

**Paul C. And Edna H. Warner Endowment Fund for Sustainable Agriculture  
Progress Report Form**

**Aquaponics for High Tunnels – Developing a Design and Demonstration  
Unit for Local Food Production**

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**Summary:**

This is Phase One of a project designed to further the development of ecologically sound practices by use of aquaponics to maximize both aquatic and vegetable crop growth in a system that reduces reliance on non-renewable resources and also reduces environmental impact as compared to conventional practices. The goals of this proposed project are to design and install a sustainable aquaponics system that can be cost effective for use by family farms in greenhouse high tunnels, and to increase income to growers, while also increasing the local food supply. The installation is proposed to be located in a modified high tunnel on a small commercial family farm in Central Ohio that will allow for demonstration tours.

**What was done?**

Two IBC totes/tanks have been installed in the ground of a passive solar greenhouse (PSG) and 6 above ground in the main bio-integrated greenhouse (BIG). Tanks have been stocked with a few mosquito fish to monitor water quality. Pumps have been installed for the tanks in PSG and are being powered by the existing solar power from BIG. Grow trays are being modified to grow plants above the in-ground tanks, using a capillary rope wick method for keeping the plant roots watered. Spearmint is being grown for this test. Please see attached photos.

Pumps for the 6 tanks in BIG and bio-filtration for all eight tanks is expected to be completed early in 2013. Monitoring sensors are being investigated and will be purchased in early 2013. The new solar equipment will be installed in spring 2013. Depending on the winter conditions and availability of fish stock, fish will not be stocked until late winter or early spring. Phase one, design and installation of the system and evaluation of fish survival, is expected to be completed by May 2013.

**How have the results contributed or will they contribute sustainable agriculture?**

The Ohio State University South Center's Aquaculture Program and the Ohio Soybean Council partnered to host the 2012 Soy-Aqua Fish Farm Tour on Saturday, October 20, 2012. Thirty people interested in aquaculture and aquaponics boarded the tour bus in Marysville, Ohio. Stop number two was RainFresh Harvests in Plain City, an aquaponics and green house facility operating on alternative and sustainable energy. Owner Barry Adler demonstrated the solar and wind energy system that allows him to operate his greenhouse off the grid. He grows high-value specialty crops and sells wholesale to restaurants.



