



**MASSACHUSETTS
FARM TO SCHOOL**

Cleaning & Caring for Your Hydroponic Systems

with Green City Growers

December 4, 2024



Agenda

- Introductions
- Farm to School & Green City Growers
- Requirements for Healthy Plants
- Universal Maintenance
- Review Common Hydroponic Systems
- Troubleshooting Common Issues
- Hydroponics at School
- Resources
- Questions

Today's Presenters:

Julia Toropov (she/her)

Education & Programs Specialist

julia.toropov@greencitygrowers.com

Green City Growers

Mattie Devin (she/her)

Senior Farmer Educator

madeline.devin@greencitygrowers.com

Green City Growers

Mya Neary (she/her)

Horticulture Manager

mya.neary@greencitygrowers.com

Green City Growers

Abby Getman Skillicorn, MBA (she/her)

Special Projects Manager

abby@massfarmtoschool.org

Massachusetts Farm to School

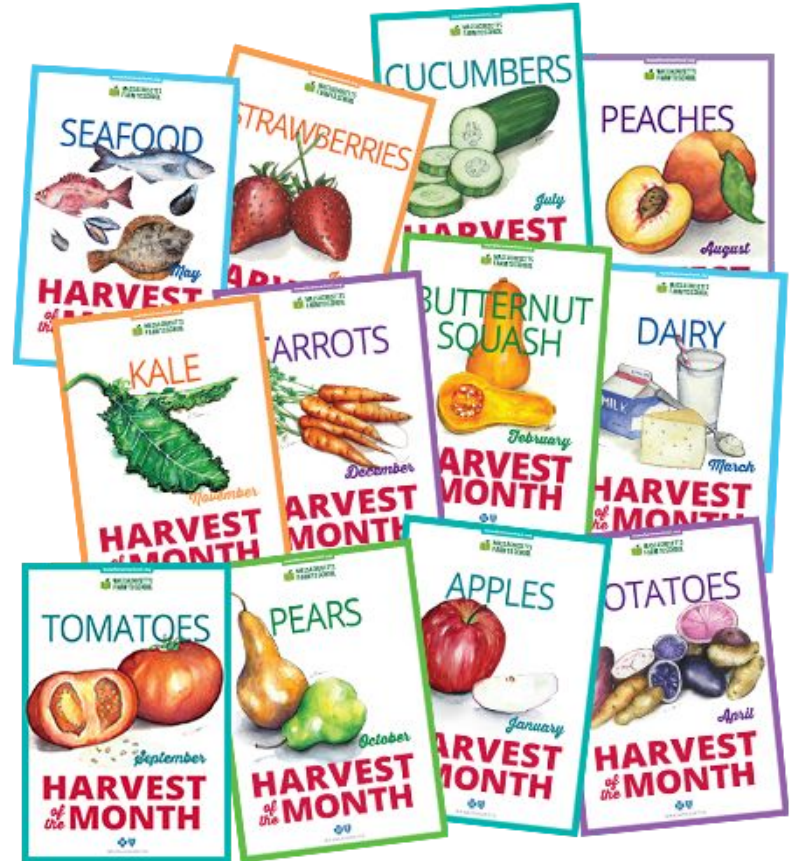
Massachusetts Farm to School Overview

Mass. Farm to School strengthens local farms and fisheries and promotes healthy communities by increasing local food purchasing and education at schools.

Get involved through our:

- Professional learning opportunities
- Networking
- Policy/Advocacy
- Communications

Massachusetts Farm to School is the contracted outreach partner of the Massachusetts Department of Elementary and Secondary Education's Office for Food and Nutrition Programs on the MA FRESH grant.





We provide inspiring shared experiences to connect and educate people to grow food sustainably.

FARMING AS A SERVICE



DESIGN



INSTALL



MAINTAIN



ENGAGE

- Established in 2008
- 200+ indoor and outdoor garden sites all over the greater Boston area.
- 60+ Schools/youth programs supported
- 15 farmer educators

The “3 Cs” of Farm to School



Classroom

Farm to School education provides real-life context for learning across all disciplines inside classroom and outside in school gardens.



Cafeteria

Farm to school programs strive to show that school nutrition and the cafeteria are integral to the school day and the education of the whole student.



Community

Farm to school strengthens the community and local economy. “Local” is defined by YOU and your school community!

Maintenance

Weekly Maintenance

- Health check of plants
- Water level
- EC
- pH
- Harvest, Transplant, Seed
- Superficial cleaning: use food safe cleaner

Monthly

- Water turnover

Every 3-6 Months

- Deep clean
- Use Sanitizer (hydrogen peroxide)



Example: Green City Growers' Hydroponics Kit

Types of Systems

Nutrient Film Technique (NFT)



Types of Systems

Ebb and Flow Systems



Types of Systems

Wicking Systems



Troubleshooting Common Hydroponics Issues

Nutrient Deficiency



Check pH, EC, and water level

Dry Plants



Underwatering: Check pump, timer, and water level

Pests



Preventative measures, school safe spray, remove plants and deep clean

Algae Bloom



Nutrient-rich water exposed to light: deep clean unit, spray with hydrogen peroxide make sure saturated substrates are not exposed to light

Integrating into a School Community

How will you engage students?

- **Hands-on maintenance and responsibility**
 - Best for small groups, older students, long-term involvement
- **As part of a lesson**
 - Can accommodate larger groups, range of ages, 4 to 5 lessons
- **Passive engagement**
 - Placement of unit and signage are impactful

THIS HYDROPONIC GROWING UNIT PRODUCES 300 LBS OF GREENS A YEAR!

WHAT IS HYDROPONICS?

- **Soilless Growth:** Hydroponics uses nutrient-rich water instead of soil.
- **Controlled Conditions:** Grow towers like this allow for precise control over light, temperature, and pH.
- **Efficient Use:** Maximizes space and resources, suitable for urban and indoor farming, using up to 90% less water than traditional methods.

THESE GREENS ARE OFFERED IN YOUR CAFETERIA SELF-SERVICE SALAD BAR

THIS IS HYPER LOCAL FOOD THAT DOESN'T NEED TO BE TRANSPORTED TO YOU
This means fresher and tastier produce!

THE FUTURE OF THE FOOD SYSTEM IS IN YOUR HANDS.

SCAN THIS QR CODE FOR SPANISH, CAPE VERDEAN CREOLE, HAITIAN CREOLE, CHINESE, AND ARABIC TRANSLATIONS



Integrating into a School Community

What will happen to the produce?

- Eaten by students as part of lessons
- Used by school culinary program
- Taken home to families
- Used in school food service



Green City Growers supports Boston Public Schools' gardens by working with students to use foods grown for their school meal program

Successful Systems with Classrooms

Hydroponics Domain Expert

- Technical knowledge
 - Set up and maintain the unit
- Relevant student engagement
 - Mentor students, design and run lessons

Faculty Support

- Coordinating school engagement
 - What classes will interact when?
 - Identifying opportunities for integration
- Teacher involvement during lessons
 - Class buy-in
 - Behavioral support



Successful Systems with the Cafeteria

Working with Food Service


- Food Service Director & Kitchen Manager “buy-in”
 - Discuss process and food safety measures
 - Frequency of harvest (what can they expect)
 - Clearly defined roles/procedures for harvest, washing and storage
 - Communications plan
- Understand capacity
 - Many school cafeterias are not “scratch kitchens” and can’t handle a lot of on-site food processing
 - Does the school have a salad bar?



Boston Public Schools | Hydroponics and Culinary Program at two BPS high school (lettuce integrated into school meals)

Resources

1. Green City Growers
[Maintenance Checklist Template](#)
2. Kids Gardening
[Selecting a Hydroponic System for Your Classroom](#)
3. Check out Manufacturer's Resources:
 - a. Ex: Farmative from Fork Farms
4. Mass. Farm to School
[Webinar Archive](#)

 SAMPLE HYDROPONIC CHECKLIST		
TOPIC	TASK	DESCRIPTION
HARVESTING	LETTUCE - MORE 8 INCHES FOR HEAD (HARVEST WHOLE HEAD) HERBS -NOT LESS 6 INCHES (TRIMMING)	HARVEST THE PLANT-PUT IN HARVESTED BAGS LABEL (DATE, PLANT, THE NAME OF UNIT)
PH	CHECK IT IS WITHIN 5.5-6.5	IF NEEDED ADD PH DOWN AND PH UP (1 OR 2 TEASPOONS) PLEASE ADD GRADUALLY. START WITH SMALL AMOUNT, MEASURE PH IN ABOUT 20-30 MIN AND MEASURE AGAIN.
EC	CHECK IT IS WITHIN 1000-1500 PLANT AND WEATHER DEPENDENT	USE THE MEASURING CUP, ADD WATER FIRST THEN 1 SCOOP OF NUTRIENT A, MIX THOROUGHLY. THEN ADD 1 SCOOP OF NUTRIENT B, MIX THOROUGHLY AGAIN AND ADD TO THE TANK. AFTER WATER HAS CIRCULATED, MEASURE TO MAKE SURE THE WATER IS AT PROPER EC. NOTE: IF YOU DRAIN ALL TANK, YOU WILL BE NEEDED ADDED 3 TBS OF EACH NUTRIENT
WATER LEVEL	CHECK WATER LEVEL WITH MEASUREMENT STICK	THERE ARE 2 SIGNS: MAXIMUM AND MINIMUM. OPEN THE LEFT TANK AND LOOK AT LEVEL, TOP OFF WATER ACCORDINGLY.
CLEANING	THE UNIT SHOULD LOOK CLEAN AND SHINY! BE SURE YOU DO NOT HAVE A CLOG IN YOUR WATER LINE.	WIPE AND BRUSH ALGAE. CHECK THE UPPER LINE AND PLANT APPEARANCE FOR ANY CLOGS.

Questions?

Get In Touch:



Julia Toropov
Education & Programs
Specialist

Pronouns: she, her, hers
julia.toropov@greencitygrowers.com



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Senior Farmer Educator

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