

2009 Specialty Crop Innovation Grants

Project Summary

Due to Alaska's short growing season and extreme climate fluctuations, Alaska Grown specialty crop producers have a limited production window. New technologies in the areas of season extension offer substantial increases in crop production. Small grants will allow more growers to utilize and benefit from the latest improvements in technology.

The Division of Agriculture launched the 2008 Alaska Agriculture Innovation Grant (AAIG) with FY 07 SCBG funding. The program was widely popular and received statewide press coverage. A requirement of the 2008 program was that grant recipients share the information gained during their project with other specialty crop producers. As a result of these presentations by farmers, more growers within the specialty crop industry are interested in launching innovative technologies to increase their crop productivity and extend their growing season. Therefore, the project was launched again in 2009.

Project Approach

The Division advertised the grant availability through many resources: a newsletter, grant announcement, email announcement, and through several conferences. The Division received 33 grant applications, for a total funding request of \$133,394. Matching funds totaled \$457,969. Through a competitive process, the Division awarded ten grants for a total of \$39,456.00.

Goals & Outcomes

The original goals of this project were stated as:

Develop methods for season extension and increased crop productivity through small grants to specialty crop producers, and

Increase the awareness of new technologies through producer presentations.

Both goals were 100% achieved. The grant recipients were able to extend their season and increase their productivity through their projects and many more specialty crop producers learned of the methodologies through both hearing the presentations and reading the reports on our web page.

Project #1 Tropic Breeze Wind Machine

Goal: Extend growing season and increase diversity of crops grown by protecting frost sensitive crops from freezing.

Outcome: The season was extended by 20 days for the squash crop and the yield was increased by hundreds of pounds. The machine is expected to protect ½ acre of corn, with roughly 7000 plants producing one ear each at a value of \$1/ear.

Impact: Utilizing a wind machine to circulate warm air does protect frost sensitive crops down to 28 degrees Fahrenheit.

Outreach: The grower gave a presentation at the 2010 Delta Farm Forum reaching over 100 farmers. An article about the project appeared in the Alaska Farm & Ranch News which has a large readership of Alaska households.



Photo by Michele Trainor

Frank Borman, owner of a U-Pick farm in Delta Junction, erected a wind machine in hopes of extending the growing season. An alarm installed in Borman's home automatically alerts him when the temperature drops to 34 degrees.

Delta farmer using wind to extend growing season

By MICHELE TRAINOR
Alaska Farm and Ranch News

It was 4:30 a.m. on September 3 when Frank Borman heard the alarm go off. Rousing himself from the comfort of his warm bed, he headed out to the field where he fired up his Ford 9600 tractor, setting his wind machine into action. The temperature had dropped to 34 degrees, and Borman kept his fingers crossed that the wind machine would save his vegetables from a killer frost.

Borman, who owns a U-Pick farm on Tanana Loop Extension in Delta Junction, was one of 11 statewide 2009 recipients of a grant through the Alaska Agriculture Innovation Grant (AAIG) Program. Funded by the United States Department of Agriculture (USDA) Specialty Block Grant (SCBG), AAIG reimburses farmers 50 percent, or up to \$5,000, of the total cost of a project, equipment, or system used for specialty crops.

"The purpose of the grant is to expand current

technologies and encourage Alaskan growers to pursue innovative ways of growing produce and other specialty crops," explained Amy Pettit, development specialist with the Division of Agriculture. "The grant

is limited to what are considered specialty crops under the federal agreement. Vegetables, fruits, and nursery crops all fall under this guideline. Most field crops do not."

Borman first heard of the grant a year ago.

"It was a fit for me," he explained. "I had been

toying with the idea of using a wind machine for three years, and this grant gave me the incentive to give it a try."

Borman, who grew up on a large, productive fruit and vegetable family farm in Ohio, knew wind machines were used to stave off killer frosts in the spring. If it worked on fruit trees in the spring, perhaps it just might extend Alaska's growing season.

Borman successfully grows potatoes, onions, and cole crops on his U-Pick farm, but he wanted to expand his operation to include more squash and sweet corn. Sweet corn would be a draw for customers, but he knew Interior Alaska's growing season was not long enough for any corn crop. Some farmers in the Lower 48 have success using above crop irrigation systems to keep crops from freezing, but he felt this would only create a muddy mess for customers. After doing extensive research, he concluded a wind machine would be the best fit for his operation.

Once learning he was a grant recipient, Borman made the trip to Washington state to pick up the Tropic Breeze wind machine.

"Electric-driven wind machines are less expensive, but they require three-phase power," he explained. "A lot of orchard farmers do not have the large tractors it takes to run a wind machine. So it took some looking to find a tractor-powered gas-driven one."

Returning on the 4th of July, he began to make preparations to install the 32-foot-high wind machine. Nine yards of concrete were required to build a pad to hold the 3200-pound machine. The two eight-foot blades added an additional 100 pounds, and foundation bolts and rebar another 130 pounds.

"But I got the concrete in just a little too late this year," Borman admitted. "I wanted to give it 30 days to cure before setting up the machine. As a result, I got nipped with an August 1 frost."

Since the August 1 frost, Borman has fired up his wind machine seven times. The 86-horsepower wind machine is designed to protect a circular seven-acre field down to 28 degrees. Borman had planted seven acres of various strains of sweet corn. While the corn exhibits some damage from the initial frost, it is still growing. But Borman concedes this season was a learning experience.

"I didn't install a Murphy switch, so I have to continually monitor the tractor while it's running," Borman said. "Which means little or no sleep for me. And starting the corn early in cold frames to transplant is imperative to a successful crop. The rows I planted from seed are not going to mature in time to harvest. You can't miss out on any growing days in Alaska. But does the wind machine

prolong the growing season? Yes, it does. Without it I would have lost the entire field by now."

Walking through a windbreak to another field, Borman pointed out his control crops. Squash, green beans, and corn had been planted in an area that received no benefit from the wind machine. All were shriveled, dried, and dead, killed by earlier frosts.

"It's expensive to run," he admitted, gesturing toward the wind machine. "However, if it brings in

customers and provides them with the produce they want, I'm willing to keep on experimenting with the system."

Part of the grant agreement is that the recipient must be willing to share information and is required to give a presentation or demonstration to a minimum group size of 10 producers. According to Pettit, the division received \$130,000 in applications this year.

This is the second year USDA has funded the program.

“Without it I would have lost the entire field by now.”

Frank Borman
Farmer and owner of
Borman's U-Pick Farm in
Delta Junction

Project #2 Solar Power for Hoop house Insulation & Irrigation

Goal: Extend season by one month on either end of the summer through utilization of a solar powered hoop house.

Outcome: Harvested cut lettuce into October, two to three weeks later than before. Spinach was harvested into November and was of such superior quality that more space will be devoted to it in the future.

Impact: Grower had additional sales.

Outreach: Grower spoke at the 2011 Produce Growers Conference reaching 100 people.



Project #3 Solar-Powered Irrigation System

Goal: Implement a solar-powered irrigation system that will increase production capacity by providing water to a new vegetable plot; enhance plant productivity by warming the water and increase efficiency through using a drip irrigation system.

Outcome: Production was increased by 300% from 1000 pounds of vegetables to 4000 pounds of vegetables.

Impact: Grower had

additional sales and decreased labor costs due to the new irrigation system.

Outreach: More than 100 people attended a farm tour to learn about the project.



Project #4 Solar Hot Water System for Greenhouse

Goal: Install a hot water heating system to heat raised beds, provide in floor heat and warm water for irrigation resulting in season extension and decreased greenhouse heating costs.

Outcome: The greenhouse was kept operating through November 15th which is a month longer than before implementing the system.

Impact: Grower extended season later than normal resulting in additional sales.

Outreach: The grower gave a presentation at the 2011 Nursery Greenhouse conference reaching 150 people.



Project #5 Raised Bed Peony Mower

Goal: Perform trials to compare three ways of cutting peonies to determine the most efficient methodology. Assumption is that mechanically cutting peonies will both extend the growing season and increase the size of the crop without significantly increasing field labor.

Outcome: The purchased BCS power mower was compared to other cutting methods (by hand and weed whacking) using four criteria: 1) time required to cut 200 feet of peonies, 2) ability to control placement of cuts, 3) damage to the plants and 4) worker fatigue. Hand cutting had the fastest times in the trials and resulted in the least damage to the plants. The BCS had the longest cut time but resulted in less damage to the plants than the weed whacker and had the lowest worker fatigue. The BCS's poor showing in the cut times is thought to be unfamiliarity with the process

compared with hand cutting and is expected to decrease with experience.

Impact: With a few modifications the BCS will be the preferred method for cutting strong, mature plants and will result in healthier plants.

Outreach: The grower gave a presentation at the 2011 Peony Growers conference with 200 people in attendance.



Project #6 Drop Down Side Systems

Goal: Implement drop-down side systems for three greenhouses which will increase production capability, decrease the use of fuel oil during vegetable production and increase plant quality through reduced disease problems.

Outcome: Grower reduced fuel costs by 25% and increased production by 100%.

Impact: Grower had increased production and lower costs resulting in greater profit for the year.

Outreach: The farmer hosted a tour with 15 growers in attendance.

Come and See What Your Alaskan Neighbors Are Doing!

Come see farming off the grid! Alan and Leilani Kingsbury have been farming for many years just outside of Talkeetna, and are happy to share their years of farming, and what they have learned.... with you!

Here are some things you can expect to see:

- Economically built greenhouses, from resources on their farm
- Greenhouses with drop down curtains
- Roll-up side systems for their two cold frames
- Innovative insulation for greenhouses
- Hay farming

You will also learn about:

- CSA Start-up experience
- Selling to a local restaurant
- Farming off-grid
- What wet seasons do to hay crops!
- Making it work with what you have – the pay as you go system!



The Kingsbury's received a Division of Agriculture Innovation Grant to assist in the purchase of their drop down curtains and their roll-up side systems. Come learn if it worked and if you should invest in a system like this!

To participate in the farm tour, contact Patricia O'Neil @ 761-3858 or Patricia.ONeil@alaska.gov.



Tour Details:

Date: August 25th
Tour Time: 10:30-12:30
Departing Palmer: 8:30
Return to Palmer: 2:30
BYO sack lunch

We will be utilizing a state van for transportation. The first ten people to sign up will be able to ride in the van to Talkeetna. If you are coming from the Talkeetna area, and driving yourself, please contact me so we have an accurate number of attendees.

Project #7 Potato Harvester

Goal: Purchase a potato harvester that will enable an increase in production to support a year-round CSA market. Current production is kept at a minimum due to the quick onset of freeze-up and lack of employees to get larger quantities of potatoes out of the ground.

Outcome: Freeze-up came overnight the end of September. We had to quickly harvest our potatoes and other root crops before they froze. We would not have been able to harvest all of the root vegetables before freeze-up, if we had not had the harvester. It saved our crops. We harvested about 8000 pounds of potatoes.

Impact: Grower was able to significantly increase production and harvest resulting in year-round sales.

Outreach: Grower gave a presentation at the 2010 Produce Growers conference reaching 50 farmers, as well as receiving extensive news coverage due to his remote location and innovative techniques.



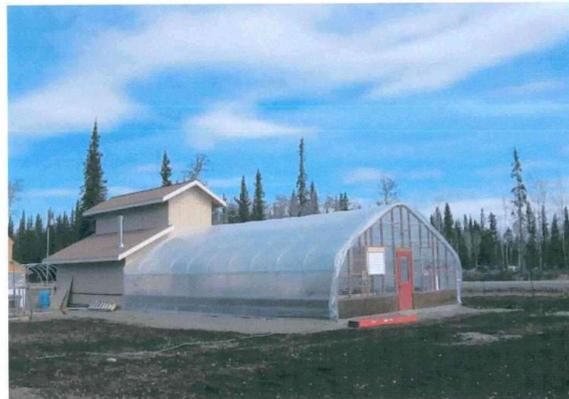
Project #8 Propagation Greenhouse

Goal: We expect that the number of plants we can propagate in a greenhouse the size we are planning will allow us to increase the amount of propagated plants by at least 10 times.

Outcome: Prior to having the propagation greenhouse, grower started 200 cuttings with only a 12% survival rate. Utilizing the new greenhouse, grower realized cutting survival of 70%. The increased space allowed for an increase in the number of plants from 200 to 2000.

Impact: Grower dramatically increased production and survival rate of plants, resulting in more berries and additional sales.

Outreach: Grower hosted a farm tour with 12 growers present.



Project #9 Equipment for Innovative Farming in Igiugig

Goal: Increase production capacity through efficiencies gained with equipment and reductions in labor costs.

Outcome: Planting time was reduced from one week down to one afternoon. Crop productivity tripled over previous years.

Impact: Increased production and greater self-sufficiency for a remote village.

Outreach: The results of the project were presented at the 2010 Sustainable Agriculture and Research Education (SARE) conference with 200 growers in attendance.



Project #10 Trimble Ag GPS Autopilot

Goal: Utilizing a GPS system will allow for faster potato planting which will extend the season and result in higher yields and superior quality.

Outcome: The Trimble guidance products we purchased were able to help us complete field applications faster and more productively, accurately, safely and comfortably with less operator fatigue. We were able to complete our potato planting 25% faster using this GPS system.

Impact: Results from implementing this equipment were so dramatic that the farmer has purchased two additional systems.

Outreach: Grower presented findings at the 2010 Produce Growers conference reaching 50 farmers.

Beneficiaries

Ten specialty crop farmers directly benefited from receiving innovation grants. Presentation audiences totaled a minimum of 925 over two years of presentations.

Lessons Learned

Managing mini-grants is time consuming. Each individual recipient may need specialized attention and have unique challenges in project implementation.

