

Aquaponics: A Dream System

B & SRR Youth Center and Academy, St. Anne, Illinois

Raising Tilapia Fish in Tanks Along with Plants and Vegetables in Beds

Coordinator: Irene Seals

Location: St. Anne, Illinois

SARE Grant: \$15,930

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Irene Seals created an aquaponics system, which consists of a 500-gallon fish tank and three beds tiered on top of each other. Waste from the fish fertilizes the plants in the beds, while plants purify the water before it flows back to the fish tank.

When Irene Seals moved from the South Side of Chicago to a small farm in Pembroke, Illinois, with her husband in 1982, she was less than enthused about it. The land was barren, she says, except for "a lot of junk" that had to be cleared before they could build a barn and house. Accustomed to the noise and the lights of the city, she also had trouble getting used to the eerie quietness of the farm.

Irene moved to the farm because her husband Frank used to live on a farm growing up, and he dreamed of raising horses. His dream came to pass, and it has become Irene's dream as well—B & SRR Youth Center and Academy.

Frank has since passed away, but Irene continues to run the 15-acre farm just 15 miles east of Kankakee. In 2005, she received a SARE grant to expand the operation, which includes 30 horses along with pastured chickens, turkeys, and rabbits. With the funding, she developed an aquaponics system, a method for growing plants and fish in a recirculation system in which the plants nourish the fish and the fish nourish the plants.

The system, which operates in a greenhouse, consists of three, 4- by 8-foot beds, tiered on top of each other, with



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plants grown in the top two beds and gravel filling the bottom bed. Meanwhile, the fish are stored in a 500-gallon water tank.

Every half hour, Seals says, water circulates through the system, moving from the fish tank to the three tiered beds. It moves up from the bottom bed, filtering through the gravel and flowing over the plant beds. Then the water returns to the fish tank, and the cycle begins again.

The waste from the fish acts as a fertilizer to the plants, Seals explains, while the plants absorb certain nutrients, purifying the water before it flows back to the fish tank. The rocks in the bottom bed filter out any excess fertilizer.

In the beds, Seals grows mostly herbs, such as basil, oregano, and chives. She originally tried raising catfish in the fish tank but was unsuccessful. She says the catfish population may have been too large, so the system was unable to filter out the ammonia fast enough.

When Seals found a reliable tilapia source, she started out with 200 fingerlings. It takes a year for the fingerlings to reach full size, about a pound and a half. The system has worked well, she says. They lost only 50 fish in the first year, which is to be expected, and saw great results from the plants, which are grown pesticide-free and

sold at farmer's markets.

The SARE grant covered the greenhouse construction, the beds, and the tanks. "Without it, I would not have been able to fulfill my dream," she says.

Along with the three-tiered system, Seals has a smaller, three-barrel aquaponics system that can nurture about 25 to 30 fish. The system is comprised of three 55-gallon barrels, one containing the fish, another containing the plants, and the third containing the rocks. Seals primarily keeps catfish in the barrel system, although she rotates in tilapia.

While constructing the greenhouse for the system, the main problem they encountered was with heating. Due to their inexperience with greenhouses, she says they built the greenhouse 2 feet higher than it should have been. A lot of heat was wasted and heating in the winter became costly.

"It gets pretty chilly in the greenhouse during the winter," she says. So they are looking into ways to provide solar heat to supplement the corn-burning furnace.

B & SRR farm operates an extensive outreach program to kids, with a lot of them coming from Pembroke and Chicago to help on the farm. Most of the youth come for the summer program, which rewards work in the garden and greenhouse with horse riding—a major incentive for the kids. The most devoted youth even come on the weekends during the school year.

Today, Seals has grown fond of the country, and the peacefulness that once irked her is now a part of her life.

As she puts it, "Now it's hard to go back to the city, the noise, and the crowds. I love the country. I wouldn't go back to the city for anything."

By Jason Peterson