



Getting Started with 100 Gardens

An Overview of Our K-8 Aquaponics Program



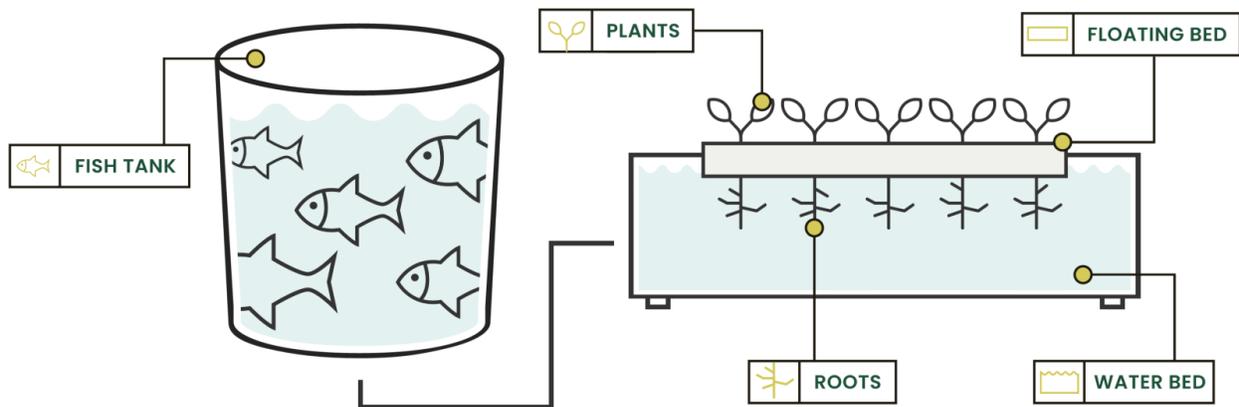
Who We Are

Our Mission: Provide exciting and engaged learning opportunities by implementing aquaponics programs in schools, institutions and in communities of need.

What is Aquaponics? And Why?

Today's youth will be leading a world that by 2050 will have less freshwater, face the total depletion of major seafood species, and have 10 billion people to feed. They need to have the awareness and the skills to succeed in that world.

Aquaponics is a method of farming that raises edible freshwater fish and vegetables together in a symbiotic environment. Fish create nutrients in the water through their waste, and vegetables use the nutrients to grow, returning clean water back to the fish. This allows the recycling and conserving of water, takes pressure off the oceans by farming fish, and grows fresh vegetables for an increasing human population.



The Ultimate Link Between Hands-On Learning and Environmental Stewardship

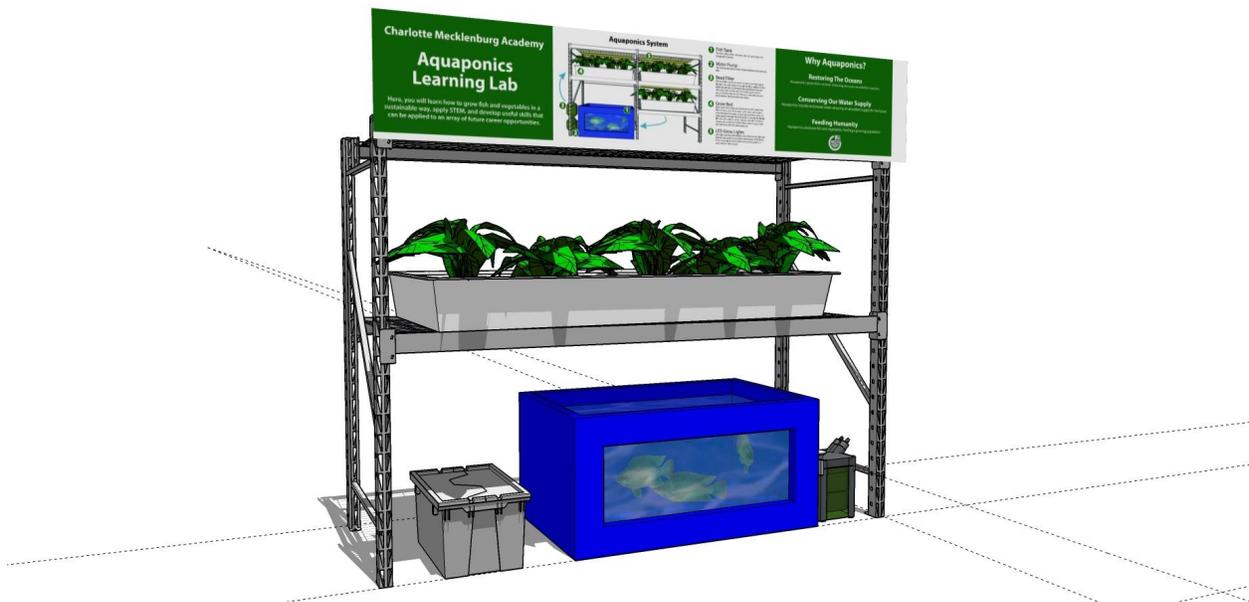
Our Aquaponics Learning Labs bring unforgettable learning experiences to students and teachers. Our K-5 and high school curriculums intersect the operation of the aquaponics system with North Carolina Education Standards for science, math, and several Career and Technical Education (CTE) classes.

Unforgettable Experiences in the Aquaponics Learning Lab - A Quick Glance

- Water quality management and data analyzation
- Daily feeding of the fish and observing fish behavior
- Weighing fish and tracking fish growth
- Humane harvesting of fish, fish processing, and culinary preparation
- Weekly starting of seeds for plant production
- Weekly harvesting and selling of leafy green vegetables
- End of school year fish fry events where students share their experiences with community members



The “Flow Lab” Classroom Aquaponics System



Features:

- 150 gallon fiberglass fish tank with viewing window
- Custom welded steel stand with gloss white finish
- 3' x 6' floating raft growing tray
- High Efficiency LED grow lights
- Water pump and plumbing
- Air pump and plumbing
- Rigid sign panels describing system functions
- Digital water chemistry monitor for transferring live water data to the cloud.

The Classroom Aquaponics System is perfect for K-12 schools, home schools, and anywhere hands-on learning and food production is needed. The system takes just one day to install and can be delivered within 45 days of ordering. All of our K-5 lesson plans and most of our high school curriculum can be implemented using the system. This small system can produce 12-18 heads of lettuce per week and 15 pounds of fresh fish each school year.



K-8 Aquaponics Programs: Bi-Weekly Service Package	
Development of the Aquaponics Lab™	✓
Professional Development for Teachers	✓
Aquaponics Standard Operating Procedures	✓
100 Gardens Flow Lab™ K-5 Curriculum	✓
100 Gardens/Kenan Fellows 6-8 Aquaponics Curriculum (Free)	✓
Service visits and Teacher Mentoring	18 Bi-Weekly Visits or 9 Monthly Visits
Ongoing Aquaponics System Monitoring	✓
Pre/Post Surveys and Evaluation	✓
Volunteer Management	✓
EOY Fish Fry Celebration	✓
Aquaponics Supply Kit	✓
Homegrown Tomato Festival Tickets	10
Program Marketing and Promotions	✓
Standard Annual Program Cost (not including the development of the Aquaponics Lab™)	\$12k - \$18k depending on location and agreed-upon services
Additional Options	
On-site coordinator	Custom
After School Club	Custom
Summer Program	Custom



Our Services and How We Partner with Schools and Institutions

We are an educational 501c3 non-profit organization. For us to fulfill our mission, we seek long-term partnerships with our school partners. A partnership requires that both the school and 100 Gardens bring passion, commitment, and resources to the program.

- 1. Development of the Aquaponics Lab™:** Working directly with the school, an Aquaponics Lab is designed and built in a greenhouse or indoors using artificial plant lighting. Once funding is in place, 100 Gardens installs the aquaponics system within the new facility using our staff, volunteers, and student interns.
- 2. Professional Development for Teachers:** 100 Gardens trains teachers to implement standard operating procedures (SOP's) for the lab and standards-aligned lesson plans to inspire a new way of thinking about learning, food, and the environment. 100 Gardens also provides regular technical and instructional support via the service visits listed below.
- 3. Aquaponics Standard Operating Procedures:** Each Aquaponics Lab™ includes detailed standard operating procedures (SOP's) for system operation.
- 4. 100 Gardens Flow Lab™ K-5 Curriculum:** We have 5 lessons for each grade K-5. All five lessons are designed to be taught together as a one week module and each module is aligned with an Essential Standard for Science.
- 5. 100 Gardens/Kenan Fellows 6-8 Aquaponics Curriculum:** An open-source curriculum developed by the Kenan Fellows program at North Carolina State University. This curriculum includes four weeks (20 lessons) of engaging, standards-aligned content that can be utilized in the classroom, after school, or during the summer. The curriculum is focused on hands-on aquaponics learning and also includes cooking and meal preparation using fresh ingredients grown in the aquaponics system.
- 6. Service visits and Teacher Mentoring:** Weekly visits by 100 Gardens staff ensure that all mechanical parts are functioning properly, fish and plants are healthy, conduct activities with classes, and provide ongoing support to teachers. Visits are typically 3 hours, which allows for potential interaction with multiple classes each visit.
- 7. Ongoing Aquaponics System Monitoring:** 100 Gardens uses Aquaponics Ai for tracking aquaponics system performance. Each day students operating the system enter critical data into the app that allows for 100 Gardens to monitor system performance remotely. Data is used by students to make decisions regarding system operation. Data is discussed with teachers and students each weekly service visit.
- 8. Pre/Post Surveys and Evaluation:** To continuously improve our programming, we administer surveys to both teachers and students before and after the programming cycle for the school year. At the conclusion of each school year, 100 Gardens and the school will meet to discuss outcomes, and how to best improve programming going into the next school year.
- 9. Regular Harvesting and Distribution of Fresh Produce:** Students and volunteers regularly harvest fresh vegetables from the aquaponics system and engage in food safety practices, harvesting fresh vegetables, tastings, cooking demonstrations, donation of produce to shelters/food banks, and sales to local restaurants.
- 10. Volunteer Management:** 100 Gardens manages volunteers that assist in harvesting and maintaining the aquaponics labs during the school year, summer break, and during holiday



breaks and teacher workdays. Volunteerism is a great way to engage parents and the community.

- 11. End of Year Fish Fry:** Each school can raise their fish to harvest size by the end of the school year. Once the fish are ready to harvest, 100 Gardens will co-host a community fish fry with the school to celebrate the achievement by students and to engage the community in conversations around education, food, and the environment. Donations are solicited at the event to raise funds for the next school year's programming.
- 12. Aquaponics Supply Kit:** This kit includes all of the fish feed, juvenile fish, pH buffers, seeds, cleaning supplies, and water quality testing supplies for each school year.
- 13. Homegrown Tomato Festival Tickets:** Each 100 Gardens partner school will receive 20 tickets to the Homegrown Tomato Festival each year. The Festival is typically held on the last Saturday of July, and is the primary fundraiser for 100 Gardens. This event showcases our school programs and helps us raise funds.
- 14. Program Marketing and Promotions:** 100 Gardens actively submits press releases to regional news outlets to raise awareness and support for our programs. We will seek permission before submitting stories for your school's program.
- 15. On-Site Coordinator:** This crucial position is a teacher at the school. Their role is to be the onsite contact, champion the project, and facilitate the use of the aquaponics system for teachers, coordinate with community 'clients' and liaison with 100 Gardens. For their efforts beyond their standard teaching responsibilities, they are provided a \$5,000 per year stipend.
- 16. After School Club:** An after-school club can be established to offer students additional learning opportunities. This program is not included in our standard programming but can be designed with the school and added to the annual programming costs.
- 17. Summer Program:** A summer program can be established to offer students additional learning opportunities. This program is not included in our standard programming but can be designed with the school and added to the annual programming costs.

Roles of Stakeholders

School or institution:

- School provides the site, teachers, and students who will interact with and operate the aquaponics system and implement the curriculum. The site can be a classroom or other inside location within the school or it could be in a greenhouse or outside the structure in which the aquaponics system is located.
- Pays for the utility costs for the Aquaponics Lab.
- Recommends a person for the role of on-site coordinator, preferably from the existing faculty or staff.
- The school is authorized to use the 100 Gardens logo and name in marketing and promotion during their relationship with 100 Gardens.

100 Gardens:

- Provides design and installation of the Aquaponics Lab.
- Provides educational services according to the chosen partnership agreement.



- Provides connections to other industry information, developing technology, and subject matter thought leaders and innovators.
- Where applicable, assists in securing licensing or permits for fish species selected for growing.
- Participate in fundraising activities with presentations, tours of facilities, community networking, and grant writing support.

On-site coordinator:

- Their role is to be the onsite contact, champion the project, and facilitate the use of the aquaponics system for teachers, coordinate with community "clients" and liaison with 100 Gardens.
- They are supported and trained by 100 Gardens.



Please visit www.100gardens.org or contact sam@100gardens.org for additional information.

