

2009 Alaska Agriculture Innovation Grant Report
The National Outdoor Leadership School
(Contract Number: 10-09-080-04)
Solar-Powered Irrigation System

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System Purchased

Solar panels, well pump, pump controller, water storage tanks, drip irrigation supplies and all additional components for supporting and linking this system together were purchased. For detailed information on items purchased for this project please refer to the attached spreadsheet entitled "Project Expenses." Copies of all receipts related to this project have also been attached.

Results

The final results of this project have been extremely successful. The irrigation system was installed and effectively working by the end of the 2009 summer season. The solar panels supplied more than adequate energy to pump water from the well to the elevated storage tanks. Initially, the water storage tanks were located too far from the irrigation lines. The water pressure was reduced along the length of the hose and was inadequate for the drip lines. Therefore we moved the tanks closer to the irrigation header line and raised the tanks slightly to provide more pressure. After this adjustment, there was adequate pressure to water half the garden at one time.

We have found the following **benefits** to this system:

- Cost effective and labor-saving means for delivering water to our new garden plot.
- Takes full advantage of the abundance of solar energy in the summer.
- System performs best on sunny days when irrigation is needed the most.
- Irrigation water is pre-warmed in the storage tanks.

We have found the following **challenges** to this system:

- Gaining enough pressure through gravity to irrigate the crops (takes some adjustments with water height and distance from irrigation lines).

Report Questions

Was your season extended or shortened and if so, by how much?

Our season was neither extended nor shortened by this system, as it was not the intent.

Did your crop productivity increase or decrease and if so, by how much?

Our crop productivity was dramatically increased in 2009 compared with previous years. In 2009, we produced close to 4,000 pounds of produce compared with approximately 1,000 pounds in previous years. Although this is mainly due to the fact that we increased the size of our garden in 2009, it is unquestionable that this system provided a labor-saving and cost-effective means for delivering water to the crops.

Presentation/Outreach

In August 2009, we hosted an on-farm tour, viewing of *Fresh* and discussion on our local food system. (Please see attached public notice that was put out for the tour.) We had overwhelming turnout with more than 100 attendees from the community. The tour, movie and discussions lasted approximately 3 hours. During the tour, we provided an overview of our farm operation as well as detailed information about each component (e.g. composting, irrigation, raising poultry in chicken tractors, raising pigs as garden tillers, garden expansion, season extension techniques, etc.). We explained the new irrigation system and showed attendees the solar panels, storage tanks and explained the way the system works and why we chose this system. The attached photos demonstrate this part of the tour. We recognized and thanked the Alaska State Division of Agriculture and the Mat-Su Health Foundation for making it possible to purchase this system. We believe that utilizing a renewable and plentiful resource to water the garden has contributed to a positive image both for our organization and the funders of this project. Attendees commented that they felt encouraged and inspired by the creativity and simplicity of this watering system, particularly the utilization of solar energy.