



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.



Food Waste Sent to the landfill	Est. %	Est. Tons
Total:	13.8%	57,889

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





Feed food waste to red worms not the landfill

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



Hatching Phase



RED WIGGLER LIFE CYCLE

Lifespan: 4-5 years



CLARK COUNTY
GREEN SCHOOLS



6-8 weeks



Reproduction

Adult Phase

Juvenile Phase









Red Wiggler



Fungus Gnat



Pill Bug



Ant



Fruit Fly

MEET THE DECOMPOSERS



Black Soldier Fly Larvae



Springtail



Centipede



Millipede



Spider





Fungi



Bacteria

MEET THE DECOMPOSERS



CLARK COUNTY
GREEN SCHOOLS

Mite



Pot Worm





Black
Soldier
Fly
Larvae

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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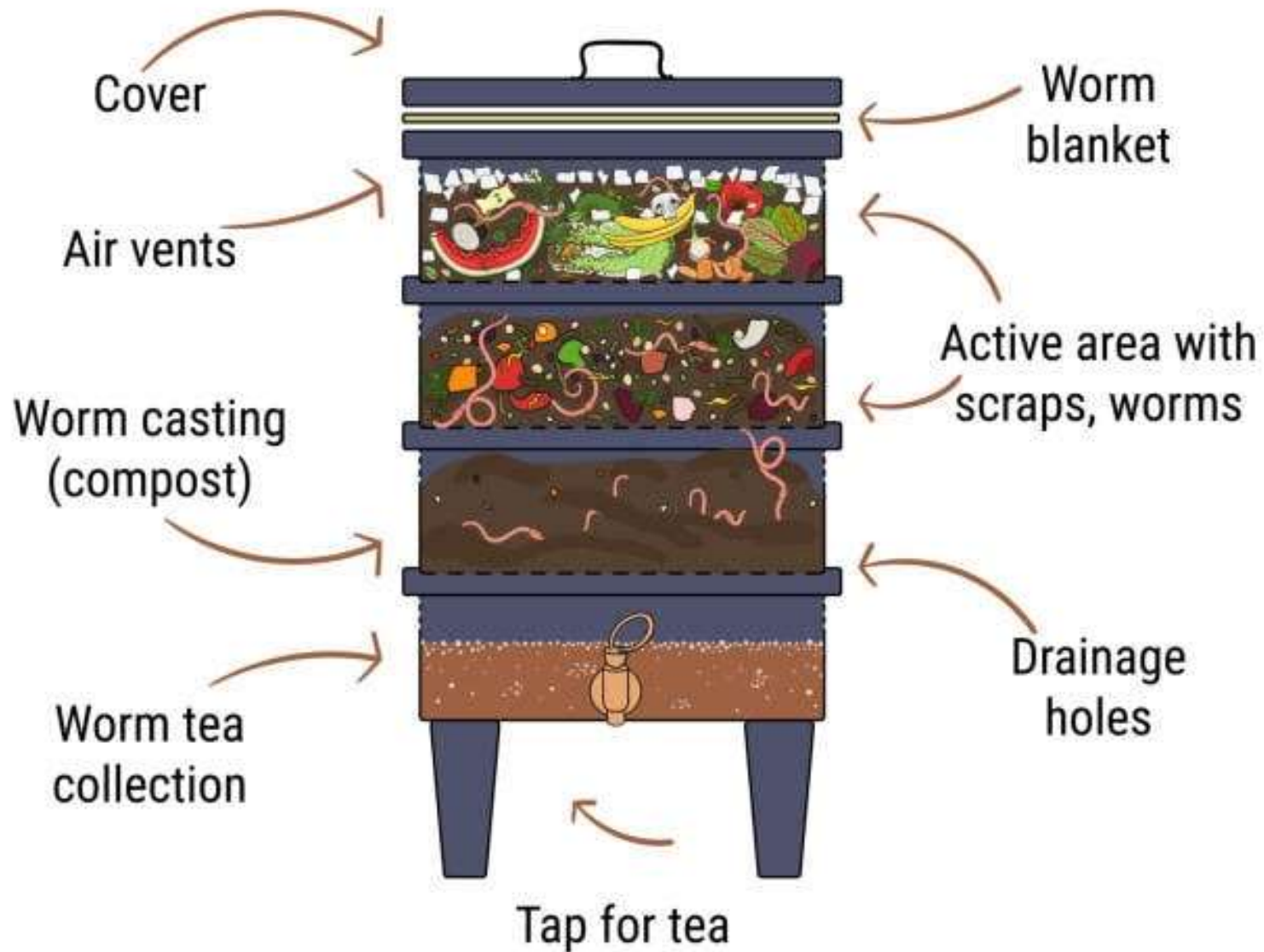
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VERMICOMPOSTING





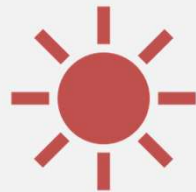
Finding a location for your worm bin



Basement



Garage



Outdoors



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



Leaf Mold Compost



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

WHAT TO FEED YOUR WORMS:



Yummy!

Yucky!



Anything green - especially the leafy stuff!

Citrus - no orange, lemon or lime



Fruits

Fats, Oils, Salad dressing



Vegetables

Breads & Cereals - can attract gnats



Coffee grounds & filters

Salts - no seasoned food



Tea bags

Meat - creates odors



Brown Paper, Black & White newspaper

Sugars - no processed food



Eggshells - crushed; adds calcium

Garlic, Onions - creates odors





Preview File

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

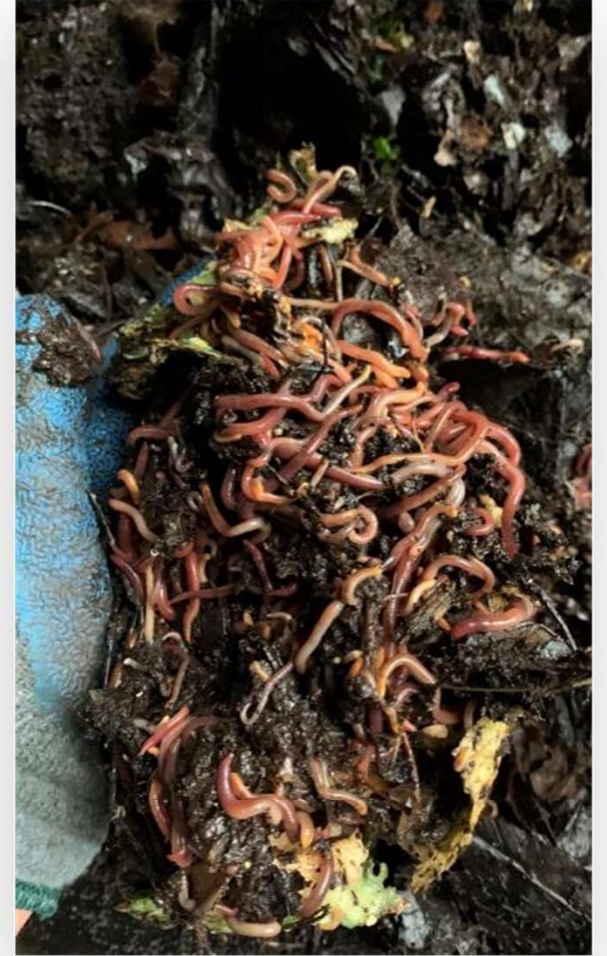








The Melon Trick



Storing your Vermicompost



Does vermicompost have NPK?

Nutrient	Content
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

Nutrient	Vermicompost	Cow manure compost
N	2.5-3%	0.4-1%
P	1.8-2.9%	0.4-0.8%
K	1.4-2%	0.8-1.2%

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

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?

Other Questions?



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