Vermiculture in Aquaponics: Surefire Methods for Producing Worms as Fish Feed…

without even touching a single worm!

By James Fry

GrowEverywhere.com/grow-worms

Mission:
Empower People to Grow Food.

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Goal:
Help YOU become a more sustainable Aquapon!

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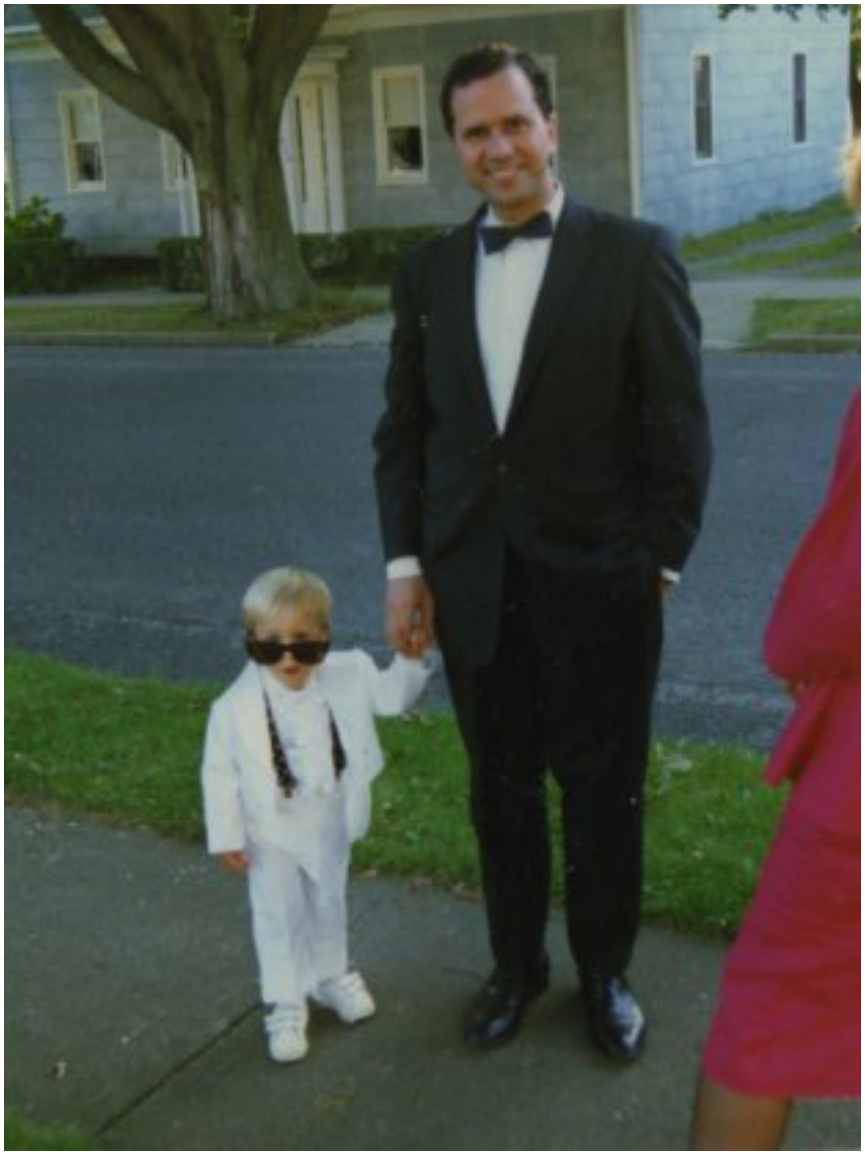
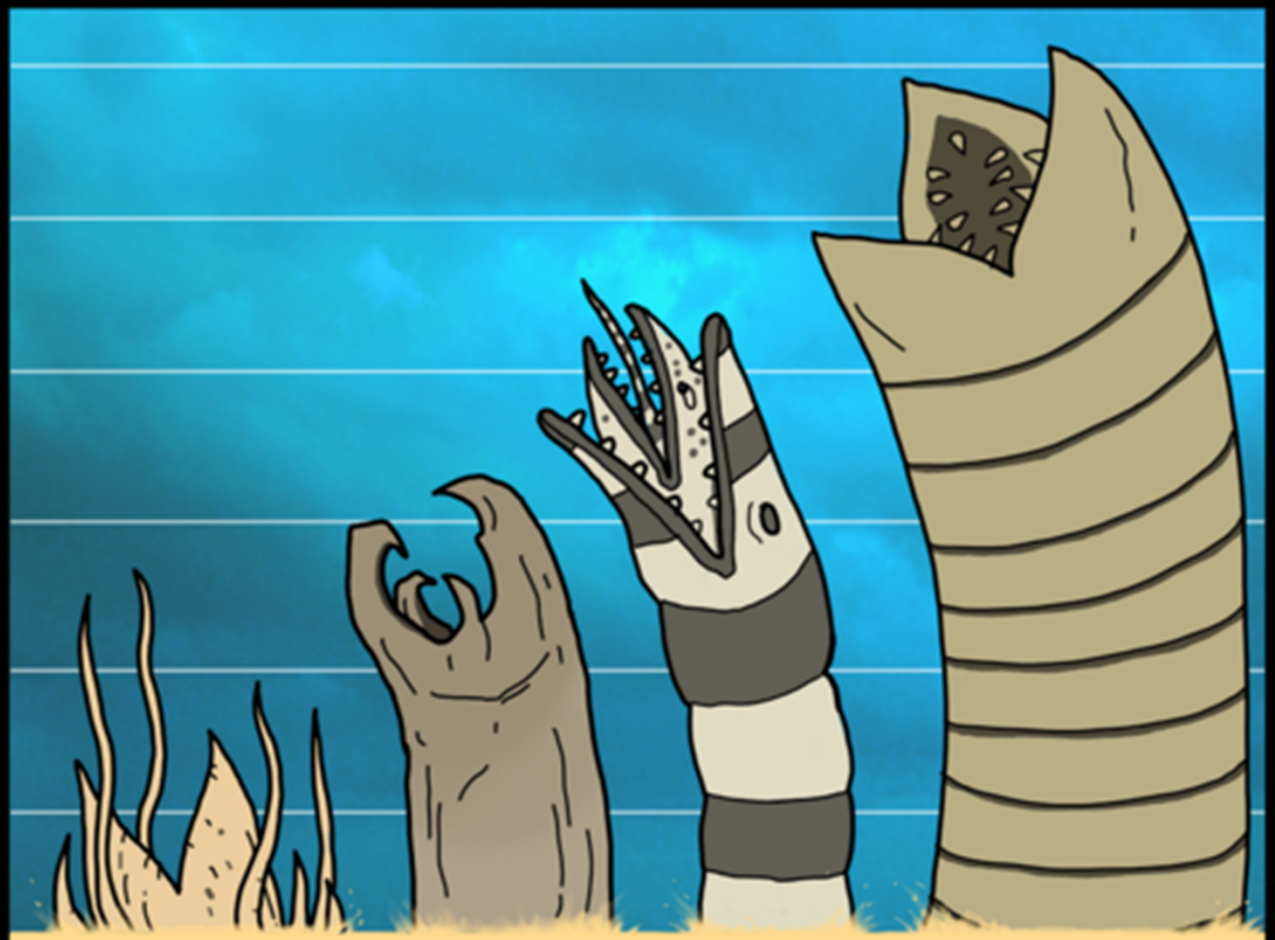
A long time ago…



Sandworms were real…

SANDWORM SIZE CHART



#13 In A Series Of Pop-Cultural Charts

DANMETH.COM

The plot thickens…

Gifts from the Worm Gods!

James:

-Permaculturist

-AP Instructor - Earthship Biotecture

-LOTS of Experiments with Worms ☺

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Let’s Grow BIG Worms

Game Plan:

1. BIGGEST Challenge in AP
2. Worm Facts
3. Bust Worm MYTHS
4. HANDS on DEMO and CONTEST!
5. OPTIMAL Vermiculture
6. OPTIMAL Harvesting

   -"**HWE"** and "**US_IDATW"** Methods

   --1. Small **slow** batch

   --2. Large *fast* batch

What we DON'T WANT…

DEPENDENT on pelletized feed

Global Problems

Over fishing

Tuna

22kg : 1kg

Salmon

4kg : 1kg

Global Problems

Food waste

36 Million TONS of Food: **LANDFILLED**

20% of Methane in US:

Methane:

21x **worse** than CO2

☺

What we DO WANT!

-Local (home grown)

-High protein

-Abundant

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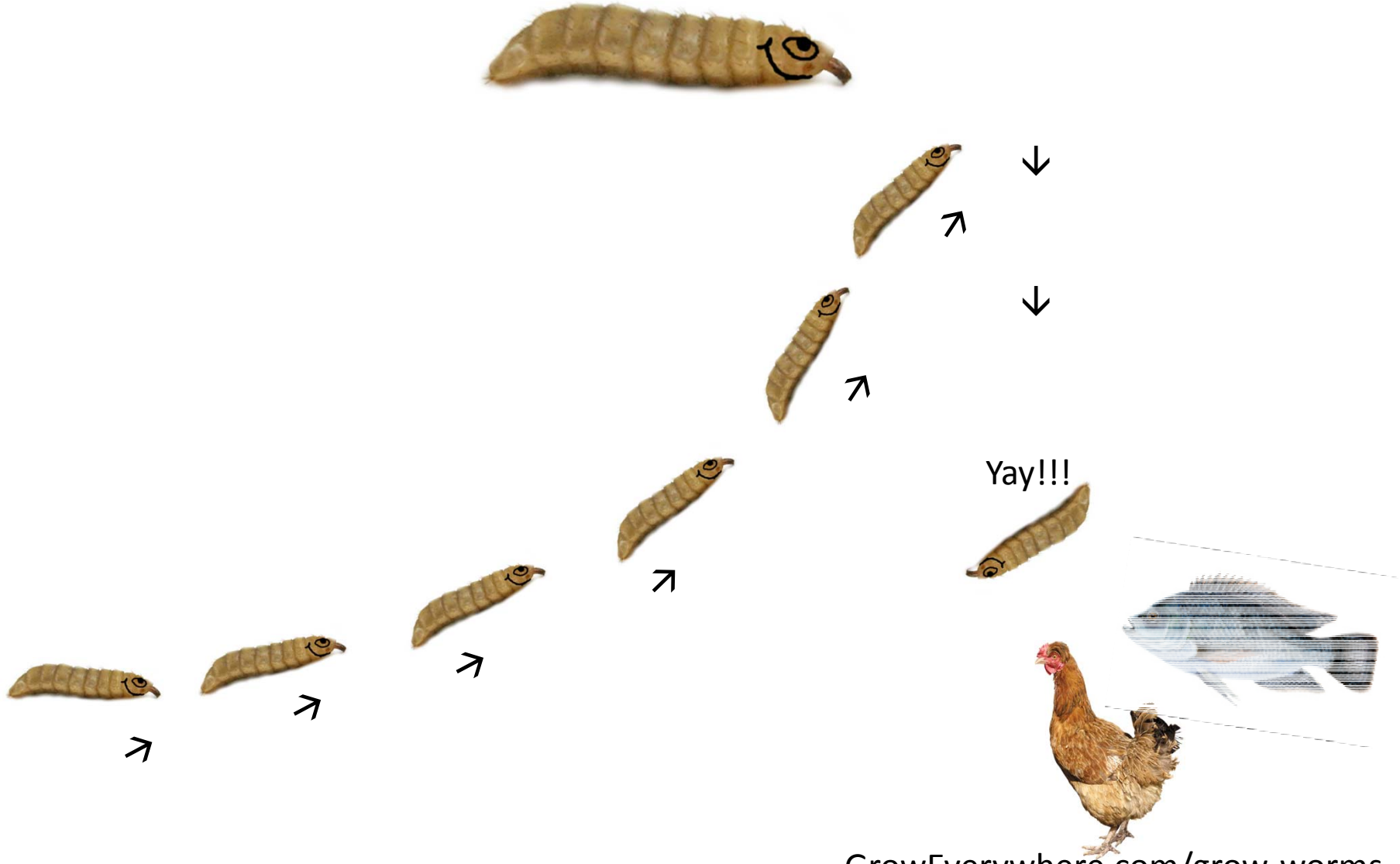
BSF Incredibleness



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BSF Limitations

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Worms are Worth it!

High Protein

Easy to Breed

Any Climate

Convert Wastes

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Wandering Worms…

???

???

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Worm Facts

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Reproduce *Rapidly*

8 worms

+

6 Months

=

1500 worms

1,000 worms

↓

180,000 worms

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Worm Cocoons

- 11 Weeks
- 4 – 6 in each
- 2 months to breed

* RedWormComposting.com

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High in Protein

82% Protein *

**

Composition %	Compost worms	Cow milk	Pork	Beef	Poultry
Water	8.0	9.0	7.9	8.0	7.9
Dry substance	92.0	91.0	92.1	92.0	92.1
Fat	10.1	30.0	50.3	50.8	18.3
Protein	69.1	26.1	30.0	28.8	60.0
Other components	12.8	34.9	11.8	12.4	13.8
Products in dry form (in 100 g)					

* ADEQ Arkansas

** Latvian Association of Vermicultivation

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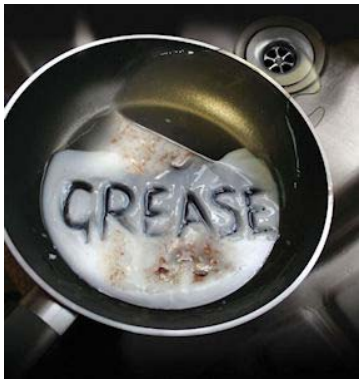
Myths

- Citrus

- Onions

- Grease



DON'T FEED THESE…

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Worms : A Powerful Degreasing Agent

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Supersize it.

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OPTIMAL Vermiculture

- 59 - 77°F Temperature (15 - 25°C)
- 75% Humidity
- pH 6.7
- Aerobic
- Start small… then expand

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Start small…

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Expand.

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Start a Worm Bin!

- Food Scraps
- Shredded paper
- Egg shells
- Soil
- AP water

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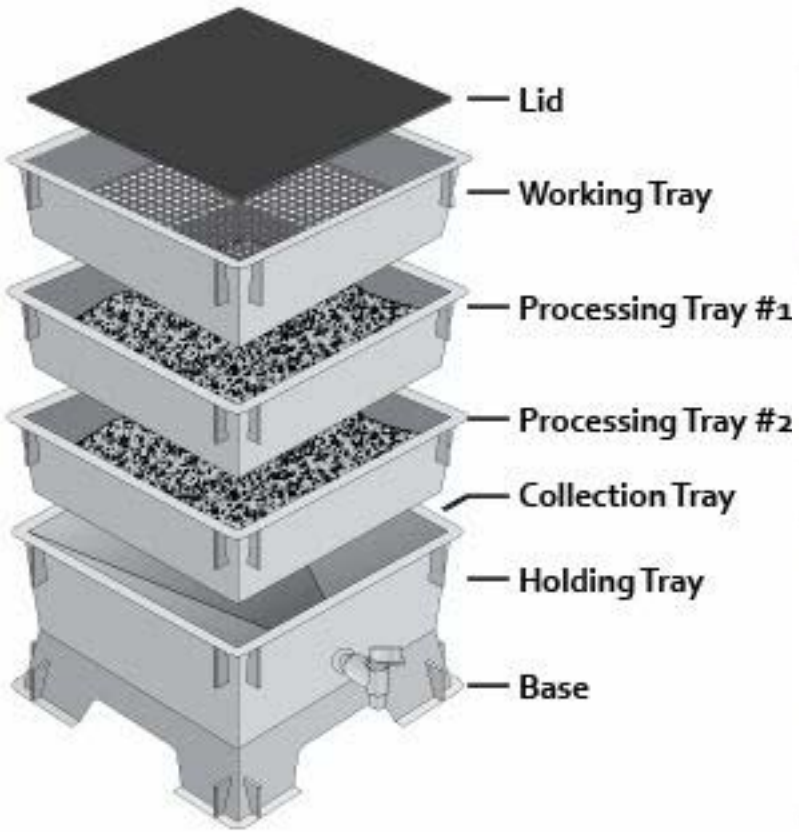
Layering Material



Ratio

2 : 1

Dry : Wet

Aim for
“Perfectly Moist”
Mixture

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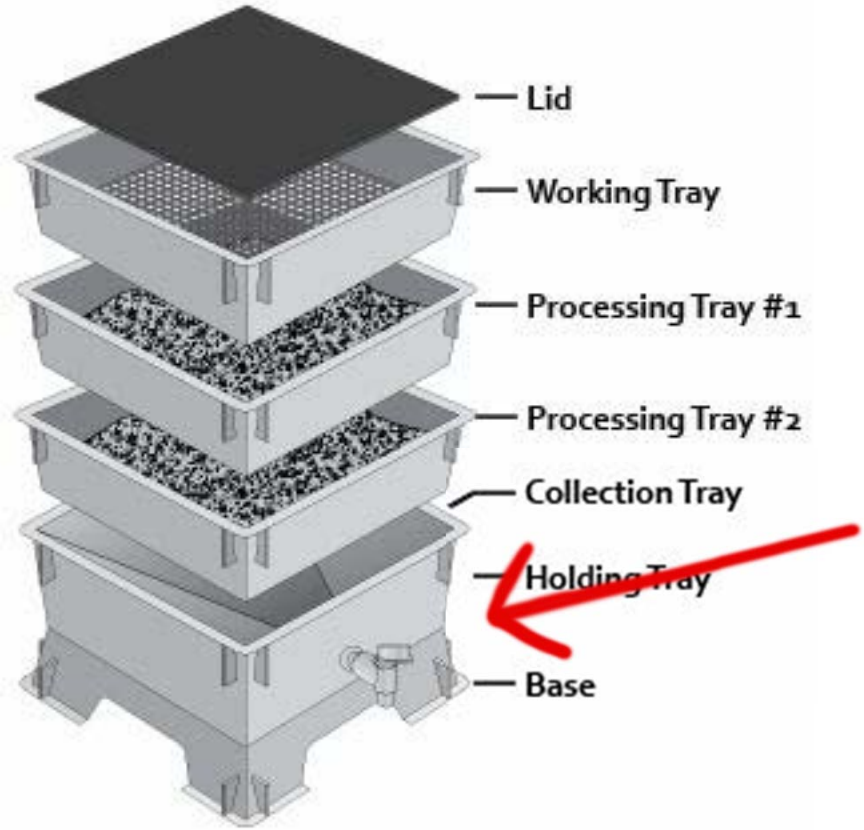
Draining liquid



Grow BIG Worms

Just Add… *Bread!*

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Don't Add…

- Glossy Paper
- Hard Alcohol

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Finished Product

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Composting Competition!

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Harvesting attempts

- “Grunting”
- Light tubes
- Bait boxes
- Cherry picking

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Harvesting… the easy way!

HWE Method “Harvesting Worms Easily”

US_IDATW Method “ Uh Sorry…
I don’t actually
touch worms :-/ “

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Worms LOVE…

- Dark
- Cool
- Moist

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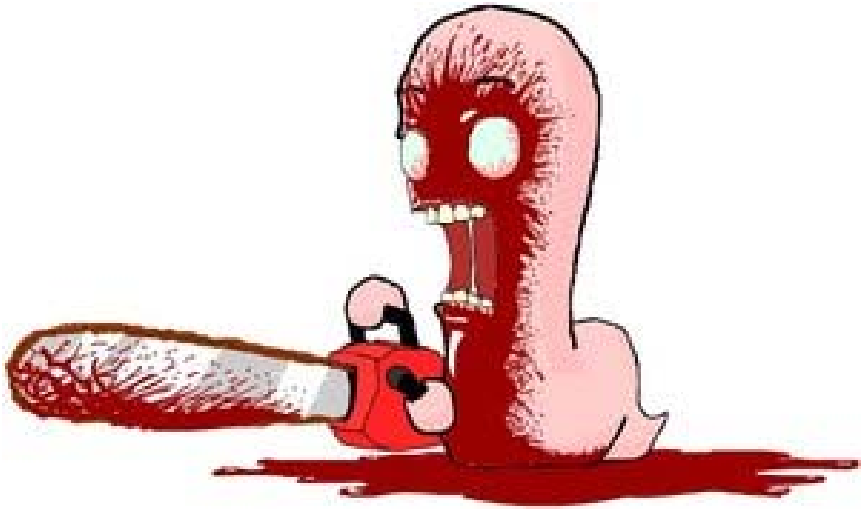
Worms HATE

- Light
- Hot
- Dry
- James



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Small **Slow** Batch

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Large *Fast* Batch

1

2

3

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Survey

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Thank you!

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Questions?

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