GROWERTALKS

Under an Acre

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Gardening on the Hudson

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It's a rare occurrence when you need sea legs on a farm, but one of the first lessons upon setting foot on the Science Barge on the Hudson River in Yonkers, New York, is how to roll with the waves. Although the barge is anchored to the shore there's a constant motion and even more movement when there's a howling wind.

Pictured: The Science Barge in Yonkers, New York, was developed by New York Sun Works, a non-profit organization that constructs inventive science laboratories in city schools, making the barge a floating classroom. From April to November, students come to the barge to witness Jennifer Sloan, Education Director, pass on her knowledge and passion about the environment and farming.

Developed by New York Sun Works, a non-profit organization that constructs inventive science laboratories in city schools, the barge is a floating classroom. From April to November, students come to the barge to witness Jennifer Sloan, Education Director, pass on her knowledge and passion about the environment and farming, plus hear the essentials of being on the water. When students board the barge, they're taught how to stand by rocking side to side, spreading their legs and keeping their knees loose. But most important, they're taught the rules: no running, pushing or jumping overboard.

Groundwork Hudson Valley is an environmental non-profit group that seeks to improve physical and social conditions in communities. Through their stewardship on the barge, Jennifer, Bob Walters—the Science Barge director—and others are environmental educators of the community. When students arrive, Jennifer conducts an Earth demonstration with a handmade model to describe water and soil limitations.

"Only 1/32 of our planet is used for growing. We are ruining our soil with industrialized farms. We need to turn toward organic methods, use less tilling and start to recapture the urban areas," she says. Jennifer informs the students about soil erosion and the fact that 0.3% of the Earth's water is drinkable, which leads to a discussion about the barge and its use of hydroponics.

The outside area of the barge is used for education, a wetlands filter and composting. There are outdoor growing planters, as well as window-size and decoration planters. The indoor space consists of two 20 ft. x 24 ft. adjoining greenhouses with one large Nutrient Film Technique table and three rows of Behto buckets. There is an Aquapond and an ebb and flow system that has been home to goldfish, carp, tilapia and catfish. Another tray table is used for hydroton and rockwool with plugs.

Two VertiGro systems are stacked five high with 40 plants. For most of the plant systems, a timed water program comes on every two hours for two minutes for small plants, and four to five minutes for large plants. Tubes run through the tower, water comes up a pipe, pours out a spout at the top and drains back into the reservoir.

The Nutrient Film Technique table resembles rows of closed gutters. The nursery rows fit 144 young plants and eight adult rows can fit another 144 plants. Jennifer starts a flat of seedlings in rockwool and after two weeks moves them to the nursery row where they receive a constant flow of nutrient water that's pumped through a tube system. After an additional two weeks, the plants are moved to the adult rows. They stay in the system for eight weeks and are then transferred to the ebb and flow or plant boxes. Not too long after this Jennifer harvests lettuce (60 heads a week), mustard greens, Swiss chard and herbs.

"We could start kale, but in eight weeks we would move it so the root system does not clog the area," she says. Two varieties of lettuce are grown, Rex butterhead, which is recommended for hydroponics, and Summer Crisp, which did well on a farm where Jennifer had worked.

Melons, cucumbers, tomatoes, sugar snap peas, peppers, beans and okra are grown in the Behto buckets. The buckets are square with a 3-gal. capacity. They're connected to the tubing system and flooded every two hours. There are 10 buckets in three rows with two plants per bucket with a total of 60 plants. Jennifer starts the tomatoes in March and removes them in November.

"The tomatoes have grown to 19 ft. long, leaning and lowering. We trained the vines to curl and loop. They looked like curtains," she says. With the fruit at eye level, harvesting became easier.

The water is monitored daily for its electrical connectivity and pH balance. The nutrients in the water depend on the crop they feed. For instance, there are three nutrient recipes for fruit crops in accordance with the level of fruiting. Groundwork Hudson Valley shares its water nutrient recipes with visitors to the barge.

Opening day for the Science Barge this year is April 13. Jennifer has started two varieties of cucumbers, two varieties of sweet peppers, okra, sun gold and cherry tomatoes, and sugar snap peas. On June 1, they'll begin to sell the produce at the local farmers market, and they donate to the food pantry.

"In late June and July, we'll be running an exhibit about foods that heal, like lentils and purslane," says Jennifer. The health of its visitors, as well as the health of the environment, is most important to their mission. The passive tracking solar panels keep them off the grid, the recycled shipping container serves as the office, the wetlands area receives the waste water from the reservoirs every five to six weeks, the plants filter the ammonia in the fish pond and at the far end of the barge is a composting toilet. A biodiesel unit runs on recycled vegetable oil when they need heat in the greenhouse.

During the winter, Jennifer travels to schools to conduct programs, but has to travel with many pieces. It's easier for the students to come to the barge where they're getting ready for another season of educating and serving samples of hydroponically grown food. A docent program encourages young students to gain career skills while getting an environmental education.

"We are teaching people to recapture urban spaces; to reduce carbon footprints. [The Science Barge] allows us to have fresh produce in a food desert, and teaches people how to grow on rooftops and in small spaces," says Jennifer. **GT**

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