

AQUARANCH AQUAPONIC GREENHOUSE PROJECT NEARS COMPLETION

By Rebecca L. Nelson

An innovative aquaponic greenhouse project in Flanagan, Illinois is nearing completion. After several years planning and several months of construction, the 12,500 square foot, naturally-ventilated greenhouse is built and covered. The interior components including the heating and cooling systems, the environmental control computer and the aquaponic systems are now being installed.

The greenhouse is owned and operated by Myles Harston and Rob and Katilyn Prickett of AquaRanch Produce, the sister company to AquaRanch Industries, a manufacturer of recirculating aquaculture and aquaponic systems.

Rebecca Nelson and John Pade have been consulting on this project and working closely with Myles Harston, owner of AquaRanch Industries, since the inception of this project through the planning and now during construction.

Myles, Rob and Katilyn have been raising tilapia in recirculating aquaculture systems inside of the AquaRanch Industries building for the past eight months and have fish ranging from finger-

lings to several pounds ready to be moved into the greenhouse system which consists of 12 fish tanks. AquaRanch will continue to breed and raise the tilapia in their nursery system with the larger fish raised in the tanks in the greenhouse.

AquaRanch Industries fabricates and manufactures their aquaculture and aquaponic systems and takes pride in the unique design and very effective clarifier which they've designed. The system in the new greenhouse consists of two separate groups of 6-fish tanks, a clarifier, a sump tank, a degassing/mineralization tank and all of the connected drain lines and plumbing. Since AquaRanch will be hosting tours and training workshops in the new greenhouse, all of the fish tanks have windows so you can easily see the fish. This helps with monitoring fish health as well.

The AquaRanch greenhouse project will utilize the float system and the layout is based on the design developed at the University of the Virgin Islands. Each group of six fish tanks will be connected to 2-8' x 160' and 2-4' x 160' plant grow beds in which



Myles Harston and John Pade discussing the design of the aquaculture system.

fancy lettuce and a variety of herbs will be grown. The naturally ventilated greenhouse design provides protection for the crop and the ability to maintain warmer than outside temperatures whenever necessary. When cooling is required, the roof vents open and allow excess heat to escape. This eliminates over-humid greenhouse conditions and dramatically reduces energy consumption. There is also a high pressure fogging system installed which will provide extra cooling when needed.

An environmental control computer senses the conditions in the greenhouse and controls the equipment inside to provide proper conditions for the plants and fish. The advanced system chosen for the AquaRanch greenhouse is ideally suited to precisely control air temperature and humidity plus it can monitor and adjust other factors including pH and water temperature. Additionally, it includes alarms and telephone auto-dialers that can call Myles, Rob and Katilyn when any parameter that they've set is out of range.

The environmental controller determines when and how much the roof is open based on indoor and outdoor temperature and humidity levels and weather conditions. A weather station connected to the computer can sense when inclement weather is approaching and the roof will automatically be closed to protect the crops from rain or other weather changes. The greenhouse environmental controller can adjust the conditions in the greenhouse by the minute if necessary. This precise control creates a more stable environment for the plants and fish, resulting in increased yields, better management and a higher quality product.

The plants will be seeded once the fish are moved into the greenhouse system. The produce and fish will be marketed within the community as well as to high-end grocery stores in nearby metropolitan areas. AquaRanch will also be offering tours and training courses. Stay tuned to Aquaponics Journal for more information as the fish and plant culture systems are stocked and seeded and a schedule of events becomes available.

About the Author: Rebecca L. Nelson is editor of *Aquaponics Journal* and, along with partner, John Pade, offers consulting for aquaponic and hydroponic greenhouse projects. She can be reached by email at nelson@aquaponics.com or by phone at 209-742-6869.



Top: Testing the roof vent at sunset.

Middle: The clarifier and sump tank (foreground) connected to the fish tanks (background).

Bottom: One of the 6-tank groups with windows and drain lines in view. Each 3" drain leaving the tanks flows into a shared 6" drain back to the clarifier.