

HOMESTEAD VERMICOMPOSTING

**CP Knerr – First Fruit Farm
Scottsville, NY**

ABOUT ME

CP Knerr - Scottsville, NY - cpknerr@firstfruitfarmny.com

We live on a 74 acre farm since 2003

2003 - 2008

Vegetable CSA / Gardening

2008 - Present

Family / Permaculture / Grazing / Silvopasture

Regenerative Soil - Regenerative Soil Amendments
(Biochar / Worms)

First Fruit Farm & Nursery



PLANT NURSERY - FOCUSED ON EDIBLES & LANDSCAPE PLANTS



REGENERATIVE SOIL AMENDMENTS-BIOCHAR & WORMS/CASTINGS



2 PHASES FOR THIS PRESENTATION

Phase 1: Getting Started

- Basics of all things worm composting to get you started

Phase 2: Homestead Scale

- Where I'm at, (possible) vision for you
- Practical approach at “homesteading” scale with goal of vermicompost + vermiculture specific for red wigglers
- Focus on WNY – Winter

Feel free to ask questions whenever!

PHASE 1: GETTING
STARTED

PHASE 1: GETTING STARTED

I was in this phase for the first 2 years I've done this.
I'd like to show you where I started, not where I'm at.

Why did I get started?

- Experimenting with stuff I'd learned in Matt Power's Regenerative Soil course.
- Grow microbiology for regenerating the soil.

VERMICOMPOSTING?

Composting + Worms

Just worms = Vermiculture

But not just any worms -

Red Wigglers (*Eisenia fetida*) *fetida* = stinking

European Nightcrawlers
(*Eisenia hortensis*) *horten*
= garden



WHY VERMICOMPOSTING?

Smaller food additions OK

Difficult in hot composting piles

More attentive to composting process

Consistent moisture

Multiple Products

Worm Castings

Worm Tea



WAYS TO HELP YOUR WORMS THRIVE

1. **Temperature:** (45-85)
2. **Breathing:** Moisture + Oxygen + “fluff” in bedding
3. **Food:** Thriving Microbiome
4. **Room:** For Growth
5. **Resiliency:** Provide diverse environment
6. **Water:** Non-chlorinated – let city water sit 24 hours in open container



WAYS TO KILL YOUR WORMS (OR PREVENT THEM FROM THRIVING)

1. **Temperature:** < 32 or > 95
 - a. <32: Freezing outside
 - b. >95: Hot composting in the bin
2. **Breathing:** No Fresh Air, Insufficient moisture
3. **Food:**
 - a. Excessive protein vs carbon - Think compost ratio! (C:N 25:1)
 - b. Food not accessible - Waxy coatings, not chopped. Expose cells
4. **Inattention:** Integrate them into your workflow. Feed/check regularly like livestock.
5. **Homogenous environment:** Give yourself grace by experimenting in a small part of the bin or with new foods on a small scale!
6. **Water:** Let chlorinated water sit exposed to air for 24 hrs

STARTING OUT: WHERE THEY LIVE

Bins: 17 or 24 gallon plastic

- Get (ridiculously) heavy.
- Hard to harvest
- You will outgrow - quick.

Nested Bin Setup:

- Drill holes in floor of inner bin
- Outer bin serves to catch water
- Ventilate the lid



HOW MANY WORMS?

1000 Red Wigglers = 1 lb

1000 - 2000 worms/square foot

½ - 1 lb food daily/sq foot

1 LB Red Wigglers ->



BEDDING (CARBON)

Home “Waste”:

- Shredded (Non-Waxed) Cardboard
- Shredded (Non-Glossy) Paper

Yard “Waste”:

- Shredded Leaves
- Wood Chips + Leaves

NO:

- Plastic
- “Excessive” grass clippings



WORM FOOD

Worms Eat Microbes

- Carbs: straight in (Fruits, bread, pasta)
- Other Things: Pre-Compost (Bokashi)

Nutrients

- Azomite, Ground Egg Shells

“Grit”

- Biochar, Fine Sand, Rock Dust

For Worm Multiplication – Chicken feed

Add regularly over time and adjust moisture



HARVESTING CASTINGS

Get Worms Out of The Way

- Light - Drives them away
- Food - Causes them to migrate

Dry Castings on Extra Lid

Sift - Target Mesh Baskets
“borrowed” from my wife ->



USING CASTINGS

House/Potted Plants

- Top Dress ->
- Mix in potting mix

Plant/Seed Inoculant

- Add a handful when planting transplants

Worm Tea

- Cold Brew coffee bag in (non-chlorinated) water, shake around, let sit overnight



PHASE 2:
HOMESTEADING
SCALE

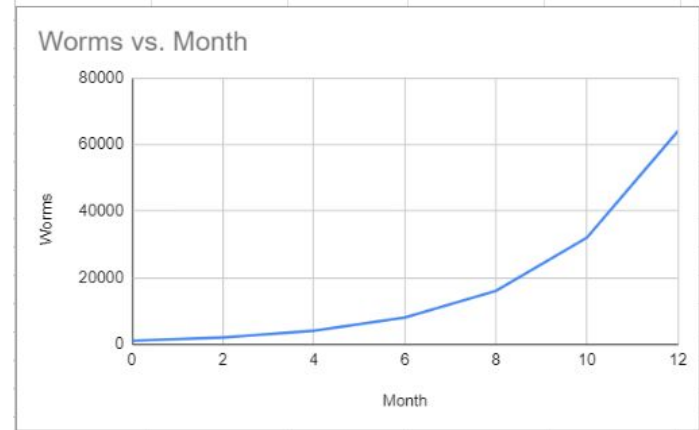
WHY EXPAND?

I've been moving towards this for the last 2 years

Why?

- More Worms - Bagster bins
- More Vermicast - Continuous Flow Through
- More Worm Tea - Bubbler Extractor

Month	Worms	Square Feet	Retail
0	1000	1	\$40.00
2	2000	2	\$80.00
4	4000	4	\$160.00
6	8000	8	\$320.00
8	16000	16	\$640.00
10	32000	32	\$1,280.00
12	64000	64	\$2,560.00



BAGSTER BINS

Idea from “Meme’s Worms” Youtube

Maximize Worm Production

4’x8’ Bagster with PVC frame
(\$50 total)

Misted every day for 30 minutes
~2.5 gallons total daily

Started with ~5 lbs worms,
filled up over summer.

Winter Worm Home



CONTINUOUS FLOW THROUGH (CFT)

Easy Casting
Harvesting!

Leaky Stock
Tank + $\frac{3}{4}$ " EMT
Conduit - ~\$40

12-18" bedding:
worms on top,
castings on
bottom



BUBBLER WORM TEA BREWER

Hardware:

- 32 gallon Rubbermaid Trash Can
- Some PVC pipes
- (Serious) Aquarium Pump
- Cold Brew Coffee Bag

Bubbles Air to extract microbes over a 24 hour period

Lots of Worm Tea.

Note: WormPower in Avon is exclusively selling worm tea now - this is how the pros apply worm castings

JOHNSON - SU (VERMI)COMPOSTING

Passively Aerated Static Pile
VermiComposting :)

(Whaaaat?):

- Passive Aeration - Oxygen continuously introduced by pile structure
- Static Pile - No Flipping
- Vermicomposting - Uses worms

12 Months to product

Need to build all at once.



JOHNSON - SU (CONTINUED)

Gather Materials

- Grass
- Wood Chips/Leaves
- Manure
- Indigenous Microorganisms if desired for your application (e.g. for apple trees, gather soil from around apple tree roots)

Round up child to stomp & mix ingredients



JOHNSON - SU (CONTINUED)

Mix, Soak, Drain, and Pack around pipes in the bin - Nothing > 1' away from air



JOHNSON - SU (CONTINUED)

After a few days - Pull pipes!



JOHNSON - SU (CONTINUED) + BENEFITS

After pile heats and returns to “worm temp”, add 1-2 lbs red wigglers and water daily from top, wait 1 year or more, the longer, the better.

Massively diverse microbiology:

- Phosphorus Solubilizers, Nitrogen Fixers, Metal oxidizers, pesticide degraders, ... (i.e. goodbye synthetic fertilizers)
- Microbes begin to “Quorum Sense” and work together.
- **Degrade glyphosate + microplastics.**

Boost Carbon Cycling:

- From experiments at New Mexico state, applying this at 2 - 5 lbs per acre, on 40% of the arable land, would **capture all CO₂ from industrial revolution to now within 1-2 years.**

Restore Native Plants:

- After barley harvest in New Mexico, grasses returned that had not grown in the area since the Spaniards were exploring the area.

WNY WINTER WORM CARE

I've successfully overwintered worms in an unheated, open barn:

- Bagster Bin with Ground/Concrete Floor Contact
- 2 wheelbarrows of compost windrowed down the middle + worms - 1' bagster floor on all sides. Water down with EM or Compost Tea to get microbiology really going.
- Surround with leaves
- Cover everything with ½" Hardware Cloth to keep skunks out
- Water occasionally throughout the winter
- Temps steady around 50F with air temperature ~10 degrees

FEEDSTOCKS - LAWN GRASS

Experimenting with
ensiled lawn grass
clippings

- Inoculated with Terraganix EM-1
- Worms seem to do OK but don't love it.
- Pigs love it.



FEEDSTOCKS - EFFLUENT

Biodigester effluent - chock full of microbes & nutrients!

Food Waste/Manure ->

Methane/H₂ production + Effluent
(Microbes & Nutrients ->

Energy + Worm Food



RESOURCES

WHERE TO GET WORMS

Local:

- Me (\$40/lb) *but 2 for 1 if you mention this talk :)
- Northeast Worms in Rochester (\$41/lb)

Mid-Atlantic:

- Uncle Jim's Worm Farm (\$65-\$40 / lb)

Many Southern Sources:

- Meme's Worms - Hurricane recovery

LOCAL RESOURCES

Me :)

- <https://firstfruitfarmny.com>

Wormpower in Avon – Worm Tea

- <https://www.wormpower.net/>

Northeast Worms – Youtube and shop in Rochester

- <https://www.northeastworms.com/>

BOOKS + YOUTUBE

“Worms Eat My Garbage” by Mary Appelhof

“The Worm Farmer’s Handbook” by Rhonda Sherman

“Regenerative Soil: The Science and Solutions” by Matt Powers

Youtube:

- Meme’s Worms
- Green Gregs
- The Garden and Worm Lady

ACKNOWLEDGEMENTS

Thanks to my wife for allowing me to:

- Keep and multiply 10 lbs of worms in our basement
- Bokashi compost chicken meat and bones in our basement
- “Borrow” various office and kitchen supplies (baskets, bags, spoons)
- Encouraging my interests and dreams (and to move them to the barn) :)

Kids:

- Thanks for always asking “What are you doing, Dad?”

MAILING LIST & FACEBOOK

Join our Farm Mailing List!

Check out our Facebook Page!

Bookmark our Website!

<https://firstfruitfarmny.com>



SUPPORT GLOBAL
WORMING!