



# Worm Bin Composting

## AKA Vermicomposting

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# Where is Away?



**140 (40 foot) containers a week**

**160 miles upriver . . .**

**To Boardman, Oregon**



**Then 12 miles to Finley Buttes Landfill.**





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Municipal solid waste  
landfills are the third-  
largest source of  
human-related  
methane emissions in  
the United States





# Wasted Food Scale

How to reduce the environmental impacts of wasted food



# What do you do with your food scraps?

Organic Material	Est. %	Est. Tons
Edible Food Waste – <b>Vegetative</b>	6.4	26,847
Inedible Food Waste - <b>Vegetative</b>	4.8	20,136
Edible Food Waste – <b>Meats/Fats/Oils</b>	2.1	8,809
Inedible Food Waste – <b>Meats/Fats/Oils</b>	0.5	2,097
<b>Total:</b>	<b>13.8%</b>	<b>57,889</b>



# Feed food waste to red worms not the landfill

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Nature's Miracle Grow Fertilizer!

## Learning objectives

Maintaining a  
worm bin

Harvesting  
worm castings

Using  
vermicompost

# How many of you have pets?



# Red Wiggler Worms

## *Eisenia fetida*



Cocoon Phase



3-4 weeks

# RED WIGGLER LIFE CYCLE

Lifespan: 4-5 years



CLARK COUNTY  
**GREEN SCHOOLS**

Hatching Phase



6-8 weeks



Juvenile Phase



Adult Phase

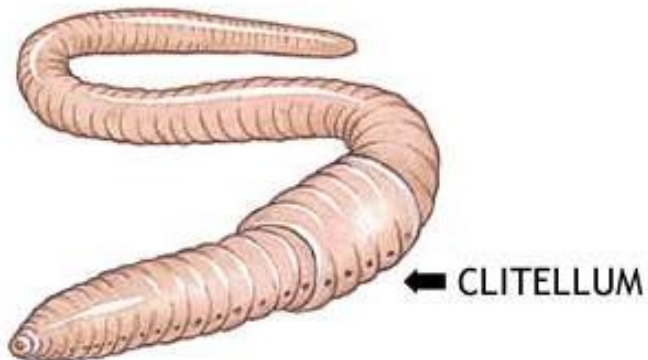


Reproduction



# Redworm breeding

- Mature in 3 months
- 1 cocoon per week
- Hatch in 3 weeks (ave. 3 hatchlings)
- Can go dormant for months









**Red Wiggler**



**Fungus Gnat**



**Pill Bug**



**Ant**



**Fruit Fly**



**Black Soldier Fly Larvae**



**Springtail**



**Centipede**



**Millipede**



**Spider**





# MEET THE DECOMPOSERS



CLARK COUNTY  
**GREEN SCHOOLS**



**Fungi**



**Bacteria**



**Mite**



**Pot Worm**



Black  
Soldier  
Fly  
Larvae

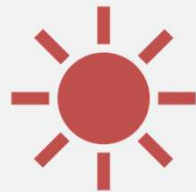
# Finding a location for your worm bin



Basement



Garage



Outdoors

## Slide 19

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**PD1**

Pete DuBois, 9/24/2020



**Bedding for your Worms  
(Browns = Carbon / Energy)**



# Leaf Mold Compost

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**Foods for your Worms  
(Greens = Nitrogen /  
Reproduction)**

# WHAT TO FEED YOUR WORMS:



## Yummy!



*Anything green - especially the leafy stuff!*



*Fruits*



*Vegetables*



*Coffee grounds & filters*



*Tea bags*



*Brown Paper, Black & White newspaper*



*Eggshells - crushed; adds calcium*

## Yucky!

*Citrus - no orange, lemon or lime*



*Fats, Oils, Salad dressing*



*Breads & Cereals - can attract gnats*



*Salts - no seasoned food*



*Meat - creates odors*



*Sugars - no processed food*



*Garlic, Onions - creates odors*





# How Much Can I Feed?

Worms eat  $\frac{1}{2}$  their weight/day

One pound (1,000) of worms will eat  $3\frac{1}{2}$  pound of food/week

Always cover with bedding

Bin under ideal conditions should handle up to 1 gallon/week



# Feeding Tips

worms actively eating recent food

For extended vacation sprinkle 1/4 cup of flour and cover

Don't feed on hot days

Feed heavier in winter to keep bacteria going for heat



# How to Correct a Wet (stinky) Bin

- Crack the lid
- Stop feeding
- Gently stir in new dry bedding
- Drain leachate



# Managing Moisture Levels



# Worms looking like ground hamburger?



# When Should You Harvest Compost?



# Harvest Ready

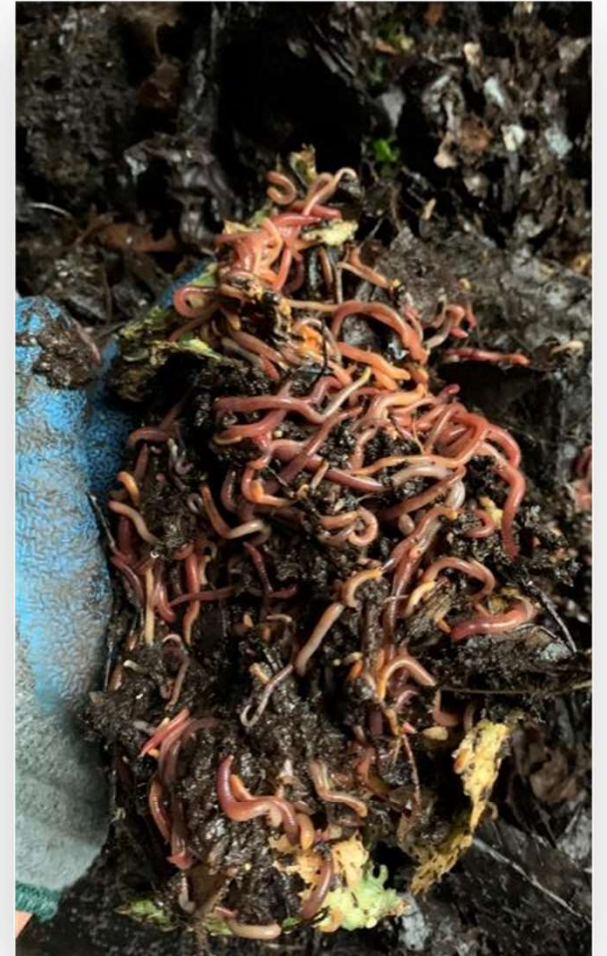


# Compost Harvesting Steps

- Scoop out the top 3 - 6 inches and set aside
- Store vermicompost in a bin or put on the garden
- Return top 3-6 inches to begin new bin



# The Melon Trick



# Storing your Vermicompost



# Does vermicompost have NPK?

<b>Nutrient</b>	<b>Content</b>
Nitrogen	2 – 3%
Potassium	1.85 – 2.25%
Phosphorous	1.55 – 2.25%
Sodium	0.06-0.3%
Calcium and Magnesium	22.67-47.6 mg/100g
Copper	2-9.5mg/kg
Iron	2-9.3mg/kg
Zinc	5.7-11.5mg/kg
Sulphur	128-548mg/kg

# Vermicompost vs cow manure

<b>Nutrient</b>	<b>Vermicompost</b>	<b>Cow manure compost</b>
N	2.5-3%	0.4-1%
P	1.8-2..9%	0.4-0.8%
K	1.4-2%	0.8-1.2%

## Composting Pete's Vermicompost

Worm castings on average contain 5X Nitrate, 7X Phosphate, 10X Potash than found in average topsoil. The fertilizer nutrients are water soluble and are immediately available to plants.

- Mix in 5-10% of total mix with worm castings. Provides up to 3 months food.
  - Starting medium
  - Transplants
  - New plantings
- Give all of your houseplants, pot plants, window boxes, hanging baskets a top dressing. The nutrients will sink in when you water
- Spread in seed rows
  - 1 gallon can provide 3 months food to a 4' by 8' garden bed
- Potting mix
  - 1 part vermicompost : 3 parts leaf compost
  - 1 part vermicompost: 1 part compost: 1 part soil

# Using your Vermicompost

- Use 2 Tbsps per 4" pots;  $\frac{1}{4}$  -  $\frac{1}{2}$  cup per gal. transplants
- Sprinkle on houseplants & garden plants
- Spread in seed rows or new plantings
- 1 gal. provides 3 months for for a 4' x 8' garden bed
- Potting mix
  - 3 parts leaf compost : 1 part vermicompost

# Types of worm bins







# Worm Factory

## Upward Migration Composting Worm Bin System

*Remember: Healthy Worms are Happy Worms!*

**BIN MANAGEMENT:**

- Place several moist sections of paper (soaked in water) directly on top of the food in the feeding tray

**FEEDING:**

- Food mixture (50% kitchen scraps and 50% fiber)
- 1lb of worms need a 1/2lb of food per day, avoid overfeeding!
- Avoid citrus, meat and dairy products in your Worm Factory

**MOISTURE:**

- Worms require moist bedding; see instruction manual for "Moisture Squeeze Test"
- To reduce moisture, add dry shredded paper

**TEMPERATURE:**

- Operating temperature should be between 40° - 80°F
- Keep your worm bin in a dry, cool location

**FOOD LIST:**

Worms like their food chopped as small as possible!

- All vegetables (table and preparation scraps, peels and veggies that are past their prime)
- All fruits (table scraps, peels, and cores)
- Starches: pancakes, pasta, rice, pizza crusts, cereal, crackers, stale bread
- Fiber: shredded paper, egg cartons, peanut shells, magazines, kleenex, napkins, cardboard, junk mail
- Healthy snacks: coffee grounds and filters, crushed egg shells, tea bags (without staples), dead flowers and plants (non-diseased), leaves, plant trimmings

Courtesy of Washington State University Extension Service

Note: In their natural environment, soil protects worms from extreme changes in heat, cold and moisture. The Worm Factory® should never be exposed to direct sun or rain. When housed outside, care must be taken to provide a covered protected area, never in an open garden or a back yard. Never allow to freeze.

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file

# *Other Questions?*



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# FAQs

- Do I need to add soil to the bin?
- Do worms eat the food?
- How long will the worms live?
- Where can I get red worms?