

Boston Latin School YouthCAN Freight Farm Information

BLS YouthCAN students won the farm in the Global Green School Makeover Competition in 2013. It was part of \$75,000.00 worth of new green technologies that we won in that competition...there were over 400 schools that entered the competition nationally and BLS won. We won the farm, the green wall in the dining hall, the energy dashboard in the main lobby, and one of the water bottle filling stations.

Why did we want the Farm? - We saw the Freight Farm as a visible interactive way to promote the importance of systems thinking around sustainability at BLS related to something that everyone cares about: FOOD!! We use the farm as both a teaching tool for Boston Latin School, educating about the importance of buying local, sustainably grown food (most food travels an average of 1,500 miles to get to people's plates) as well as a way to engage the larger community about sustainability while providing a tangible community service – fresh food. Industrial Agriculture on the other hand has many downsides that make it less sustainable.

How the Farm Works

Built entirely inside a 40' x 8' x 9.5' **shipping container**, our freight farm is outfitted with all the tools needed for **high-volume, consistent harvests**. At full capacity, we can grow up to **900 heads of leafy greens/week**. With innovative climate technology and growing equipment, the perfect environment is achievable 365 days a year, regardless of geographic location. Our farm has a **system for germination and seedling growth** including a custom-designed aluminum workstation for planting and germinating seedlings and a hydroponic setup for up to 2,500 seedlings. The seedling station is also outfitted with ebb and flow irrigation and an LED lighting system specifically calibrated for early stage growth. The farm has a vertical system of hydroponic towers where plants grow to maturity. The vertical towers create a high-density growing environment with **four rows of towers providing space for over 4,500 plants**. An **overhead drip irrigation system and strip lighting supports crop growth all the way to harvest**. Climate conditions are measured and controlled by an in-farm controller to achieve optimal growing conditions, regardless of the exterior environment. **Incorporated sensors balance temperature, humidity and CO2 levels. A closed-loop irrigation system delivers a nutrient-rich water solution directly to plant roots**, ensuring strong and uniform growth. Water quality is measured and controlled through temperature, pH and EC sensors located inside the tanks. A patented **high-efficiency LED lighting system mimics sunlight and delivers the optimal wavelengths for uniform plant growth**. An automated scheduling system simulates day and night. Our farm's 4g hotspot allows us to stay connected to the operation of the farm 24/7. Through the farmhand app it's possible to monitor all the environmental components inside the farm directly from an iOS device. We are able to set the parameters for ideal growing conditions and receive notifications if there are any changes to the environment. Surveillance cameras and data logging helps us ensure that we maintain proper food safety protocols in the farm and brings transparency to the food supply chain.

FF Food: We've worked towards getting permission to serve farm food in our dining hall at lunch (not approved yet) Steps taken so far:

- a. Developed a Food Safety Protocol for how food will be handled safely in the farm
- b. Held a meeting with BPS Food and Nutrition Services staff to present the Food Safety protocol and pitch the idea of serving the food in the dining hall (they all took a tour of the farm and were very impressed)
- c. The next step is to have a meeting with staff at the City's Inspectional Services Department to get their approval
- d. We may also need to get the approval from the State Dept. of Agriculture
- e. And we plan to have a fundraiser so that we can install a sink in the farm, where people can wash their hands (required)

Website (www.blsleafygreenmachine.org) FF students designed a website and a facebook page and instagram page to help educate about the work the farm is doing---we're really using the farm as a big message about

sustainability, local food, reducing food miles, sustainable urban farming, supporting the local economy, and healthy eating.

Impact/Interest – The BLS Freight Farm really has had significant reach in the community...even well beyond BLS. I know that the Farm is in part responsible for our Federal Green Ribbon School recognition as well as for Boston Latin being named a 2017 Best of Green Schools awardee by the US Green Building Council's Center for Green Schools. There was even a giant billboard at an exhibition in Geneva Switzerland that featured the students who won the Freight Farm in the Green School Makeover Competition! The BLS FF has been reported on by the Heckinger School Report, WCVB TV, Spectrum TV, WBUR, and others.

Community Outreach - In addition to educating our own students in exciting and innovative ways and providing a really rich learning and leadership experience, we've also had lots of groups come and tour the farm--from area high school students (Brookline HS and others) to area college students (Northeastern, Harvard Public Health) to visiting long distance guests (France, Iceland, Denmark Japan, & Rochester NY), to schools thinking of getting their own farm (CM, Madison Park) and schools that just wanted a tour (Brookline HS, BLA) as well as inquiries from schools in other parts of the country (NC, CA, etc). We've also had requests for tours from local entrepreneurs who are thinking of getting a farm. The Freight Farm students even participated in a group Skype call with Native Americans in Arizona who want to put a unit at the Tsehootsooi Medical Center in Fort Defiance Arizona for use with at risk youth. BLA this morning who wants to bring a few students to see how the hydroponics work. We have provided information to lots of schools thinking about getting a farm (California, North Carolina, Ohio) and even had a large group student phone conference with a Navajo group in Arizona who want to get a Freight Farm and use it with at risk youth on the reservation.

CSA - We are also working on getting a CSA (Community Supported Agriculture) Program going where faculty, staff and parents in the BLS Community could buy a share of what we are growing in the farm. This would help make the farm more self supporting because there are lots of things we need to buy for the farm on a regular basis (seeds, seed plugs, nutrients, ph lower, cleaning supplies, gloves, paper towels, etc.)

Curriculum – We want teachers to use the farm in their classroom, but it's difficult because the farm isn't big enough for a whole class. We're still working on creating a brief unit on sustainability during which students could cycle through the farm a few at a time while others worked on content in the classroom. We came up with the study hall solution as a way of still ensuring that students run the farm. Students who work in the farm learn about hydroponics and the growing cycle, they learn about how food systems work, they test for and balance nutrient levels and ph levels in the farm, and participate in all aspects of running the farm. In so doing, they cultivate responsibility and powerful leadership skills. Students participate in at least three trainings before starting to work in the farm and are supervised by Nancy Waters and Cate Arnold.

Where does the food go? We give some of it away to student farmers, BLS faculty etc., we also donate food to the **Jamaica Plain First Church's Food Pantry (twice a month)**, and as mentioned above, hope to occasionally serve some of the food in the BLS dining hall as well as sell some of it.

Media Coverage – NPR, The Heckinger Report, Channel 5 News, and Spectrum News