



*L to r, Giada misting the milkweed seed. Checking out the plants.  
Paisley and Gaida and, right, Merrie feeding the fish.*

## MAGNOLIA SCHOOL CHILDREN EXPANDING GARDEN EXPERIENCE AND HABITAT WITH AQUAPONICS

**by Merrie Decker**

Montgomery County Master Gardener

Bear Branch Elementary, Magnolia ISD, has introduced aquaponics to their well-established gardening program. The six-year-old state award-winning Junior Master Gardening Club is led by Montgomery County Master Gardener (MCMG) Merrie Decker, assisted by fellow teachers Carla Allen and Kimberly Moser.

The aquaponics system is new this year. The children help maintain the system by taking the pH, feeding the fish, and planting seeds in the plant table. A generous couple donated their aquaponics system to the school. MCMG colleagues Michael Bodman, Jim Bundscho, Mike Cooley, Yvonne Stephenson and Libby Lachman helped design a functioning system that would work well in the school's greenhouse and would be easily accessible for the children to use and maintain.



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Traditionally, the children grow their own vegetables from seed in the school's greenhouse. With the addition of aquaponics, they are learning a more efficient, sustainable alternative to growing outside in soil. Aquaponics is way of raising fish and plants in an enclosed, recirculating ecosystem. Within the system, a fish tank contains bluegill, which provide nutrients for plants. In turn, plants, along with bacteria, help clean the water for fish. The water continually recirculates throughout the system, creating a system that produces a dual harvest from one process.

Aquaponics can be used as a tool for STEM subjects like Math, Biology, Chemistry and Horticulture. In the past, the JMG group has conducted fertilizer trials, production trials as a way of learning the scientific method. This year we will grow vegetables in the aquaponics systems to compare to what we grow outside in the soil. Lettuce harvested and washed is enjoyed as a snack, as well as used for a comparison. Substantial differences were found between lettuces grown in a tray in the greenhouse and the lettuce in aquaponics.

Bear Branch Elementary also has a Monarch Waystation that provides a place for Monarchs to rest, lay eggs and get a drink on their journey to and from Mexico. However, the school has had a difficult time getting enough milkweed in the garden due the low germination rate of milkweed seeds. The aquaponics system successfully will allow the six seeded varieties of native milkweed to germinate, producing several sprouts in just two weeks. A record success that will provide more food for the Monarchs!

All grade levels at Bear Branch Elementary go to the greenhouse to learn about aquaponics, with the help of the JMG club members. In the spring, the school will have a carnival where all will be invited to tour their new aquaponics system.

And what do the children have to say about the new approach? "Really cool experience getting to take care of fish at school" -- Jake; "I learned plants are happy and grow better on the aquaponics table" -- Giada; "We get to see fish ... and the plants they help" -- Lillian; and from Paisley about what she likes best: "That you have to test the water, I like that!"

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