots for germination, purity, and moisture. Visits to existing and potential farmers of native seed enabled us to address questions concerning infestations of invasive weeds (candle grass, hawksbeard, white cockle,

hemp nettle, chickweed, and foxtail); fertility management; and marketability.
http://www.dnr.state.ak.us/ag/ag_pmc.htm

PUBLICATIONS (not previously reported): 2003/09 TO 2006/02

1. Hunt, P. and S.J. Wright. 2005. Adak Germplasm arctic bluegrass. Alaska Division of Agriculture, Plant Materials Center. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.
2. Hunt, P. and S.J. Wright. 2005. Andrew Bay Germplasm large-glume bluegrass. Alaska Division of Agriculture, Plant Materials Center. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.
3. Hunt, P. and S.J. Wright. 2005. Casco Cove Germplasm beach lovage. Alaska Division of Agriculture, Plant Materials Center. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.
4. Hunt, P. and S.J. Wright. 2005. Clam Lagoon Germplasm beach fleabane. Alaska Division of Agriculture, Plant Materials Center. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.
5. Hunt, P. and S.J. Wright. 2005. Henderson Ridge Germplasm red fescue. Alaska Division of Agriculture, Plant Materials Center. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.
6. Hunt, P. and S.J. Wright. 2005. Kotzebue Germplasm arctic wild chamomile. Alaska Division of Agriculture, Plant Materials Center. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.
7. Hunt, P. and S.J. Wright. 2005. Lowel Point Germplasm meadow barley. Alaska Division of Agriculture, Plant Materials Center. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.
8. Hunt, P. and S.J. Wright. 2005. Nelchina Germplasm spike trisetum. Alaska Division of Agriculture, Plant Materials Center. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.
9. Hunt, P. and S.J. Wright. 2005. Teller Germplasm alpine bluegrass. Alaska Division of Agriculture, Plant Materials Center. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.
10. Hunt, P. and S.J. Wright. 2005. Tin City Germplasm arctic bluegrass. Alaska Division of Agriculture, Plant Materials Center. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.
11. Hunt, P. and S.J. Wright. 2005. Tok Germplasm Yakutsk snowparsley. Alaska Division of Agriculture, Plant Materials Center. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.
12. Hunt, P. and S.J. Wright. 2005. Twenty Mile Germplasm boreal yarrow. Alaska Division of Agriculture, Plant Materials Center. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.
13. Hunt, Peggy and Stoney J. Wright. 2004. Alyeska Polargrass. Alaska Division of Agriculture, Plant Materials Center. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.
14. Hunt, Peggy and Stoney J. Wright. 2004. Arctared Red Fescue. Alaska Division of Agriculture, Plant Materials Center. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.
15. Hunt, Peggy and Stoney J. Wright. 2004. Benson Beach Wildrye. Alaska Division of Agriculture, Plant Materials Center. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.
16. Hunt, Peggy and Stoney J. Wright. 2004. Egan Sloughgrass. Alaska Division of Agriculture, Plant Materials Center. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.
17. Hunt, Peggy and Stoney J. Wright. 2004. Gruening Alpine Bluegrass. Alaska Division of Agriculture, Plant Materials Center. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.
18. Hunt, Peggy and Stoney J. Wright. 2004. Kenai Polargrass. Alaska Division of Agriculture, Plant Materials Center. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.
19. Hunt, Peggy and Stoney J. Wright. 2004. Nugget Kentucky Bluegrass. Alaska Division of Agriculture, Plant Materials Center. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.
20. Hunt, Peggy and Stoney J. Wright. 2004. Norcoast Bering Hairgrass. Alaska Division of Agriculture, Plant Materials Center. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.
21. Hunt, Peggy and Stoney J. Wright. 2004. Nortran Tufted Hairgrass. Alaska Division of Agriculture, Plant Materials Center. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.
22. Hunt, Peggy and Stoney J. Wright. 2004. Reeve Beach Wildrye. Alaska Division of

Agriculture, Plant Materials Center. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.
23. Hunt, Peggy and Stoney J. Wright. 2004. Service Big Bluegrass. Alaska Division of Agriculture, Plant Materials Center. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.
24. Hunt, Peggy and Stoney J. Wright. 2004. Solomon Wheatgrass. Alaska Division of Agriculture, Plant Materials Center. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.
25. Hunt, Peggy and Stoney J. Wright. 2004. Sourdough Bluejoint Reedgrass. Alaska Division of Agriculture, Plant Materials Center. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.
26. Hunt, Peggy and Stoney J. Wright. 2004. Wainwright Slender Wheatgrass. Alaska Division of Agriculture, Plant Materials Center. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.

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Item No. 2 of 3

ACCESSION NO: 0200300 **SUBFILE:** CRIS
PROJ NO: ALK-04-09 **AGENCY:** NIFA ALK
PROJ TYPE: SPECIAL GRANT **PROJ STATUS:** TERMINATED
CONTRACT/GRANT/AGREEMENT NO: 2004-34518-15040 **PROPOSAL NO:** 2004-06164
START: 01 SEP 2004 **TERM:** 31 AUG 2007 **FY:** 2007 **GRANT YR:** 2004
GRANT AMT: \$334,308

INVESTIGATOR: Lewis, C. E.

PERFORMING INSTITUTION:

School of Natural Resources & Agricultural Sciences
UNIVERSITY OF ALASKA
FAIRBANKS, ALASKA 99775

ALASKA SEED GROWER'S ASSISTANCE PROGRAM

NON-TECHNICAL SUMMARY: The Alaska Seed Grower's Assistance Program is intended to coordinate seed production between producers and users. This will be done through specification development, user education and producer education by means of written documents and one-on-one farm assistance. The ultimate goal is efficient native seed production that meets demand in a balanced fashion. Demand will be encouraged through education, demonstration and specification.

OBJECTIVES: The basic objective is the development of a program to educate growers and users in the most effective and efficient methods of commercially producing and using seed of the native plants developed for use in Alaska.

APPROACH: 1. Provide On-Farm assistance for commercial seed producers using production experience acquired over many years at the Plant Materials Center (PMC), proven methods

successfully used on various seed farms in **Alaska**, and techniques developed in other seed growing regions, including Canada and Iceland. 2. Publish manuals for seed growers and potential Growers in the art of efficient and effective seed production for **Alaska** native plants. These manuals will be modeled after publications in use elsewhere. 3. Provide education programs for primary users of **Alaska** produced seed while determining their needs, problems, and program limitations. 4. Publish a Statewide revegetation manual that will provide users of **Alaska**-produced seed clear, concise, and up-to-date information on methods, seed availability, and species adaptation. This manual will also address problems and possible solutions associated with different types of revegetation needs (wetland vs. dry roadways, etc.) 5. Publish informative brochures on the various species/varieties being produced or nearing production in **Alaska**, for the potential users of seed. The targeted audience will include the primary users, various state and Federal agencies, and the public at large who may have an interest in revegetation or landscaping with native species/**Alaska** produced plant material. 6. The PMCs research component will investigate the effect of annual rye (*Lolium multiflorum* Lam.) on perennial **Alaska** native grasses. A very common problem encountered in **Alaska** native seed crops is the control of weedy grasses in production grass seed fields. Through observation, preliminary theories suggest that annual rye has an allelopathic effect on some native seed grasses.

PROGRESS: 2004/09 TO 2007/08

OUTPUTS: The Alaska Seed Growers Assistance Program II enhanced economic opportunities for current and potential agriculture growers of native Alaskan plants. Through this program 45 publications on the use and cultivation of Alaska native plant seeds were designed and written. These publications are on a newly designed, user friendly, website. They are attractive, professional, and interpretive. Each publication describes a different plant species - its background information, distribution, growth, uses, production, and characteristics. The information comes from the 35 years worth of evaluation by the Alaska Plant Materials Center (PMC). These publications foster a visible way for the agriculture community to determine whether they would want to grow these plants on a commercial basis. For the purposes of education and extension these publications provide information that only a few people in the past have known about. According to the statistics from the website, between January 2007 and the end of August 2007, each publication has been viewed on an average of 425 times. The most viewed publication is Caiggluk Tilesius Wormwood (*Artemisia tilesii*.) It was viewed 504 times. This is very interesting because Caiggluk was part of a two year research project for this program. The research entailed experimenting with different combinations of grasses and forbs with the goal of finding a mixture for revegetation purposes that could out-compete weeds and be diverse (instead of just grasses). Caiggluk was the best in out-competing the weeds. The mixture of two parts forbs to one part grass shows the best promise for the goals of this project. This research will continue next year. The research on the affects of annual rye on perennial grasses used for revegetation continues to show that if more than 10 percent annual rye (*Lolium multiflorum*) is spread at the same time as the grasses, the grasses are inhibited substantially in their ability to germinate the following year. Gruening Alpine Bluegrass (*Poa alpina*) was completely killed by the annual ryegrass. Educational programs were given to thousands of people throughout Alaska, including such groups as the Girl Scouts, Master Gardeners, and State Fair participants. Seed purity/germination tests continue to be provided for seed lots from growers across Alaska. This service is extremely important because it enables them to evaluate their techniques and market their plants as "certified" by a certified seed analyst. An Alaska Revegetation Manual and Alaska Native Seed Production Manual are in the draft stages to be

completed during the third portion of this grant. The research results from UAF on herbicidal control of foxtail in native grass fields show that foxtail barley is very sensitive to the herbicide propoxcarbazone, with the native grasses showing fairly good tolerance at one half the recommended rate. Education, extension, and research for native seed growers in rural and urban Alaska have been helped tremendously by this program. **PARTICIPANTS:** Individuals that worked on this project were Agronomists Stoney Wright, Peggy Hunt, Jessica Larsen, Andy Nolen, and Brian Jackson; Seed Analyst, Kathi VanZant; and Professors Steve Sparrow and Carol Lewis. Peggy Hunt, Agronomist II, was the lead for this project. She researched, designed, published the Native Plant Publications, and gathered statistics about the public's use of the publications. She supervised two interns, one of which scanned the past publications into digital form. Both interns helped with the research investigations. She performed the research on the Grass and Forb Revegetation Investigation and on How Annual Rye Affects the Growth of Perennial Grasses. Peggy did the outreach and education to schools, fairs, and scouts. She worked with educators to help them develop programs to use with their students. Peggy was instrumental in getting the Revegetation Manual ready for the Web; designing and finishing exhibits for education, designing and producing interpretive signs for the native plant demonstration plots at the Plant Materials Center; photographing native plants for educational plant flyers; presenting programs to Master Gardeners, Alaska legislative aides, farmers, Soil and Water Conservation employees and board members, people concerned about weeds; answering phone calls and e-mails on many different topics; writing and sending out psa's and newsreleases; and in maintaining the Alaska native seed growers list-serve, and participating in other relevant listserves. Stoney Wright, Agronomist III, provided guidance throughout this project. Stoney wrote the Revegetation Manual, which was based on his 30 years of experience of revegetation using native Alaskan plants. Stoney also presented three professional speeches on Native Seed Production in Alaska to a total of 385 people. His abstract for the Northern Latitudes Mine Reclamation Workshop is published in their proceedings. Jessica Larsen, Agronomist I, provided editing for the plant publications and the Revegetation Manual. Andy Nolen, Agronomist II, met with farmers throughout Alaska (from Juneau to Fairbanks, etc.) He assisted them in improving their crop techniques for Alaska native plants, answered questions, and helped them in their seed cleaning techniques. Kathi VanZant, Certified Seed Analyst, performed another 184 tests from Jan. to July, 07 to add to the ones previously reported. Dr. Steve Sparrow, Professor of Agronomy at University Alaska Fairbanks, and his graduate student, Brian Jackson, completed research on using two different herbicides on foxtail barley in native grass fields. The information from this master's thesis will be shared with and used by grass seed farmers in Alaska. Dr. Carol Lewis, Dean of the School of Natural Resources and Agricultural Sciences, UAF, contributed by maintaining the smooth interface between the PMC, UAF, and USDA. The Alaska Seed Growers Assistance Program collaborated with many subsets of farmers and growers; concerned citizens about invasive plants; master gardeners; and agronomists at the PMC, UAA, UAF, Soil and Water Conservation Districts, NRCS, and throughout Alaska and many other locales. **TARGET AUDIENCES:** The Alaska Seed Grower's Assistance Project II has served current and potential Alaska native seed growers. These include farmers from all over the state, from rural Alaska to the Matanuska Valley. The project has made available to the public, researchers, educators, and farmers the 35 years worth of publications produced by the Alaska Plant Materials Center and 45 new, easy to use, plant publications. It has educated Alaska youth in classrooms and in scout camps about Alaska native plants and what plants are invasive. These youths take the information back to their parents and friends. Curricula for agriculture in the classroom was developed and disseminated to elementary and secondary schoolteachers, non-formal educators, and collaborating agronomists. Many of the

individuals and groups were of mixed heritage - primarily Alaska native. Some of the children were physically and mentally challenged. This project instructed two interns and one graduate student. Workshops, classroom activities, and outreach were all delivered with hands-on, minds-on activities and with inquiry as the basis for the activities.

IMPACT: 2004/09 TO 2007/08

The Alaska Seed Grower's Assistance Program II enhanced the economic opportunities for agricultural producers throughout the state by providing 45 publications on different Alaska native plants that need to be grown on a commercial basis. These plants are in demand for revegetation and landscape projects. By providing growers with good scientific information which is very accessible via the Plant Materials Center's website, this program is making a difference for many Alaskans. Statistics on the number of times this information has been accessed rose over 1000 percent for 108 out of 130 publications on the PMC website during the span of time from September, 2006 to September 2007 (some up to 1600 percent!) This extreme rise in viewers is probably due to adding metatags and stream-lining viewing capabilities for these publications. This program fostered a better public understanding of the whole picture of agriculture and environmental connections via educational programs to teachers, administrators, scouts, school groups, and scientists about both native and invasive plants. Collaborations between agricultural, environmental, educational, legislative, and scientific groups have been attained through the breadth of this program.

PUBLICATIONS (not previously reported): 2004/09 TO 2007/08

1. Hunt, Peggy and Stoney J. Wright. 2007. Franklin Bluffs Germplasm nodding locoweed. Alaska Division of Agriculture, Plant Materials Center (APMC). Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.
2. Hunt, Peggy and Stoney J. Wright. 2007. Kobuk Germplasm dwarf fireweed. APMC. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.
3. Hunt, Peggy and Stoney J. Wright. 2007. Mentasta Germplasm staghorn cinquefoil. APMC. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.
4. Hunt, Peggy and Stoney J. Wright. 2007. Pioneer Peak Germplasm nootka reedgrass. APMC. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.
5. Wright, Stoney J. 2007. Notice of Pre-Certified Selected Class Germplasm of Native Plants for Commercial Production and Use in Alaska. 2006 Grouping of Accessions. Alaska Department of Natural Resources, APMC. Palmer, AK.
6. Wright, Stony J. 2007. Developing Commercial Sources for Native Seed and Plants in Alaska. Abstract published in the Proceedings for the Northern Latitudes Mine Reclamation Workshop, 2007.

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Item No. 3 of 3

ACCESSION NO: 0204897 **SUBFILE:** CRIS
PROJ NO: ALK-05-11 **AGENCY:** NIFA ALK

PROJ TYPE: SPECIAL GRANT **PROJ STATUS:** TERMINATED

CONTRACT/GRANT/AGREEMENT NO: 2005-34518-16507 **PROPOSAL NO:** 2005-06161

START: 15 SEP 2005 **TERM:** 14 SEP 2008 **FY:** 2008 **GRANT YR:** 2005

GRANT AMT: \$331,504

INVESTIGATOR: Lewis, C. E.

PERFORMING INSTITUTION:

School of Natural Resources & Agricultural Sciences

UNIVERSITY OF ALASKA

FAIRBANKS, ALASKA 99775

ALASKA SEED GROWER'S ASSISTANCE PROJECT III

NON-TECHNICAL SUMMARY: The ultimate goal is efficient native seed production that meets demand in a balanced fashion. Demand will be encouraged through education, demonstration and specification. The **Alaska** Seed Grower's Assistance Program is intended to coordinate seed production between producers and users.

OBJECTIVES: The Plant Material Center will: Research the needs of primary users of native plant seed to evaluate what resources and knowledge are lacking; Research the needs of commercial and private growers to evaluate how to best help them achieve their goals with native seed and mesh with the needs of agencies; Research best management practices for weed control on new field plantings of native seed; Research and evaluate the types of forbs best suited for field planting and revegetation; Using the information gathered, as well as past research results, develop and publish an **Alaskan** Native Seed Growers Manual. Develop and publish a statewide revegetation manual to provide users of **Alaska** Produced Seed clear, concise, and up-to-date information on methods, seed availability, and species adaptation; Provide farm assistance for commercial seed producers throughout the state; Publish informative, interpretive plant flyers/ brochures on the various species/varieties of plants being produced or nearing production in **Alaska**. The Agricultural and Forestry Experiment Station will: Determine effective means of weed control on species determined to be a problem in production fields.

APPROACH: Evaluation of the needs of primary users of native plant seed will be conducted. Research for best management practices (BMPs) for weed control on new field plantings of native seed is continuing at PMC and AFES. The BMPs for weed control will be written up for dissemination. Research and evaluate the types of forbs best suited for field planting and revegetation: This research will compare similar forb and grass mixtures in 8 small plots at the PMC to evaluate which mixtures might out-compete chickweed, lambsquarters, etc. Four species of plants will be included in each seed mixture: Arctared Fescue, Nortran Tufted Hairgrass, Wainwright Germplasm slender wheatgrass, and Caiggluk Tilesy Sagebrush. The forb variables added, one to each of 7 plots, will be Solidago decumbens, Oxytropis campestris, Hedysarum alpinum, Chamerion latifolium, Achillea millefolium ssp. borealis, Artemisia campestris, and Polemonium pulcherrimum. The control plot will have the same percentage of the above forbs (20 per cent) but will use Caiggluk at a 40 per cent level. These plants were chosen for their abilities to germinate in the field without prior processing. Site preparation will follow established guidelines for revegetation of moderately dry, non-sloping areas. The soil will be packed and scarified prior to planting. Fertilization will occur at the

same time as planting. Seed will be drilled one quarter to one half inch deep, and then rolled or raked. This will be done in early spring or fall. The plots will not be irrigated. The perimeter will be rogued to enable separation of plots and restrict weeds from encroaching on the plots. The least amount of soil disturbance (no till) will prohibit turning over the buried seed bank. Monitoring of the plots will occur weekly with the parameters of density, percent cover, diversity, frequency, vigor, and amounts of weed growth determined for all species involved. Dominance and abundance will be qualitatively evaluated on a number scale. Photos will be taken weekly. The results will be published in peer-reviewed journals. Using the information gathered, as well as past research results, an **Alaskan Native Seed Growers Manual** will be developed which will provide users with methods for efficient and effective seed production of **Alaska Plants**. Develop and publish A statewide revegetation manual will be developed to provide users of **Alaska Produced Seed** clear, concise, and up-to-date information on methods, seed availability, and species adaptation for functional, productive, and efficient plantings for disturbed sites. The objectives of the weed control study will be to determine which weed control methods are economical for farmers and to develop best management recommendations in grass-seed fields in **Alaska**. We will study both chemical and non-chemical weed control methods on various grass species. A thorough literature review will reveal which weed control method would have the most potential in **Alaska**. We also do a cost-benefit analysis for procedures that show promise to determine if they are likely to be economically feasible for use by commercial grass-seed producers in **Alaska**.

PROGRESS: 2005/09 TO 2008/09

OUTPUTS: The Alaska Seed Grower's Assistance Project III run by the Alaska Plant Materials Center (PMC) strengthened the knowledge of native seed growth to a diverse Alaskan audience made up of farmers, potential growers, teachers, students, and specialty groups. The Project's goals included enhancing economic opportunities for current and potential growers of Alaska native seed. Thirty-five pre-certified selected class germplasms of native plants for commercial production and use in Alaska were released to the public through the efforts of this Project. Through 52 interpretive, professional plant publications and an Alaska Revegetation Manual (web based and in 1000 printed copies), people throughout the State were made aware of the potential market, how to revegetate within regional parameters and suggested plants in Alaska, and how to grow native plants. Six interpretive posters were researched and designed for motivating and facilitating discussions about Seed Certification, Why Grow Native Seed, Seven Steps to Establish Plants for Use in Land Reclamation and Revegetation, About Potato Diseases, Seed Grower's Assistance, and Arctic Germplasm Collections. Professional presentations were presented at several conferences, educational programs were provided for school students and specialty groups, and teachers with the Alaska Agriculture in the Classroom Educator Institute were actively involved with activities for their students on growing, investigating, and identifying native and noxious plants. Growers were motivated to use efficient techniques for planting, cultivating, harvesting, and cleaning seed through demonstrations at the PMC, at their own farms, and at the University of Alaska, Fairbanks (UAF) research fields. During this Project, because of dissemination of information via a newly designed, professional website (www.dnr.state.ak.us/ag/ag_pmc.htm), the number of web hits from 2006 to 2008 drastically increased on the PMC's homepage by 215 percent, on the plant flyer's webpage by 227 percent, and with an up-to-date Native Plant Source directory, up 191 percent. Research during this Project analyzed effects on invasive plants by certain herbicides (UAF), application rates of annual ryegrass for suppressing weeds but still allowing desired species growth (PMC), and mixtures of grasses and forbs that could out-compete weeds while maintaining a diverse product (PMC). The results from this research

were presented through professional papers, presentations, and visits by interested growers. Services for the public, schools, and farmers were provided on many topics - ranging from raingardens, revegetation, landscapes, harvest protocols, seed cleaning, invasive and noxious plants, seed testing, and general information. Community events, such as the State and County fairs, provided venues to counsel and empower Alaskans to grow native plants. Four interns and graduate students were advised and mentored in this Project. Field maps and signage for the actively cultivated 190 species of native plants grown at the PMC were designed and kept accurate to enable visitors to evaluate which plants they might want to grow in their own fields or homes. **PARTICIPANTS:** The major individuals who worked on this Project from the PMC were Peggy Hunt (Agronomist II), Stoney Wright (Manager), Andy Nolen (Agronomist II), Domo Colberg (intern), Elizabeth Naganiski (intern), Jaimie Wharton (intern), Kathi VanZant (Certified Seed Analyst); and from UAF were Stephen D. Sparrow (Professor of Agronomy), Brian Jackson (graduate student), and Carol Lewis (Dean of the School of Natural Resources and Agricultural Sciences). The lead person who worked on this Project was Peggy Hunt. She researched, designed, published the Native Plant Publications; designed, formatted, and gathered statistics on the PMC's website; designed, planted, and researched PMC research projects; mentored the interns' designs of the posters and research; provided hands-on activities for students and teachers; worked with farmers and potential growers of native plants teaching techniques, identification of plants, suggestions for which plants to grow for profit, etc. Stoney Wright wrote the Alaska Revegetation Manual, reviewed documents for accuracy, and presented results at State, National, and International conferences. Andy Nolen visited with farmers and potential growers throughout the state, helping them with techniques, weed control, and general advice. The three interns assisted with research at the PMC, designed posters, took pictures, worked in the seed lab, helped with the plant publications, and scanned many of the PMC's older publications into a computerized form. Kathi VanZant performed thousands of germination, purity, and tetrazolium tests on seed lots sent from farmers throughout the state. She also set up the seed lab and taught for educational tours. Dr. Sparrow designed the research at UAF and mentored the graduate student working on effective herbicides for foxtail grass. Carol Lewis maintained the interface between the PMC and UAF and managed the personnel responsible for smooth transitions of grant administration. Organizations collaborated with include University of Alaska, Anchorage; Natural Resources Conservation Service; Alaska Soil and Water Conservation Districts; Alaska Committee for Noxious and Invasive Plants Management; Matanuska Borough Schools; Anchorage Schools; Fairbanks Schools; Girl Scouts; Boy Scouts; Future Farmers of America; Alaska Seed Growers, Inc.; Alaska Native Plant Seed Growers; Master Gardeners throughout Alaska; Alaska Agriculture in the Classroom Educator Institute; Alaska Division of Agriculture; Alaska Division of Forestry; Alaska Division of Mining, Land, and Water; Alaska Division of Parks and Recreation; Bureau of Land Management; U.S. Forest Service; U.S. Department of Agriculture; Agricultural Research Service; and U.S. Air Force. This Project also maintained contact with subsets of farmers, small scale growers, agency personnel, and interested citizens about invasive weeds, grower opportunities, and new ideas through the Seed Grower's list-serve, e-mail lists, and telephone conversations. Training and professional development courses were provided at the PMC's conference room and in coordination with other agencies. **TARGET AUDIENCES:** Changes in knowledge from this Project occurred for many people in Alaska. By understanding the reasons for revegetating with native Alaskan plants, growers, farmers, interested rural and urban citizens were given information to have success in their endeavors. Agency personnel now have the means to specify a variety of plants for revegetation or landscape needs. When the specifications state that only Alaska native seed can be used for various projects, then the

bidders contact the PMC to find out where to purchase the required seed. This has caused an upswing in the economic base and an incentive for more people to grow Alaskan seed. The plant publications, revegetation manual, and Directory have proven to be invaluable for Alaskans. This Project has caused people to take positive actions to increase the economic and environmental status of Alaska. Changes in knowledge and actions have occurred with programs provided by this project on invasive plants. Students involved in investigating native versus invasive plants, have taught parents and friends about these plants. Many of these students were appalled to see bird vetch, etc. covering areas which used to be native plants. Many teachers have participated in hands-on activities designed to make them more observant. Some teachers have started native plant rain gardens at their schools and actively manage these areas with their students. These gardens are ways to showcase the need for native plants to be grown. Several people are working on ways to combine the many efforts of small, rural, and ethnic gardeners into a brokerage or farmer's market venue to sell native plants and seed. Other entrepreneurs have listed themselves on the Directory as businesses that can harvest needed seed for revegetation purposes-as long as they have enough adequate notice. Still other growers are cultivating native plants for landscape use with techniques provided by the Project. The three research projects increased knowledge which made people change how they were growing native plants. PROJECT MODIFICATIONS: None

IMPACT: 2005/09 TO 2008/09

The Alaska Seed Grower's Assistance Project III impacted thousands of people by changing their thoughts about the worth of native plants. Before this PMC's Project started contractors would obtain seed for various projects through nurseries and farmers in other states and countries. This seed would be the same species as is located in Alaska, but since it was not grown here it did not have the hardiness of seed grown with Alaskan conditions. Now, with the help of this Project, people have a strengthened knowledge about the advantages of Alaska grown native plants. Because of this Project 35 native plants were released for commercial production and use in Alaska. Through the 52 plant publications, Alaskan Revegetation Manual, posters, presentations, website, and demonstrations, potential and established growers are motivated to grow Alaska seed for economic development. The revitalization of the industry is shown in the number of phone calls, e-mails, discussions, and purchases of newly released naturally selected foundation seed. By understanding effective techniques to grow native seed, even the youth instructed in seed growing have shown interest and have gone back to their parents and teachers to motivate Alaska seed growing. The trickle-down effect is noticed during community events where educational exhibits and PMC staff talk to interested visitors. The up-dated website with the above mentioned publications as well as 35 years worth of scanned publications from the PMC, pictures, and up-to-date Native Plant Source Directory shows that individuals are working to make informed decisions from fundamental and applied research. The change in numbers of hits to various web pages shows that this development of technological and interpretive web presence is making a difference for many people. Presentations and demonstrations about noxious and invasive weeds have encouraged hundreds of people to watch what is growing in their own yards, to join weed pulling groups, to work for badges on weed removal, and to not only be aware of the problem but to attempt to create solutions. Through research by UAF discussions on whether to use an herbicide, such as propoxycarbazone on foxtail barley, have come about because of the research findings from research on Nortran tufted hair grass, Gruening alpine bluegrass, and Wainwright slender wheatgrass. Results of the project will be used to increase production of grass seeds and reduce costs of grass seed production in Alaska by efficiently

controlling foxtail barley in grass seed fields. PMC research on how much annual rye should be used in revegetation projects shows that if contractors use more than 10 percent in the mix, they will injure the native plants. PMC research on whether a mixture of forbs and grasses can outcompete weeds and create visual and ecological diversity in revegetation efforts has definitely impressed visitors viewing the plots where there once there were weeds but are now a healthy diverse population of three forbs and three grasses and very few weeds. The interns and graduate students who have worked on this Project are all making decisions to work in Natural Resources.

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15. Wright, Stoney J., (Editor and Designer, Peggy Hunt). 2008. A Revegetation Manual For Alaska. Department of Natural Resources, Alaska Plant Materials Center, Palmer, AK. 161 pp.

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Item No. 1 of 1

ACCESSION NO: 0204897 **SUBFILE:** CRIS**PROJ NO:** ALK-05-11 **AGENCY:** NIFA ALK**PROJ TYPE:** SPECIAL GRANT **PROJ STATUS:** TERMINATED**CONTRACT/GRANT/AGREEMENT NO:** 2005-34518-16507 **PROPOSAL NO:** 2005-06161**START:** 15 SEP 2005 **TERM:** 14 SEP 2008 **FY:** 2008 **GRANT YR:** 2005**GRANT AMT:** \$331,504**INVESTIGATOR:** Lewis, C. E.**PERFORMING INSTITUTION:**

School of Natural Resources & Agricultural Sciences

UNIVERSITY OF ALASKA

FAIRBANKS, ALASKA 99775

ALASKA SEED GROWER'S ASSISTANCE PROJECT III *Report*

NON-TECHNICAL SUMMARY: The ultimate goal is efficient native seed production that meets demand in a balanced fashion. Demand will be encouraged through education, demonstration and specification. The **Alaska** Seed Grower's Assistance Program is intended to coordinate seed production between producers and users.

OBJECTIVES: The Plant Material Center will: Research the needs of primary users of native plant seed to evaluate what resources and knowledge are lacking; Research the needs of commercial and private growers to evaluate how to best help them achieve their goals with native seed and mesh with the needs of agencies; Research best management practices for weed control on new field plantings of native seed; Research and evaluate the types of forbs best suited for field planting and revegetation; Using the information gathered, as well as past research results, develop and publish an **Alaskan** Native Seed Growers Manual. Develop and publish a statewide revegetation manual to provide users of **Alaska** Produced Seed clear, concise, and up-to-date information on methods, seed availability, and species adaptation; Provide farm assistance for commercial seed producers throughout the state; Publish informative, interpretive plant flyers/ brochures on the various species/varieties of plants being produced or nearing production in **Alaska**. The Agricultural and Forestry Experiment Station will: Determine effective means of weed control on species determined to be a problem in production fields.

APPROACH: Evaluation of the needs of primary users of native plant seed will be conducted. Research for best management practices (BMPs) for weed control on new field plantings of native seed is continuing at PMC and AFES. The BMPs for weed control will be written up for dissemination. Research and evaluate the types of forbs best suited for field planting and revegetation: This research will compare similar forb and grass mixtures in 8 small plots at the PMC to evaluate which mixtures might out-compete chickweed, lambsquarters, etc. Four species of plants will be included in each seed mixture: Arctared Fescue, Nortran Tufted

Hairgrass, Wainwright Germplasm slender wheatgrass, and Caiggluk Tilesy Sagebrush. The forb variables added, one to each of 7 plots, will be *Solidago decumbens*, *Oxytropis campestris*, *Hedysarum alpinum*, *Chamerion latifolium*, *Achillea millefolium* ssp. *borealis*, *Artemisia campestris*, and *Polemonium pulcherrimum*. The control plot will have the same percentage of the above forbs (20 per cent) but will use Caiggluk at a 40 per cent level. These plants were chosen for their abilities to germinate in the field without prior processing. Site preparation will follow established guidelines for revegetation of moderately dry, non-sloping areas. The soil will be packed and scarified prior to planting. Fertilization will occur at the same time as planting. Seed will be drilled one quarter to one half inch deep, and then rolled or raked. This will be done in early spring or fall. The plots will not be irrigated. The perimeter will be rogued to enable separation of plots and restrict weeds from encroaching on the plots. The least amount of soil disturbance (no till) will prohibit turning over the buried seed bank. Monitoring of the plots will occur weekly with the parameters of density, percent cover, diversity, frequency, vigor, and amounts of weed growth determined for all species involved. Dominance and abundance will be qualitatively evaluated on a number scale. Photos will be taken weekly. The results will be published in peer-reviewed journals. Using the information gathered, as well as past research results, an **Alaskan Native Seed Growers Manual** will be developed which will provide users with methods for efficient and effective seed production of **Alaska Plants**. Develop and publish A statewide revegetation manual will be developed to provide users of **Alaska Produced Seed** clear, concise, and up-to-date information on methods, seed availability, and species adaptation for functional, productive, and efficient plantings for disturbed sites. The objectives of the weed control study will be to determine which weed control methods are economical for farmers and to develop best management recommendations in grass-seed fields in **Alaska**. We will study both chemical and non-chemical weed control methods on various grass species. A thorough literature review will reveal which weed control method would have the most potential in **Alaska**. We also do a cost-benefit analysis for procedures that show promise to determine if they are likely to be economically feasible for use by commercial grass-seed producers in **Alaska**.

PROGRESS: 2005/09 TO 2008/09

OUTPUTS: The Alaska Seed Grower's Assistance Project III run by the Alaska Plant Materials Center (PMC) strengthened the knowledge of native seed growth to a diverse Alaskan audience made up of farmers, potential growers, teachers, students, and specialty groups. The Project's goals included enhancing economic opportunities for current and potential growers of Alaska native seed. Thirty-five pre-certified selected class germplasms of native plants for commercial production and use in Alaska were released to the public through the efforts of this Project. Through 52 interpretive, professional plant publications and an Alaska Revegetation Manual (web based and in 1000 printed copies), people throughout the State were made aware of the potential market, how to revegetate within regional parameters and suggested plants in Alaska, and how to grow native plants. Six interpretive posters were researched and designed for motivating and facilitating discussions about Seed Certification, Why Grow Native Seed, Seven Steps to Establish Plants for Use in Land Reclamation and Revegetation, About Potato Diseases, Seed Grower's Assistance, and Arctic Germplasm Collections. Professional presentations were presented at several conferences, educational programs were provided for school students and specialty groups, and teachers with the Alaska Agriculture in the Classroom Educator Institute were actively involved with activities for their students on growing, investigating, and identifying native and noxious plants. Growers were motivated to use efficient techniques for planting, cultivating, harvesting, and cleaning seed through demonstrations at the PMC, at their own farms, and at the University of Alaska,

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new ideas through the Seed Grower's list-serve, e-mail lists, and telephone conversations. Training and professional development courses were provided at the PMC's conference room and in coordination with other agencies. **TARGET AUDIENCES:** Changes in knowledge from this Project occurred for many people in Alaska. By understanding the reasons for revegetating with native Alaskan plants, growers, farmers, interested rural and urban citizens were given information to have success in their endeavors. Agency personnel now have the means to specify a variety of plants for revegetation or landscape needs. When the specifications state that only Alaska native seed can be used for various projects, then the bidders contact the PMC to find out where to purchase the required seed. This has caused an upswing in the economic base and an incentive for more people to grow Alaskan seed. The plant publications, revegetation manual, and Directory have proven to be invaluable for Alaskans. This Project has caused people to take positive actions to increase the economic and environmental status of Alaska. Changes in knowledge and actions have occurred with programs provided by this project on invasive plants. Students involved in investigating native versus invasive plants, have taught parents and friends about these plants. Many of these students were appalled to see bird vetch, etc. covering areas which used to be native plants. Many teachers have participated in hands-on activities designed to make them more observant. Some teachers have started native plant rain gardens at their schools and actively manage these areas with their students. These gardens are ways to showcase the need for native plants to be grown. Several people are working on ways to combine the many efforts of small, rural, and ethnic gardeners into a brokerage or farmer's market venue to sell native plants and seed. Other entrepreneurs have listed themselves on the Directory as businesses that can harvest needed seed for revegetation purposes-as long as they have enough adequate notice. Still other growers are cultivating native plants for landscape use with techniques provided by the Project. The three research projects increased knowledge which made people change how they were growing native plants. **PROJECT MODIFICATIONS:** None

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Progress Report: Seed Research, AK (Alaska Seed Grower's Assistance Program)
Project Number: ALK-04-09
Grant Number: 2004-34518-15040

CRIS AD-421 Progress Report and Publications: 2006/01/01 TO 2006/12/31

Progress

Research this year focused on formulating easily established, diverse, and dependable native seed mixes to out-compete weeds. This provides an incentive for farmers to grow crops of selected forbs and grasses for the Alaska native seed market, which supplies contractors and agencies specifying seed mixes for revegetation. Two different studies were started and evaluated this year and will continue to be statistically analyzed next year. The first study involved three combinations of forbs and grasses in different ratios planted in randomized plots with and without a mycorrhizal inoculant. Annual weeds quickly created a cover crop in every plot. Though unforeseeable, it is possible that in some plots the native plants will out-compete the weeds next year because in 2006 the annual weeds provided shade and a moist environment for the perennial forbs and grasses to become established. The second study was a different treatment of an earlier project from this program. This study looked at the effect of different seeding rates of annual rye grass upon native grasses and weeds. This will be evaluated next year.

Education and extension during 2006 was widespread. Fifteen plant flyers detailing the use and cultivation of Alaska native plant seeds were published to the Plant Materials Center's (PMC) website and disseminated to hundreds of potential growers (http://www.dnr.state.ak.us/ag/ag_pmc.htm). The rough draft for the Interactive Revegetation Manual for Alaska is in an evaluation mode with a web designer. The Alaska Plant Production Manual is in progress. Educational presentations on recent developments in seed production in Alaska were given at four different conferences. Questions were answered for hundreds of callers, visitors, and e-mailers on topics such as invasive weeds, revegetation needs, specific plant growth protocols, wildflower selections, plant selection for settling ponds, identification of mosses and unusual plants, and protocols using for devil's club, various berries, forbs, and grasses. Many interpretive presentations were given to growers from throughout the state at the PMC, various Alaskan locations, and via media. Professional seed germination, purity, noxious weed, Tetrazolium, and moisture tests were performed on 792 seed lots with a total of 928 separate tests. In an effort to reach as many present and potential Alaskan native seed growers as possible, exhibits were held at the Alaska State Fair, employment fairs, and school fairs. The Alaska Seed Growers List-Serve was maintained and information disseminated throughout 2006.

Impact

Alaska native seed growers benefit from this project economically by learning which native plants are needed for commercial projects and how to produce them – thus growers

can practically plan for the future. By growing native plants which can out-compete invasive, non-native weeds, Alaska will be fulfilling a national mandate to revegetate with native plants. The educational component of this project reaches throughout Alaska, supporting companies, agencies, and individuals in their capacity to make a difference in the environment.

Publications

Hunt, Peggy and Stoney J. Wright. 2006. *Attu Germplasm longawn sedge*. Alaska Division of Agriculture, Plant Materials Center (APMC). Palmer, AK.
http://www.dnr.state.ak.us/ag/ag_pmc.htm.

Hunt, Peggy and Stoney J. Wright. 2006. *Black Rapids Germplasm field oxytrope*. APMC. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.

Hunt, Peggy and Stoney J. Wright. 2006. *Butte Germplasm beautiful jacob's ladder*. APMC. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.

Hunt, Peggy and Stoney J. Wright. 2006. *'Caiggluk' Tilesius' Wormwood*. APMC. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.

Hunt, Peggy and Stoney J. Wright. 2006. *Cantwell Germplasm downy wildrye*. APMC. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.

Hunt, Peggy and Stoney J. Wright. 2006. *Council Germplasm arctic bluegrass*. APMC. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.

Hunt, Peggy and Stoney J. Wright. 2006. *Knik Germplasm wild iris*. APMC. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.

Hunt, Peggy and Stoney J. Wright. 2006. *Ninilchik Germplasm nootka alkaligrass*. APMC. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.

Hunt, Peggy and Stoney J. Wright. 2006. *Nome Germplasm glaucous bluegrass*. APMC. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.

Hunt, Peggy and Stoney J. Wright. 2006. *Paxson Germplasm alpine sweetvetch*. APMC. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.

Hunt, Peggy and Stoney J. Wright. 2006. *Port Clarence Germplasm largeflower speargrass*. APMC. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.

Hunt, Peggy and Stoney J. Wright. 2006. *Safety Germplasm viviparous fescue*. APMC. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.

Hunt, Peggy and Stoney J. Wright. 2006. *Shemya Germplasm dusty miller*. APMC. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.

Hunt, Peggy and Stoney J. Wright. 2006. *Slana Germplasm tufted wheatgrass*. APMC. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.

Hunt, Peggy and Stoney J. Wright. 2006. *'Tundra' Glaucous Bluegrass*. APMC. Palmer, AK.
http://www.dnr.state.ak.us/ag/ag_pmc.htm.

Wright, Stoney J. 2006. *Notice of Release of Pre-Certified Selected Class Germplasm of Native Plants for Commercial Production and Use in Alaska. 2005 Grouping of Accessions*. Alaska Department of Natural Resources, Plant Materials Center. Palmer, AK.

Total Publications for AK Seed Research, 1/01/06 – 12/31/06: 16.

Total Publications for AK Seed Research Overall: 42.

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Item No. 1 of 1

ACCESSION NO: 0204897 **SUBFILE:** CRIS**PROJ NO:** ALK-05-11 **AGENCY:** NIFA ALK**PROJ TYPE:** SPECIAL GRANT **PROJ STATUS:** TERMINATED**CONTRACT/GRANT/AGREEMENT NO:** 2005-34518-16507 **PROPOSAL NO:** 2005-06161**START:** 15 SEP 2005 **TERM:** 14 SEP 2008 **FY:** 2008 **GRANT YR:** 2005**GRANT AMT:** \$331,504**INVESTIGATOR:** Lewis, C. E.**PERFORMING INSTITUTION:**

School of Natural Resources & Agricultural Sciences

UNIVERSITY OF ALASKA

FAIRBANKS, ALASKA 99775

ALASKA SEED GROWER'S ASSISTANCE PROJECT III**CLASSIFICATION**

KA	Subject	Science	Pct
121	2299	1060	33
205	2299	1060	34
512	2299	1060	33

CLASSIFICATION HEADINGS: **R121** . Management of Range Resources; **S2299** .Miscellaneous and new crops, general/other; **F1060** . Biology (whole systems); **R205** . Plant Management Systems; **R512** . Quality Maintenance in Storing and Marketing Non-Food Products**BASIC** 000% **APPLIED** 100% **DEVELOPMENTAL** 000%

NON-TECHNICAL SUMMARY: The ultimate goal is efficient native seed production that meets demand in a balanced fashion. Demand will be encouraged through education, demonstration and specification. The **Alaska** Seed Grower's Assistance Program is intended to coordinate seed production between producers and users.

OBJECTIVES: The Plant Material Center will: Research the needs of primary users of native plant seed to evaluate what resources and knowledge are lacking; Research the needs of commercial and private growers to evaluate how to best help them achieve their goals with native seed and mesh with the needs of agencies; Research best management practices for weed control on new field plantings of native seed; Research and evaluate the types of forbs best suited for field planting and revegetation; Using the information gathered, as well as past research results, develop and publish an **Alaskan** Native Seed Growers Manual. Develop and

publish a statewide revegetation manual to provide users of **Alaska Produced Seed** clear, concise, and up-to-date information on methods, seed availability, and species adaptation; Provide farm assistance for commercial seed producers throughout the state; Publish informative, interpretive plant flyers/ brochures on the various species/varieties of plants being produced or nearing production in **Alaska**. The Agricultural and Forestry Experiment Station will: Determine effective means of weed control on species determined to be a problem in production fields.

APPROACH: Evaluation of the needs of primary users of native plant seed will be conducted. Research for best management practices (BMPs) for weed control on new field plantings of native seed is continuing at PMC and AFES. The BMPs for weed control will be written up for dissemination. Research and evaluate the types of forbs best suited for field planting and revegetation: This research will compare similar forb and grass mixtures in 8 small plots at the PMC to evaluate which mixtures might out-compete chickweed, lambsquarters, etc. Four species of plants will be included in each seed mixture: Arctared Fescue, Nortran Tufted Hairgrass, Wainwright Germplasm slender wheatgrass, and Caiggluk Tilesy Sagebrush. The forb variables added, one to each of 7 plots, will be *Solidago decumbens*, *Oxytropis campestris*, *Hedysarum alpinum*, *Chamerion latifolium*, *Achillea millefolium* ssp. *borealis*, *Artemisia campestris*, and *Polemonium pulcherrimum*. The control plot will have the same percentage of the above forbs (20 per cent) but will use Caiggluk at a 40 per cent level. These plants were chosen for their abilities to germinate in the field without prior processing. Site preparation will follow established guidelines for revegetation of moderately dry, non-sloping areas. The soil will be packed and scarified prior to planting. Fertilization will occur at the same time as planting. Seed will be drilled one quarter to one half inch deep, and then rolled or raked. This will be done in early spring or fall. The plots will not be irrigated. The perimeter will be rogued to enable separation of plots and restrict weeds from encroaching on the plots. The least amount of soil disturbance (no till) will prohibit turning over the buried seed bank. Monitoring of the plots will occur weekly with the parameters of density, percent cover, diversity, frequency, vigor, and amounts of weed growth determined for all species involved. Dominance and abundance will be qualitatively evaluated on a number scale. Photos will be taken weekly. The results will be published in peer-reviewed journals. Using the information gathered, as well as past research results, an **Alaskan Native Seed Growers Manual** will be developed which will provide users with methods for efficient and effective seed production of **Alaska Plants**. Develop and publish A statewide revegetation manual will be developed to provide users of **Alaska Produced Seed** clear, concise, and up-to-date information on methods, seed availability, and species adaptation for functional, productive, and efficient plantings for disturbed sites. The objectives of the weed control study will be to determine which weed control methods are economical for farmers and to develop best management recommendations in grass-seed fields in **Alaska**. We will study both chemical and non-chemical weed control methods on various grass species. A thorough literature review will reveal which weed control method would have the most potential in **Alaska**. We also do a cost-benefit analysis for procedures that show promise to determine if they are likely to be economically feasible for use by commercial grass-seed producers in **Alaska**.

KEYWORDS: alaska; seed production; crop production; breeder seed; revegetation; weed control; best management practices; native plants; seeds; range management; quality maintenance; plantings; weeds; forbs; manuals; plant adaptation; methodology

PROGRESS: 2005/09 TO 2008/09

OUTPUTS: The Alaska Seed Grower's Assistance Project III run by the Alaska Plant Materials Center (PMC) strengthened the knowledge of native seed growth to a diverse Alaskan audience made up of farmers, potential growers, teachers, students, and specialty groups. The Project's goals included enhancing economic opportunities for current and potential growers of Alaska native seed. Thirty-five pre-certified selected class germplasms of native plants for commercial production and use in Alaska were released to the public through the efforts of this Project. Through 52 interpretive, professional plant publications and an Alaska Revegetation Manual (web based and in 1000 printed copies), people throughout the State were made aware of the potential market, how to revegetate within regional parameters and suggested plants in Alaska, and how to grow native plants. Six interpretive posters were researched and designed for motivating and facilitating discussions about Seed Certification, Why Grow Native Seed, Seven Steps to Establish Plants for Use in Land Reclamation and Revegetation, About Potato Diseases, Seed Grower's Assistance, and Arctic Germplasm Collections. Professional presentations were presented at several conferences, educational programs were provided for school students and specialty groups, and teachers with the Alaska Agriculture in the Classroom Educator Institute were actively involved with activities for their students on growing, investigating, and identifying native and noxious plants. Growers were motivated to use efficient techniques for planting, cultivating, harvesting, and cleaning seed through demonstrations at the PMC, at their own farms, and at the University of Alaska, Fairbanks (UAF) research fields. During this Project, because of dissemination of information via a newly designed, professional website (www.dnr.state.ak.us/ag/ag_pmc.htm), the number of web hits from 2006 to 2008 drastically increased on the PMC's homepage by 215 percent, on the plant flyer's webpage by 227 percent, and with an up-to-date Native Plant Source directory, up 191 percent. Research during this Project analyzed effects on invasive plants by certain herbicides (UAF), application rates of annual ryegrass for suppressing weeds but still allowing desired species growth (PMC), and mixtures of grasses and forbs that could out-compete weeds while maintaining a diverse product (PMC). The results from this research were presented through professional papers, presentations, and visits by interested growers. Services for the public, schools, and farmers were provided on many topics - ranging from raingardens, revegetation, landscapes, harvest protocols, seed cleaning, invasive and noxious plants, seed testing, and general information. Community events, such as the State and County fairs, provided venues to counsel and empower Alaskans to grow native plants. Four interns and graduate students were advised and mentored in this Project. Field maps and signage for the actively cultivated 190 species of native plants grown at the PMC were designed and kept accurate to enable visitors to evaluate which plants they might want to grow in their own fields or homes.

PARTICIPANTS: The major individuals who worked on this Project from the PMC were Peggy Hunt (Agronomist II), Stoney Wright (Manager), Andy Nolen (Agronomist II), Domo Colberg (intern), Elizabeth Naganiski (intern), Jaimie Wharton (intern), Kathi VanZant (Certified Seed Analyst); and from UAF were Stephen D. Sparrow (Professor of Agronomy), Brian Jackson (graduate student), and Carol Lewis (Dean of the School of Natural Resources and Agricultural Sciences). The lead person who worked on this Project was Peggy Hunt. She researched, designed, published the Native Plant Publications; designed, formatted, and gathered statistics on the PMC's website; designed, planted, and researched PMC research projects; mentored the interns' designs of the posters and research; provided hands-on activities for students and teachers; worked with farmers and potential growers of native plants teaching techniques, identification of plants, suggestions for which plants to grow for profit, etc. Stoney Wright wrote the Alaska Revegetation Manual, reviewed documents for accuracy, and presented results at State, National, and International conferences. Andy Nolen visited with farmers and potential growers throughout the state,

helping them with techniques, weed control, and general advice. The three interns assisted with research at the PMC, designed posters, took pictures, worked in the seed lab, helped with the plant publications, and scanned many of the PMC's older publications into a computerized form. Kathi VanZant performed thousands of germination, purity, and tetrazolium tests on seed lots sent from farmers throughout the state. She also set up the seed lab and taught for educational tours. Dr. Sparrow designed the research at UAF and mentored the graduate student working on effective herbicides for foxtail grass. Carol Lewis maintained the interface between the PMC and UAF and managed the personnel responsible for smooth transitions of grant administration. Organizations collaborated with include University of Alaska, Anchorage; Natural Resources Conservation Service; Alaska Soil and Water Conservation Districts; Alaska Committee for Noxious and Invasive Plants Management; Matanuska Borough Schools; Anchorage Schools; Fairbanks Schools; Girl Scouts; Boy Scouts; Future Farmers of America; Alaska Seed Growers, Inc.; Alaska Native Plant Seed Growers; Master Gardeners throughout Alaska; Alaska Agriculture in the Classroom Educator Institute; Alaska Division of Agriculture; Alaska Division of Forestry; Alaska Division of Mining, Land, and Water; Alaska Division of Parks and Recreation; Bureau of Land Management; U.S. Forest Service; U.S. Department of Agriculture; Agricultural Research Service; and U.S. Air Force. This Project also maintained contact with subsets of farmers, small scale growers, agency personnel, and interested citizens about invasive weeds, grower opportunities, and new ideas through the Seed Grower's list-serve, e-mail lists, and telephone conversations. Training and professional development courses were provided at the PMC's conference room and in coordination with other agencies. **TARGET AUDIENCES:** Changes in knowledge from this Project occurred for many people in Alaska. By understanding the reasons for revegetating with native Alaskan plants, growers, farmers, interested rural and urban citizens were given information to have success in their endeavors. Agency personnel now have the means to specify a variety of plants for revegetation or landscape needs. When the specifications state that only Alaska native seed can be used for various projects, then the bidders contact the PMC to find out where to purchase the required seed. This has caused an upswing in the economic base and an incentive for more people to grow Alaskan seed. The plant publications, revegetation manual, and Directory have proven to be invaluable for Alaskans. This Project has caused people to take positive actions to increase the economic and environmental status of Alaska. Changes in knowledge and actions have occurred with programs provided by this project on invasive plants. Students involved in investigating native versus invasive plants, have taught parents and friends about these plants. Many of these students were appalled to see bird vetch, etc. covering areas which used to be native plants. Many teachers have participated in hands-on activities designed to make them more observant. Some teachers have started native plant rain gardens at their schools and actively manage these areas with their students. These gardens are ways to showcase the need for native plants to be grown. Several people are working on ways to combine the many efforts of small, rural, and ethnic gardeners into a brokerage or farmer's market venue to sell native plants and seed. Other entrepreneurs have listed themselves on the Directory as businesses that can harvest needed seed for revegetation purposes-as long as they have enough adequate notice. Still other growers are cultivating native plants for landscape use with techniques provided by the Project. The three research projects increased knowledge which made people change how they were growing native plants. **PROJECT MODIFICATIONS:** None

IMPACT: 2005/09 TO 2008/09

The Alaska Seed Grower's Assistance Project III impacted thousands of people by changing

their thoughts about the worth of native plants. Before this PMC's Project started contractors would obtain seed for various projects through nurseries and farmers in other states and countries. This seed would be the same species as is located in Alaska, but since it was not grown here it did not have the hardiness of seed grown with Alaskan conditions. Now, with the help of this Project, people have a strengthened knowledge about the advantages of Alaska grown native plants. Because of this Project 35 native plants were released for commercial production and use in Alaska. Through the 52 plant publications, Alaskan Revegetation Manual, posters, presentations, website, and demonstrations, potential and established growers are motivated to grow Alaska seed for economic development. The revitalization of the industry is shown in the number of phone calls, e-mails, discussions, and purchases of newly released naturally selected foundation seed. By understanding effective techniques to grow native seed, even the youth instructed in seed growing have shown interest and have gone back to their parents and teachers to motivate Alaska seed growing. The trickle-down effect is noticed during community events where educational exhibits and PMC staff talk to interested visitors. The up-dated website with the above mentioned publications as well as 35 years worth of scanned publications from the PMC, pictures, and up-to-date Native Plant Source Directory shows that individuals are working to make informed decisions from fundamental and applied research. The change in numbers of hits to various web pages shows that this development of technological and interpretive web presence is making a difference for many people. Presentations and demonstrations about noxious and invasive weeds have encouraged hundreds of people to watch what is growing in their own yards, to join weed pulling groups, to work for badges on weed removal, and to not only be aware of the problem but to attempt to create solutions. Through research by UAF discussions on whether to use an herbicide, such as propoxycarbazone on foxtail barley, have come about because of the research findings from research on Nortran tufted hair grass, Gruening alpine bluegrass, and Wainwright slender wheatgrass. Results of the project will be used to increase production of grass seeds and reduce costs of grass seed production in Alaska by efficiently controlling foxtail barley in grass seed fields. PMC research on how much annual rye should be used in revegetation projects shows that if contractors use more than 10 percent in the mix, they will injure the native plants. PMC research on whether a mixture of forbs and grasses can outcompete weeds and create visual and ecological diversity in revegetation efforts has definitely impressed visitors viewing the plots where there once there were weeds but are now a healthy diverse population of three forbs and three grasses and very few weeds. The interns and graduate students who have worked on this Project are all making decisions to work in Natural Resources.

PUBLICATIONS (not previously reported): 2005/09 TO 2008/09

1. Hunt, Peggy. 2008. Alaska Native Plant Directory. Alaska Division of Agriculture, Plant Materials Center (APMC). Palmer, AK. www.dnr.state.ak.us/ag/ag_pmc.htm.
2. Hunt, Peggy and APMC Staff. 2008. Alaska Plant Materials Center Annual Report, 2006-2007. APMC. Palmer, AK. www.dnr.state.ak.us/ag/ag_pmc.htm.
3. Hunt, Peggy and Jaimie Wharton. 2008. Norton Sound Germplasm alpine milkvetch, *Astragalus alpinus*. APMC. Palmer, AK. www.dnr.state.ak.us/ag/ag_pmc.htm.
4. Jackson, B.J. 2008. Foxtail barley (*Hordeum jubatum*) control with propoxycarbazone-sodium and fluazifop-P-Butyl in three Alaska native grass species. M.S. Thesis, School of Natural Resources and Agricultural Sciences, University of Alaska Fairbanks.
5. Wharton, Jaimie and Peggy Hunt. 2008. Sutton Germplasm northern geranium, *Geranium erianthum*. APMC. Palmer, AK. www.dnr.state.ak.us/ag/ag_pmc.htm.
6. Wharton, Jaimie and Peggy Hunt. 2008. King Salmon Germplasm northern goldenrod,

Solidago multiradiata. APMC. Palmer, AK. www.dnr.state.ak.us/ag/ag_pmc.htm.

7. Wharton, Jaimie and Peggy Hunt. 2008. Polar Smooth Brome, *Bromus inermis* x *pumpellianus*. APMC. Palmer, AK. www.dnr.state.ak.us/ag/ag_pmc.htm.

8. Wharton, Jaimie and Kathi VanZant. 2008. Seed Poster for Alaska Certified Seed Lab. APMC. Palmer, AK. www.dnr.state.ak.us/ag/ag_pmc.htm.

9. Wright, Stoney J. 2007. Developing Commercial Sources for Native Seed and Plants in Alaska. In Proceedings for the Northern Latitudes Mining Conference. Juneau, Alaska (Abstract).

10. Wright, Stoney J. 2007. Alaska Coastal Dune Restoration and Stabilization with Beach Wildrye, *Leymus mollis*. In Proceedings: International Coastal Dune Restoration Conference, 3-5 October, 2007. Santander, Spain. (Abstract).

11. Wright, S.J. 2007. Native Plant Ecovar Development in Alaska Supported by the Department of Defense. In Abstracts: 2007 Annual Meeting Abstracts: American Society of Agronomy. Nov. 4-8, 2007, New Orleans, La.

12. Wright, Stoney J. 2007. Notice of Pre-Certified Selected Class Germplasm of Native Plants for Commercial Production and Use in Alaska. 2006 Grouping of Accessions. Alaska Department of Natural Resources, APMC. Palmer, AK.

13. Wright, Stoney J. 2008. Notice of Pre-Certified Selected Class Germplasm of Native Plants for Commercial Production and Use in Alaska. 2007 Grouping of Accessions. Alaska Department of Natural Resources, APMC. Palmer, AK.

14. Wright, S.J. 2008. Domestication of native plant species for seed production and planting in Arctic and sub-arctic Alaska. In Proceedings from Multifunctional Grasslands in a Changing World, XXI, International Grassland Congress and VIII International Rangeland Congress, Guangdong Peoples Publishing House, Guangzhou, Peoples Republic of China, p. 457.

15. Wright, Stoney J., (Editor and Designer, Peggy Hunt). 2008. A Revegetation Manual For Alaska. Department of Natural Resources, Alaska Plant Materials Center, Palmer, AK. 161 pp.

PROGRESS: 2006/09/15 TO 2007/09/14

OUTPUTS: The Alaska Seed Growers Assistance Program III enhances economic opportunities for current and potential agriculture growers of native Alaska plants. It provides interpretive education on the best management practices for growing and using native Alaska seed on the many different soil types and climatic conditions in Alaska. Through individual, group, and website interaction, potential and current growers receive thorough suggestions and recommendations for their revegetation needs. During this report period a web-based Alaska Revegetation Manual was completed and placed on a newly designed Plant Materials Center (PMC) web-site. Between July and through the end of September, 2007, the Manual attracted 757 hits. Most of the chapters had similar number of hits, with Chapter 9 on "Specialized Equipment Needs" and Chapter 6 "Choose Species/Cultivars for Revegetation Projects" being the most popular. The Manual is of use to agencies and individuals desiring to revegetate land with native Alaska seed. The Manual is based on 35 years of experience which the PMC has acquired in accessing, evaluating, and growing native seed throughout Alaska. The Manual also references 45 plant publications previously developed in this program as well as many of the scientific papers digitally scanned for web use by Alaska seed growers. Most of the papers and plant publications had a significant increase in their audience after the Manual was published. Both PMC projects will be evaluated one more summer before the results are published. The University of Alaska Fairbanks research on chemical versus non-chemical weed control methods is being evaluated statistically. It will then be written and published. Presentations to the public and Alaska seed growers continue in many different venues. Some of the presentations are designed specifically for agencies

interested in revegetation. Other presentations are designed for youth and/or adults about native versus invasive weeds. Still other presentations are on how to grow Alaska native seed. Perennial beds of selected successful natural selected forbs are on display at the PMC. The Alaska Native Seed Growers Manual is in the works and details more advanced techniques than publications previously published. **PARTICIPANTS:** Individuals who are working on this project are Agronomists Stoney Wright, Peggy Hunt, Jessica Larsen, Andy Nolen, and Brian Jackson; Seed Analyst, Kathi VanZant; and UAF Professor Steve Sparrow. Peggy Hunt, Agronomist II, was the lead at PMC for this project. She researched, designed, published the Native Plant Publications, and gathered statistics about the public use of the publications. She edited and formatted text and pictures for the Revegetation Manual. She performed the research on the Grass and Forb Revegetation Investigation and on How Annual Rye Affects the Growth of Perennial Grasses. Peggy did the outreach and education to schools, fairs, and scouts. She worked with educators to help them develop programs to use with their students. Peggy was instrumental in getting the Revegetation Manual ready for the Web; designing and finishing exhibits for education, designing and producing interpretive signs for the native plant demonstration plots at the Plant Materials Center; photographing native plants for educational plant flyers; presenting programs to Master Gardeners, Alaska legislative aides, farmers, Soil and Water Conservation employees and board members, people concerned about weeds; answering phone calls and e-mails on many different topics; writing and sending out psa's and news releases; and in maintaining the Alaska native seed growers list-serve, and participating in other relevant listserves. Stoney Wright, Agronomist III, provided guidance throughout this project. Stoney wrote the Revegetation Manual, which was based on his 30 years of experience of revegetation using native Alaska plants. Stoney presents professional speeches on Native Seed Production in Alaska and Revegetation for Alaska to many different agencies. Jessica Larsen, Agronomist I, provided editing for the plant publications and the Revegetation Manual. Andy Nolen, Agronomist II, met with farmers throughout Alaska. He assisted them in improving their crop techniques for Alaska native plants, answered questions, and helped them in their seed cleaning techniques. Kathi VanZant, Certified Seed Analyst, performs seed germination and purity tests for farmers and researchers throughout Alaska. Dr. Steve Sparrow, Professor of Agronomy at University Alaska Fairbanks, and his graduate student, Brian Jackson, completed research on using two different herbicides on foxtail barley in native grass fields. The information from this master's thesis will be shared with and used by grass seed farmers in Alaska. Dr. Carol Lewis, Dean of the School of Natural Resources and Agricultural Sciences, UAF, contributed by maintaining the smooth interface between the PMC, UAF, and USDA. The Alaska Seed Growers Assistance Program collaborated with many subsets of farmers and growers; concerned citizens about invasive plants; master gardeners; and agronomists at the PMC, UAA, UAF, Soil and Water Conservation Districts, NRCS, and throughout Alaska and many other locales. **TARGET AUDIENCES:** The Alaska Seed Grower's Assistance Project III is serving current and potential Alaska native seed growers. These include farmers from all over the state, from rural Alaska to the Matanuska Valley. The project has made available to the public, researchers, educators, and farmers the 35 years worth of publications produced by the Alaska Plant Materials Center and 45 new, easy to use, plant publications to date. It has produced an essential publication for Alaska revegetation with never-before-published techniques and easy-to-use, interactive tables for users to determine which plant mixture might be best for their situation. It is educating Alaska youth in classrooms and in scout camps about Alaska native plants and invasive plants. These youths take the information back to their parents and friends. Curricula for agriculture in the classroom is continuing to be developed and disseminated to elementary and secondary schoolteachers, non-formal educators, and collaborating agronomists. Many of

the individuals and groups are of mixed heritage - primarily Alaska native. Some of the children are physically and mentally challenged. This project instructs interns and graduate students. Workshops, classroom activities, and outreach were all delivered with hands-on, minds-on activities and with inquiry as the basis for the activities. Presentations for the State of Alaska Department of Transportation, Division of Mining Land and Water, Division of Parks and Outdoor Recreation, etc. on revegetating with native Alaska seed encourage those who write the specs for projects to specify native seed. This then provides opportunities for Alaska seed growers to realize a secure market for their seed.

IMPACT: 2006/09/15 TO 2007/09/14

The Alaska Seed Grower's Assistance Program III enhances the economic opportunities for agricultural producers throughout the state by providing publications (45, plus more on the way) on different Alaska native plants that need to be grown on a commercial basis by Alaska seed growers. These plants are in demand for revegetation and landscape projects. The PMC research project on the allelopathy of annual rye on perennial native grass growth and weed suppression continues to show that rye applied at rates of 20 and 10 suppress both invasive weeds and the desired grasses. The PMC research project on determining a diverse and hardy mixture of grasses and forbs that can out-compete invasive weeds showed marked success this summer. By providing growers with good scientific information which is very accessible via the Plant Materials Center's website, this program is making a difference for many Alaskans. The web-based Alaska Revegetation Manual was finalized by a professional web-designer, creating an inter-active, easily-accessible and visually-attractive document which had not been available for the state in the past. Statistics on the number of times this information has been accessed show extreme interest by both agency and seed growing producers. Plus, by monitoring the statistics, changes can be made to the web-site to increase its usability to disseminate information. Metatags and stream-lining viewing capabilities for all of the Plant Materials Center's publications allow easier and successful searches via the internet for these publications. This program fosters a better public understanding of the whole picture of agriculture and environmental connections via educational programs to teachers, administrators, scouts, school groups, and scientists about both native and invasive plants. Collaborations between agency, agricultural, environmental, educational, legislative, and scientific groups have been attained through the breadth of this program.

PUBLICATIONS: 2006/09/15 TO 2007/09/14

Wright, Stoney J. 2007. Alaska Revegetation Manual. Alaska Department of Natural Resources, Plant Materials Center. 89pp. <http://www.dnr.state.ak.us/ag/pmcweb/PMC reveg.htm>.

PROGRESS: 2005/09/15 TO 2006/09/14

During 2005, twelve new plant flyers were published to the web and disseminated to hundreds of interested potential growers. http://www.dnr.state.ak.us/ag/ag_pmc.htm. These interpretive, attractive, and very marketable publications represent some of the newly released native Alaska seed germplasms collected, evaluated, and increased by the PMC for many years. The PMCs website now presents eighty-eight scanned publications (in full text) originating from the PMCs thirty-two years of research, revegetation studies, and educational presentations. Also included in the topical listing are other publications by the PMC staff, which were copyrighted or published elsewhere. Ten new professional exhibits were designed to educate people on some of the PMCs major programs. On-going assistance to Alaska

native seed growers includes an educational list-serve, visits to potential and existing seed producers, seed testing, and answers to questions from the public and agency folk via phone, e-mail, and in person. The Revegetation Manual and Seed Production manual are progressing smoothly. Research by the University of Alaska, Fairbanks, to test the effectiveness of multiple herbicides and application rates for controlling grass weed species in tufted hairgrass, alpine bluegrass, and slender wheatgrass seed fields resulted in the selection of three herbicides that may provide control of foxtail barley and other grass weeds. The PMCs annual rye grass research showed that applications of annual rye at the rates of 20, 10, and 8, inhibited broadleaf weed growth as dead litter the spring after it was sown. It also inhibited the growth of several native grass crops. Further experimentation is ongoing.

IMPACT: 2005/09/15 TO 2006/09/14

Interpretive, user-friendly, publications impact the commercial production of Alaska native seed by encouraging more producers to grow and market native seed to fulfill the requirements Federal and State agencies have to plant native seed in revegetation projects. Research into practical weed control practices allows producers to have up-to-date techniques to manage their fields for a greater, purer product.

PUBLICATIONS: 2005/09/15 TO 2006/09/14

1. Hunt, Peggy and Stoney J. Wright. 2005. Adak Germplasm arctic bluegrass. Alaska Division of Agriculture, Plant Materials Center. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.
2. Hunt, Peggy and Stoney J. Wright. 2005. Andrew Bay Germplasm large-glume bluegrass. Alaska Division of Agriculture, Plant Materials Center. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.
3. Hunt, Peggy and Stoney J. Wright. 2005. Casco Cove Germplasm beach lovage. Alaska Division of Agriculture, Plant Materials Center. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.
4. Hunt, Peggy and Stoney J. Wright. 2005. Clam Lagoon Germplasm beach fleabane. Alaska Division of Agriculture, Plant Materials Center. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.
5. Hunt, Peggy and Stoney J. Wright. 2005. Henderson Ridge Germplasm red fescue. Alaska Division of Agriculture, Plant Materials Center. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.
6. Hunt, Peggy and Stoney J. Wright. 2005. Kotzebue Germplasm arctic wild chamomile. Alaska Division of Agriculture, Plant Materials Center. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.
7. Hunt, Peggy and Stoney J. Wright. 2005. Lowell Point Germplasm meadow barley. Alaska Division of Agriculture, Plant Materials Center. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.
8. Hunt, Peggy and Stoney J. Wright. 2005. Nelchina Germplasm spike trisetum. Alaska Division of Agriculture, Plant Materials Center. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.
9. Hunt, Peggy and Stoney J. Wright. 2005. Teller Germplasm alpine bluegrass. Alaska Division of Agriculture, Plant Materials Center. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.
10. Hunt, Peggy and Stoney J. Wright. 2005. Tin City Germplasm arctic bluegrass. Alaska Division of Agriculture, Plant Materials Center. Palmer, AK. http://www.dnr.state.ak.us/ag/ag_pmc.htm.

11. Hunt, Peggy and Stoney J. Wright. 2005. Tok Germplasm Jakutsk snowparsley. Alaska Division of Agriculture, Plant Materials Center. Palmer, AK. <http://www.dnr.state.ak.us/ag/agpmc.htm>.
12. Hunt, Peggy and Stoney J. Wright. 2005. Twenty Mile Germplasm boreal yarrow. Alaska Division of Agriculture, Plant Materials Center. Palmer, AK. <http://www.dnr.state.ak.us/ag/agpmc.htm>.
13. Sparrow, Steve and Brian Jackson. 2005. Preliminary Results of Foxtail Barley (*Hordeum jubatum*) Control in Native Grasses Grown for Seed. Presentation for the Noxious and Invasive Plants Management Workshop, Fairbanks, Alaska, October 2005.

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SUPPLEMENTARY DATA: Institution Type: SAES Region: 4 Process Date: 2005/07/25 Progress Update: 2009/01/05 Program Code: WI
