



MASSACHUSETTS
FARM TO SCHOOL

Hydroponics in the Classroom



MASS. 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



Harvest of the Month for Educators

- Designed specifically for the **elementary** and **secondary** classroom
- Opportunity for K-12 students to learn about local farming, healthy eating, and to celebrate local foods and farms, by highlighting a different locally grown crop each month
- 2 lessons aligned to curriculum frameworks, humanities and STEM each month
- Book suggestions
- Hands on activities to foster engagement and learning
- No cost!
- [Sign up here](https://bit.ly/HOTMEducators)

HARVEST *of the* MONTH FOR EDUCATORS

RESOURCES

Monthly Newsletters

Curriculum

PROFESSIONAL DEVELOPMENT

HARVEST OF THE MONTH IN THE CLASSROOM
KALE

HARVEST OF THE MONTH MICROGREENS
KALE

<https://bit.ly/HOTMEducators>

Today's Presenter: Miana Hoyt Dawson

Miana Hoyt Dawson is owner and operator of Pause & Pivot Farm, a small family farm in the Hilltowns of Western Massachusetts, specializing in hydroponically grown greens, herbs, and small root vegetables.

Miana's professional background spans almost 20 years, where she served in diverse roles from nonprofit fundraising to marketing leadership. In 2020, she pivoted to focus on her passion: providing high quality, local food that people like to eat. In addition to their year-round, hydroponic, indoor container farm, Pause & Pivot is home to a small herd of goats, a flock of chickens and a wood working studio.

Miana runs the farm with her husband and partner, Terry Dawson, in Williamsburg, Massachusetts with help from their 3 children, Kennedy, Milo and Harrison.



STAY IN TOUCH!

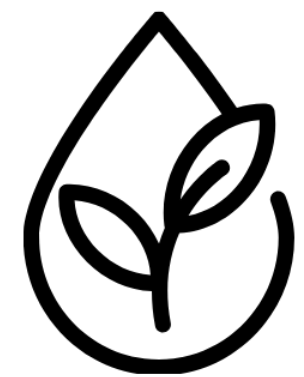


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Today's Presenter:
Miana Hoyt Dawson: Pause and Pivot
Farm pausepivotfarm@gmail.com

Hydroponics for the Classroom



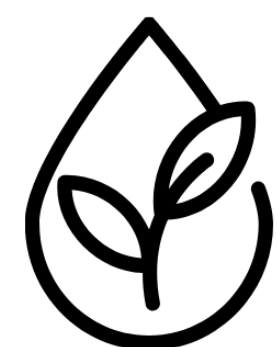
PAUSE & PIVOT
FARM



Today's Agenda

- Who we are
- How we grow (and why)
- Intro to Hydroponics
- Our Mini System
 - Components/Set up
 - Phases of growing
- Q and A





PAUSE & PIVOT
FARM

How we grow

And why

- **Contributing to a strong local food system:** fresh hyper local greens year round
- **Climate resiliency:** protected environment with consistent yields
- **Tradition and innovation:** Embracing technology to offer a traditional local service
- **Next Generation:** Engaging youth and “digital generations” with growing food.



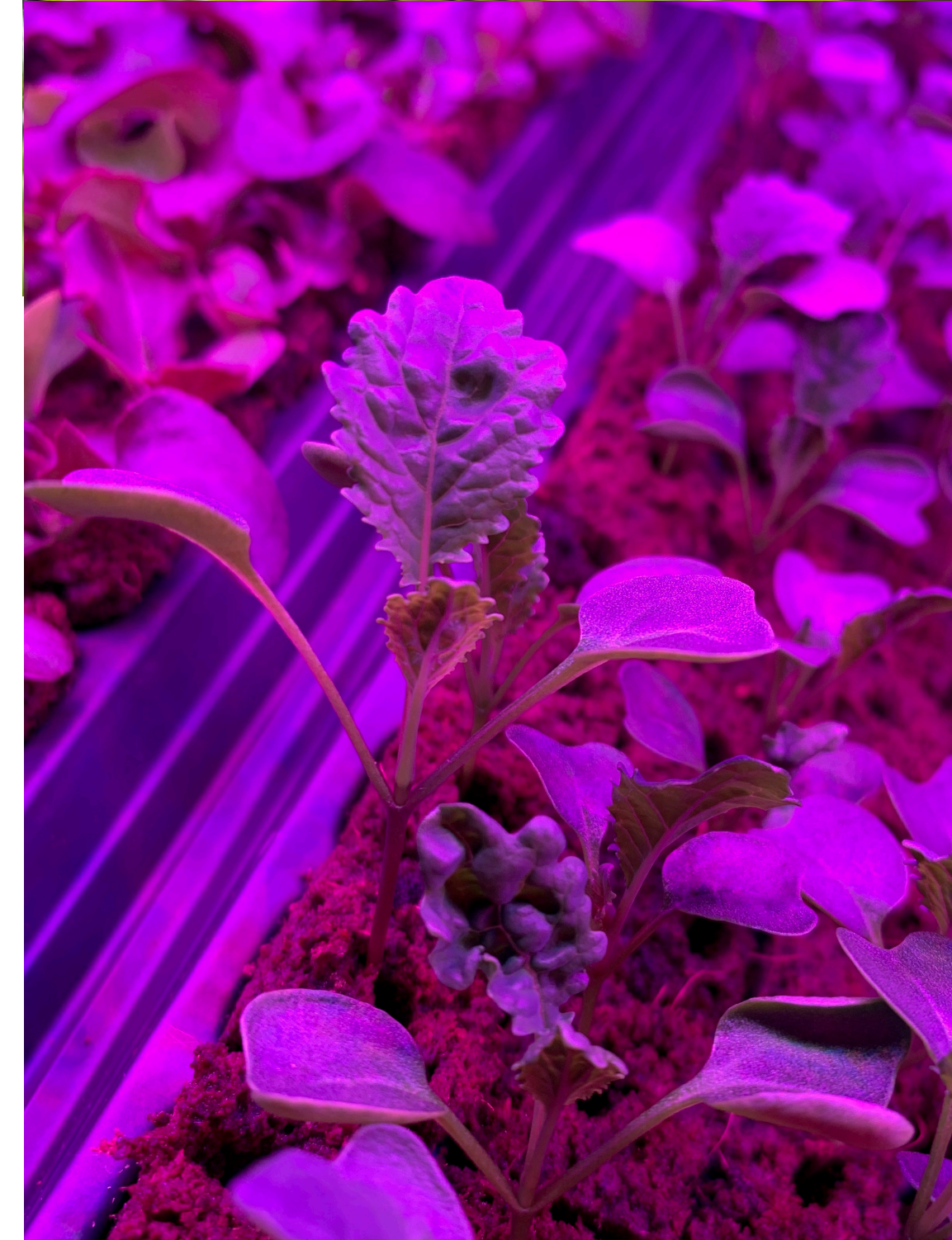
Intro to Hydroponics

Basics

- Six things are necessary for hydroponic growing: **light, air, water, nutrients, heat, and space**
- Growing can be done indoors or outdoors (Areas without drafts or cold air encourage best growth)
- Plants benefit from 12-18 hours of grow lighting/day

Advantages

- Plants can be grown year-round.
- There is greater control over conditions resulting in increased yields and faster grow time.
- No weeding is required.
- Saves water, up to 90 percent.
- No need for crop rotation.
- Plants can be spaced close together and stacked vertically.
- Materials can be reused.



Our Mini Hydroponics System

Grow up to 16 heads of lettuce/greens in about 7 weeks within 4 square feet

6' tall, 2' square shelving unit with two 2' x 2' shelves (one for nursery and one for cultivation)

Durable system with reusable materials - potential to be "always growing"

System designed with timers/automation making it ideal for short "hands off" periods (weekends)

**Total Rough Cost:
\$600 (including shelving unit)**



Mini System Overview

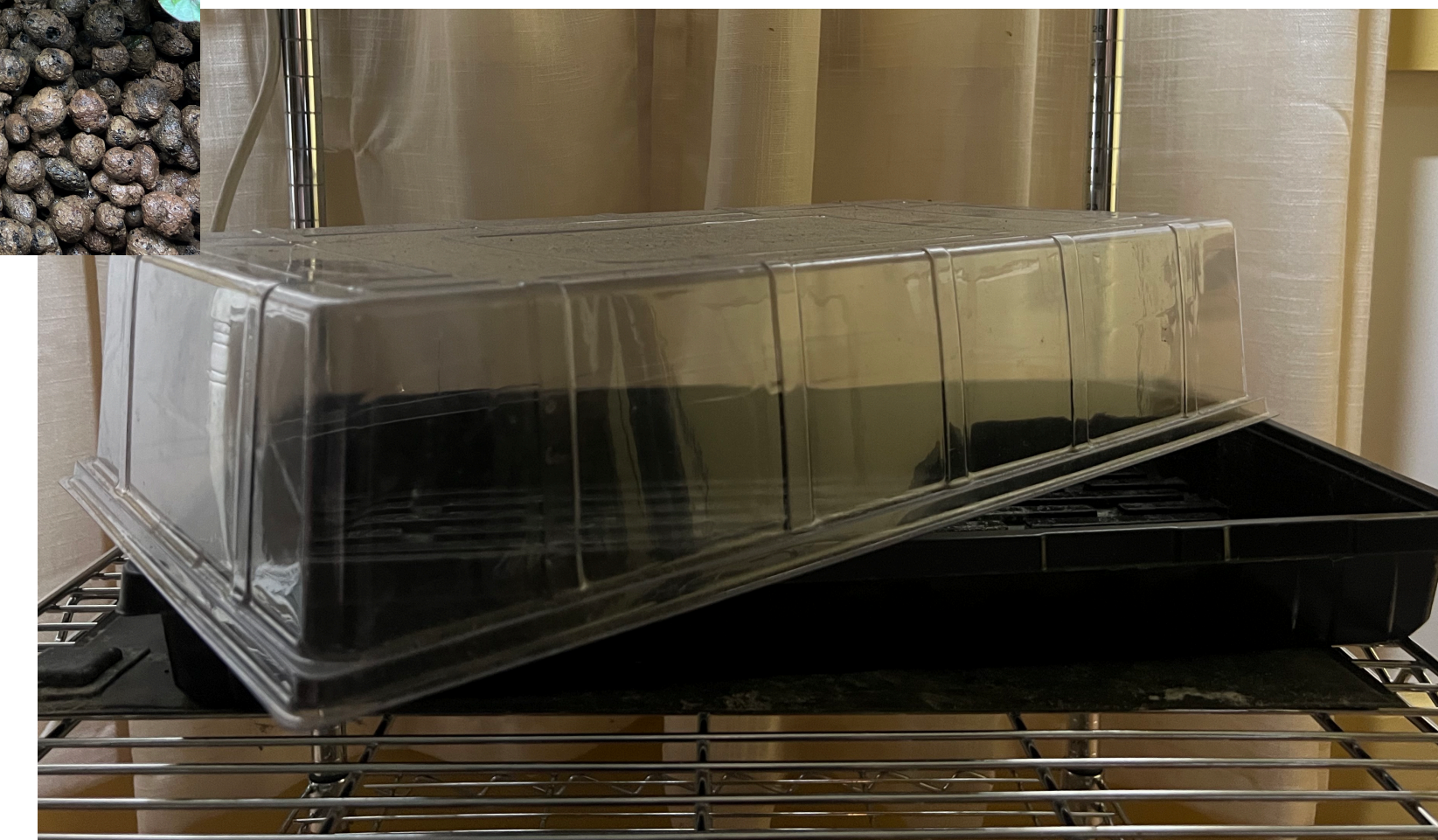
- **Nursery Shelf:** “200 Tray”, seedling tray, heat mat, germination dome, grow light
- **Cultivation shelf:** Closed loop system using a clay pebbles, grow light, and coco coir “plugs”
- **Automation Tools:** Integrated Timer (*paired with fill and drain watering system allows for consistent water/nutrient delivery and optimal lighting*)
- **Additional Supplies:** Maxigrow nutrient powder (10-5-14, Nitrogen-Phosphate-Potash mix), PH up/down, PH test strips, spray bottle



Clay Pebble
Medium



Cultivation Shelf



Nursery Shelf (heat dome
and seedling tray)

Site Evaluation and Set up

Location Requirements:

4'x4' open space with level floor

At least 7' overhead clearance

Performs best in a location that is warm and without drafts

Electricity connection
(standard outlet is adequate)

General Set up Activities:

Build shelving unit

Set up cultivation tank and tray

Connect grow lights, timer, and pump

Hang lights (using zip ties or twine to adjust height)



Phase 1: PLANT - Nursery Area

2-3 weeks until Transplant

Set up and Seeding:

Place heat mat under nursery tray, fill “200 cell” tray with as many plugs as you will be planting, Fill spray bottle with water, Select seeds (we love lettuces like coastline or red romaine, or Tokyo Bekana asian greens), Place coco coir plugs in “200 tray”, Place 1 seed in each coco coir plug, spray seeded plugs with water, put seeded tray inside nursery tray, cover with humidity dome, set grow light timer to a “daytime” cycle of 18 hours

Daily Maintenance:

Water 1x/day using a spray bottle until germination has occurred. This takes approximately 1.5 weeks. Once germination has occurred and seedlings have sprouted remove humidity dome. Fill the lower part of the nursery tray (below the “200 tray”) with enough water to saturate the coco coir plugs. Repeat daily for approximately another 1.5 weeks.

Things to note:

We plant about 20% more seeds than we hope to transplant to account for varying germination rates/success. Be sure to place the grow light about 6” above the plants so they don’t get “leggy” from reaching towards it.



Phase 2: TRANSPLANT - cultivation area

5 weeks until Harvest

Set up:

Fill lower portion of cultivation tank with 10 gallons of water, adjust PH using test kit and PH up/down, add Maxigrow nutrient powder and stir to dissolve, install clay pebbles in upper portion of cultivation tank. Gently nestle seedlings and plugs into pebbles (so the top of the coco coir is flush with pebbles)

Maintenance:

Check seedling placement (they may need to be adjusted as fill and drain occurs), Bi weekly top off water and adjust PH of solution

Decide whether you want to harvest baby leaves or full sized heads (this will determine the amount of time until the next phase)

Things to note:

Make sure the base of the plant isn't touching the nutrient solution to avoid root rot.



Phase 3: Harvest

Set up:

Using kitchen shears, carefully cut the base of the plant to remove the whole head as one unit, place in a clean bin or container (we use rubbermaid storage containers with lids), repeat until all plants are harvested

Decide how to share/prepare the greens for taste testing. This is a fun opportunity to incorporate how to make a simple vinaigrette for dipping - we love maple-balsamic because it's a little sweet so kids may love it.

Things to note:

This is the stage where you restart the planting cycle, or clean the system and store it for future use. Refrigerate in a closed container if you are not taste testing/using right away.





Thank you!

Reach out to me:
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Find us online:
www.pausepivotfarm.com