



**MASSACHUSETTS
FARM TO SCHOOL**

Worms: Vermicomposting in the Classroom

March 13, 2024



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



Presenter Bio

Jeff Stanford grew up on Cape Cod and began teaching in 1999. A lifelong gardener, much of Jeff's love of horticulture comes from his childhood working with his great uncles on their farms in Patten, Maine.

Jeff runs the Greenhouse Lab at the South Shore Educational Collaborative, teaching pre-vocational horticulture to students with moderate to severe special needs. The Greenhouse Lab consists of over two dozen campus gardens and produces fresh produce for the school community.

He lives in Sharon, MA. Jeff spends his free time tending his mini-homestead, slowly renovating his historic home, preserving home-grown food, and taking care of his youngest son, Jonny. One of fewer than 300 people in the world with his diagnosis, Jonny needs round-the-clock care, and loves spending time in the community with his family and friends.



My Program: The Greenhouse Lab at SSEC

The Greenhouse Lab at SSEC is a vocational and pre-vocational horticulture program for students with complex disabilities.

The GHL team operates a greenhouse, 25 raised beds, and a growing number of cold frames to produce year-round farm-to-table food for use in our cafeteria.

The GHL team embraces the three pillars of sustainable agriculture: economic prosperity, environmental responsibility, and social justice.



The Greenhouse Lab Mission

The GHL team is based in Careers High School, a program for students with multiple social and emotional special needs and seeks to provide them pro-social learning opportunities.

My students have received lots of services for many years, which can be erosive to self-image and self-esteem. The GHL team flips that script.

GHL team works as mentors and teaching assistants for students with multiple and complex physical disabilities. The GHL team helps disabled students participate in all manner of gardening tasks.



Gathering real-time data in the classroom: Slido check ins

Before we begin our Vermicomposting workshop, please open a browser tab on your cell phone.

Type in the address: slido.com

Allow cookies.

Then type in Join Code: 2301851

Follow the prompts to take part in the poll. We will use this app throughout the workshop.



Scan this QR code for easiest access to the slido polls.

Slido Poll #1: Rate your knowledge of gardening and composting on a scale of 1-5, where 1 is just starting and 5 is expert.



VERMICOMPOSTING IN THE CLASSROOM: OBJECTIVES



By the end of this workshop, you should have a better understanding of:

- The food-waste problem at schools
- How to incorporate a worm farm in your class
- How to build one from easy-to-source materials
- How to maintain your worm farm
- How to harvest worm tea
- How to harvest worm compost
- What common issues you may need to address to keep your worms healthy

The Food Waste Problem is a Bunch of Garbage.



Image courtesy of Handex

About one-third of all food served in school cafeterias was thrown away.

This amounts to nearly 530,000 tons of food waste per year, or 39 pounds per student.

Because of free breakfast and lunch programs at schools, this waste costs \$1.7 billion per year.

These programs are necessary because more than 13 million students experience food insecurity, but we must handle the food waste more efficiently.

References:

[The Nevada Independent](#)
[NPR](#)

One Food Waste Solution is Vermicomposting.



Vermicomposting uses red wigglers to eat food waste and turn it into fertilizer.

Much of the food waste a school kitchen produces can be turned into compost.

This vermicompost can be used in school gardens to improve soil conditions and increase crop yields.

Every pound of food waste processed through a worm farm is rerouted from the landfill.

Valuable nutrients contained in food waste aren't lost to landfills or incinerators, but instead used to grow the next generation of crops.

Source: [National Institute of Health](#)

Building a Worm Farm inexpensively



Found/Repurposed Materials

- Plastic tub (with lid is a bonus)
- Cordless drill
- Shredded paper
- A few handfuls of garden soil
- Smaller plastic tub for draining
- 500 or so red wigglers

(You can get the worms for free from horse farms. Red wigglers live in the bedding and manure piles and horse farms often give their manure to gardeners for free.)

Total cost: \$0 (plus your time)

Building a Worm Farm Inexpensively, part 2 (every penny counts)



- Drill $\frac{1}{8}$ " air holes around the top of the worm farm, and also the lid, if you have one.
- Drill a few holes on one edge at the bottom of the worm farm so liquid can drain.
- Fill the tub with moist shredded paper (white, non-glossy), and add a few handfuls of garden soil.
- Mix well and moisten if necessary. It should be damp, but not wet.
- Add your worms - 1,000 or so (about a pound)
- Let the worms acclimate to their new environment for a day or so before you feed them.

Buying a worm farm kit (A great use of grant money, if you have it)

[Uncle Jim's Worm Farm](#)

Tumbleweed's Worm Cafe includes:

- Brick for Bedding
- Worm Blanket (round)
- Rake
- 1000 Red Composting Worms
- Composter and Worm Farm Conditioner
- Children's Vermicomposting book and Children's Gardening Tool Set

Total Price is \$249.95 with free shipping.

Added benefit: You don't need to walk around in old horse manure.

Potential downside: You don't get to walk around in old horse manure.



Slido #2: We will have a Q & A after this workshop.
Please feel free to type in any questions you have so far
so I can address them toward the end of the workshop.



Sourcing your worms: Walking around in horse manure.



- Red wigglers are easy to buy on-line and can be purchased year-round.
- The best time to buy is the Spring and Fall because of mild temperatures.
- I harvest wild red wigglers at Brigg's Stable in Hingham, MA.
- The best time to pick them is at night, when they are most active.
- Day harvest strategies are successful, too - but you need to dig more.
- On a good day, I can harvest about 500 worms in an hour (results may vary).

Care and feeding: The dos and don'ts.



- Red wigglers can eat up to $\frac{1}{2}$ of their body weight per day.
- 1,000 adult red wigglers weigh about a pound.
- So your worm farm can process about $3 \frac{1}{2}$ pounds of food per week.
- Keep your worms on a vegan diet so you don't attract flies and mold.
- Avoid feeding onions, garlic, citrus, and pineapple to your worms. This hurts them.
- Chop, grind, crush, and pulverize the food for faster processing.
- Worms don't like being disturbed, so feed them once a week or so.

Harvesting and using worm tea.

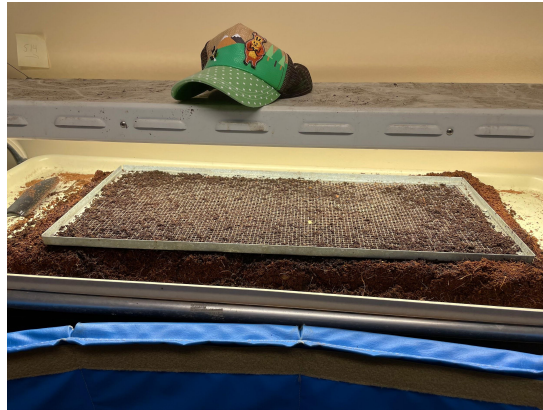


- Worm tea will continually collect in the tray under your worm farm.
- To speed up this process, you can pour a liter or so of water into your farm and let it drain out.
- The liquid will be dark brown in color, like coca cola.
- Dilute the worm tea 10:1, until it is the color of iced tea.
- Worm tea will introduce millions of beneficial bacteria into your soil and supercharge plant growth.
- This is a live culture, so use the tea the same day you pour it for best results.

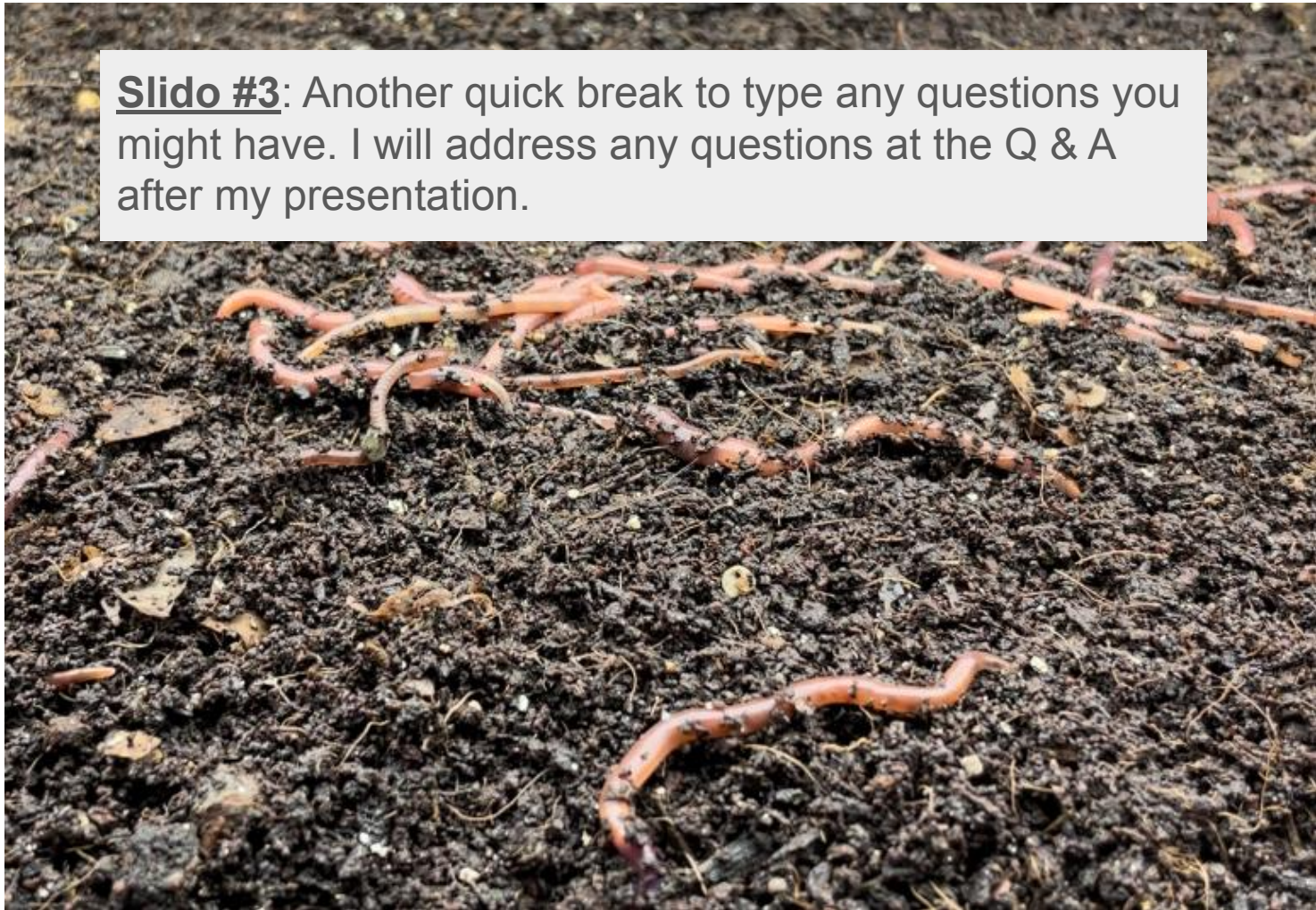
Harvesting worm compost - Takes lots of time, little effort.



- Prepare new bedding, screen, and light setup.
- Fill screen with thin layer of worm compost.
- Wait 15 minutes for worms to migrate.
- Scrape off worm-free worm compost.
- Fill screen again, repeating until all compost is harvested.
- Use worm-filled new bedding to reset your farm.



Slido #3: Another quick break to type any questions you might have. I will address any questions at the Q & A after my presentation.



Some common problems and their solutions...



- Escaping worms
 - Too wet
 - Citrus, Allums, Pineapple, Hot Peppers
 - Farm is mostly worm poop - no bedding left
 - **Solution: Fix drainage, feeding, or reset farm.**
- Swampy Odor
 - Too much food
 - Not enough oxygen
 - Too wet
 - **Solution: Fix drainage, aeration, and add brown layer**
- Swarming gnats
 - Exposed food
 - **Solution: Bury food at least 2 inches inside farm.**
- Mites
 - Too much wet food
 - Too wet
 - **Solution: Fix drainage, let farm dry out some, stop feeding for a week or so until situation resolves.**

Questions and answers...



We're almost there!

I'll take the questions from Slido plus any other questions you might have thought of.

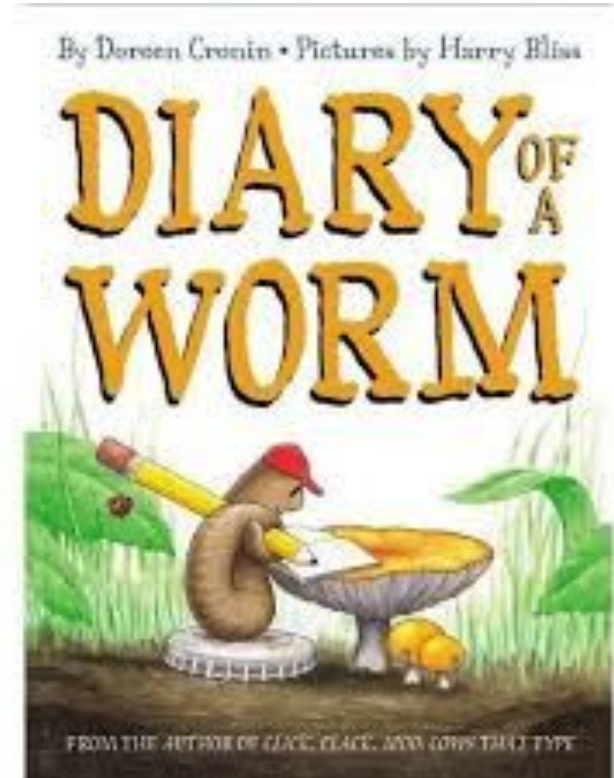
Want a book or to enter a raffle?

Book request from Mass Ag in the Classroom:

https://docs.google.com/forms/d/e/1FAIpQLScIH33T3vdljt8BvjXz7G_twN3tUziDLZ3Mp16KnS7lorlFSQ/viewform

Enter drawing for basic worm farm kit :

https://docs.google.com/forms/d/e/1FAIpQLScYkZbo3QKP_QjnUQKelk_fkEC SJ9pxRipllEgOLVuq-pkcTQ/viewform



ADDITIONAL RESOURCES & LEARNING OPPORTUNITIES

- **Mass. Farm to School** - www.massfarmtoschool.org - Subscribe to our newsletter and stay up to date on upcoming webinars and other professional learning opportunities
- **Massachusetts Agriculture in the Classroom** - <https://www.aginclassroom.org/> - Connecting educators and agriculture through lesson ideas, mini-grants, and professional development workshops
- **Uncle Jim's Worm Farm** - www.unclejimswormfarm.com - Reputable source of red wigglers, vermicomposting equipment, and plenty of articles and advice



STAY IN TOUCH!



*“There are no gardening mistakes,
only experiments.”*

Janet Kilburn Phillips

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