

UCCE El Dorado County
Master Gardeners Present

Making Worms Work For You



Thank you to....

Today's Hosts!

- Elissa
- Gloria
- Janet
- Pat
- Ruth



Welcome!

- We are the UCCE MGs of EDC
- Volunteers, trained by the U of C
- Goal of providing research-based information to our community's home gardeners
- Sign in & evaluation form
- Statewide survey
- Publications
- Timetable/snacks/restrooms
- Contributions



UC ANR

University of California Agriculture & Natural Resources
Strategic Initiatives Survey

- Endemic and invasive pests and diseases
- Healthy families and communities
- Sustainable food systems
- Sustainable natural ecosystems
- Water quality, quantity and security

What brought you here today?

Where?

How?

When?



Making Worms Work for You

Overview

Worms

Habitat

Food

Critters in the bin

Vermicompost

Troubleshooting

Wrap Up and Questions

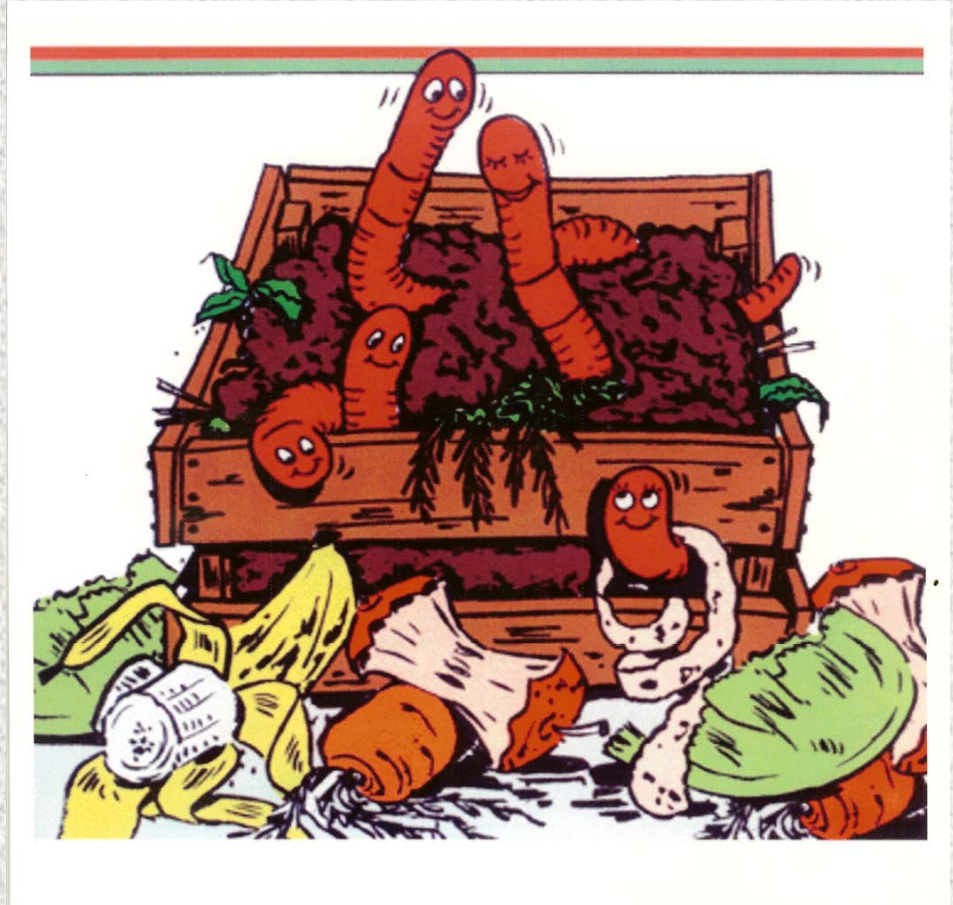


From Garbage to Soil Amendment!



Why Worms?

- Recycle kitchen scraps
- Castings
- Small spaces
- Easy
- Fun and great science



Three categories

Nightcrawlers	Deep and vertical
Earthworkers	Horizontal
Composters	Top layer

Nightcrawlers (Anecic)

Vertical burrows, 4' – 6' deep



Earthworkers (Endogeic)

- Horizontal burrows
- Top 12 inches



Composters (*Eisenia fetida* and others)

- No burrows
- Forest litter, manure
- Reproduce rapidly

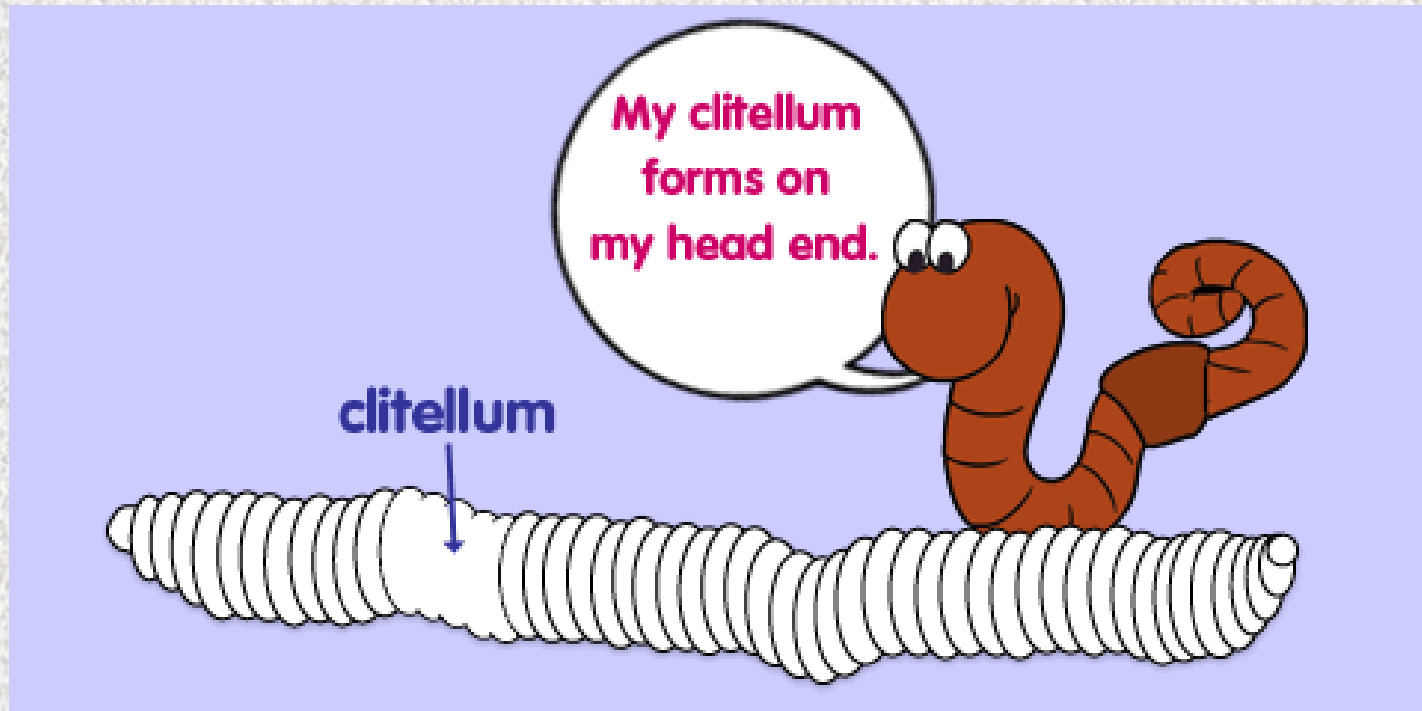


Anatomy

- One big intestine
- No eyes, ears, bones or teeth



The clitellum



Reproduction

- Hermaphroditic
 - Need two to reproduce
- Cocoon forms on the clitellum of each
- Cocoon contains the eggs
- 30 days 1-5 babies will hatch
- Mature in about 3 months



Habitat



A Comfortable Worm Bin Has

- Moisture
- Air
- Decaying organic matter
- Darkness, quiet
- Optimal temperature



Moisture and Air



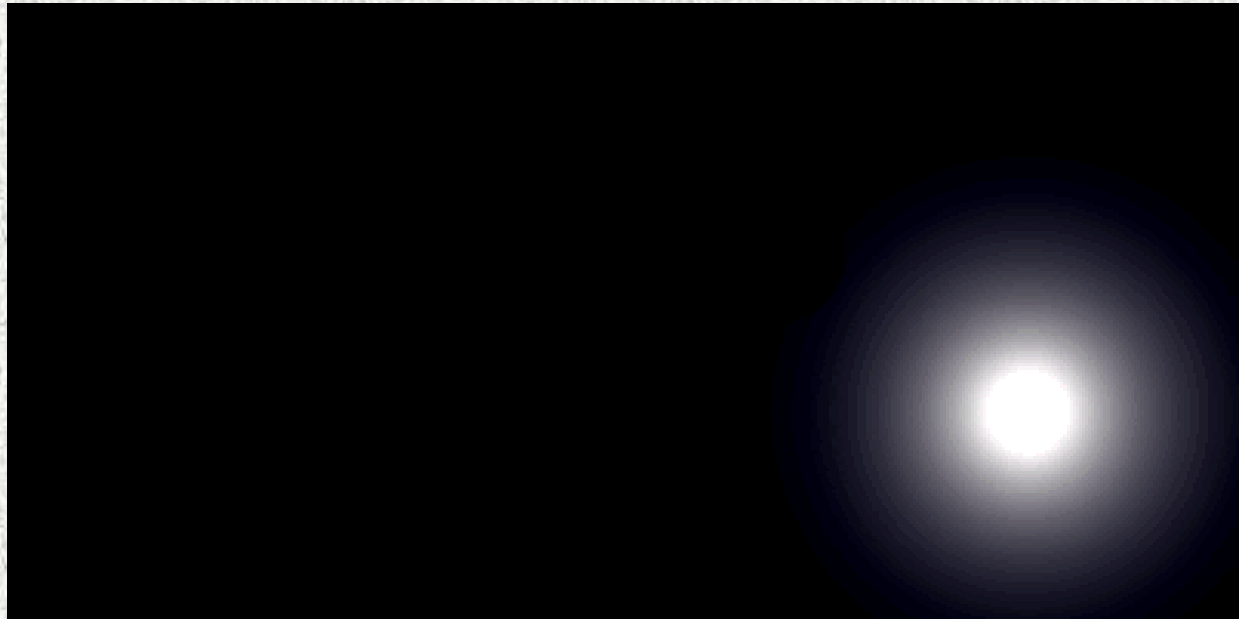
Leachate



Other Liquids

- Compost Extract – quick soak
- Manure Tea – soluble nutrients but food safety issues
- Vermicompost Tea – oxygenate, add microbe food
- Herbal Tea – mint, chamomile, etc...

Worms and Light



Temperature

- Same temperatures we like
- Optimal 55° to 77°
- Don't freeze or overheat



Bin Choices

- Build or buy
 - Wood
 - Plastic
 - Concrete block
 - Earth



Bedding, Bedding, Bedding



More Bedding



Greens



Browns



Maintain Proper Moisture



Food





- Decomposing organic matter
- Worms eat microbes (not food)

Microbe Deli



Allow

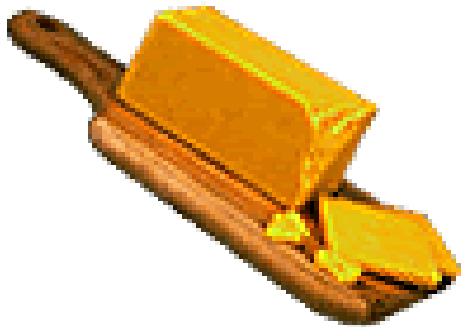
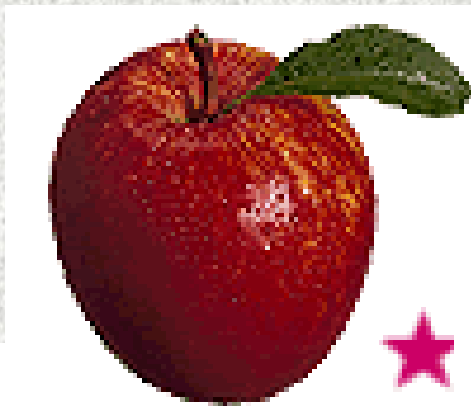
- Fruit and vegetable peeling
- Egg shells
- Coffee grounds and filters
- Tea bags
- Bread
- Lettuce
- Watermelon rinds
- Banana peels

Avoid



- Bones
- Mayonnaise
- Salad Dressing
- Meat
- Cheese
- Butter
- Oil
- Excess # of citrus peels

Test!



Test!



Optimize

- Increase surface area
 - Chop
 - Shred
- Freeze
- Microwave
- Pre-compost



Pocket Feeding

Feed a different corner
each time...



Row Feeding



Make Art!



Jan 14, 2015 - lid off.

Carrot pulp, asparagus, paper

Make Art!



Make Art!



Make Art!



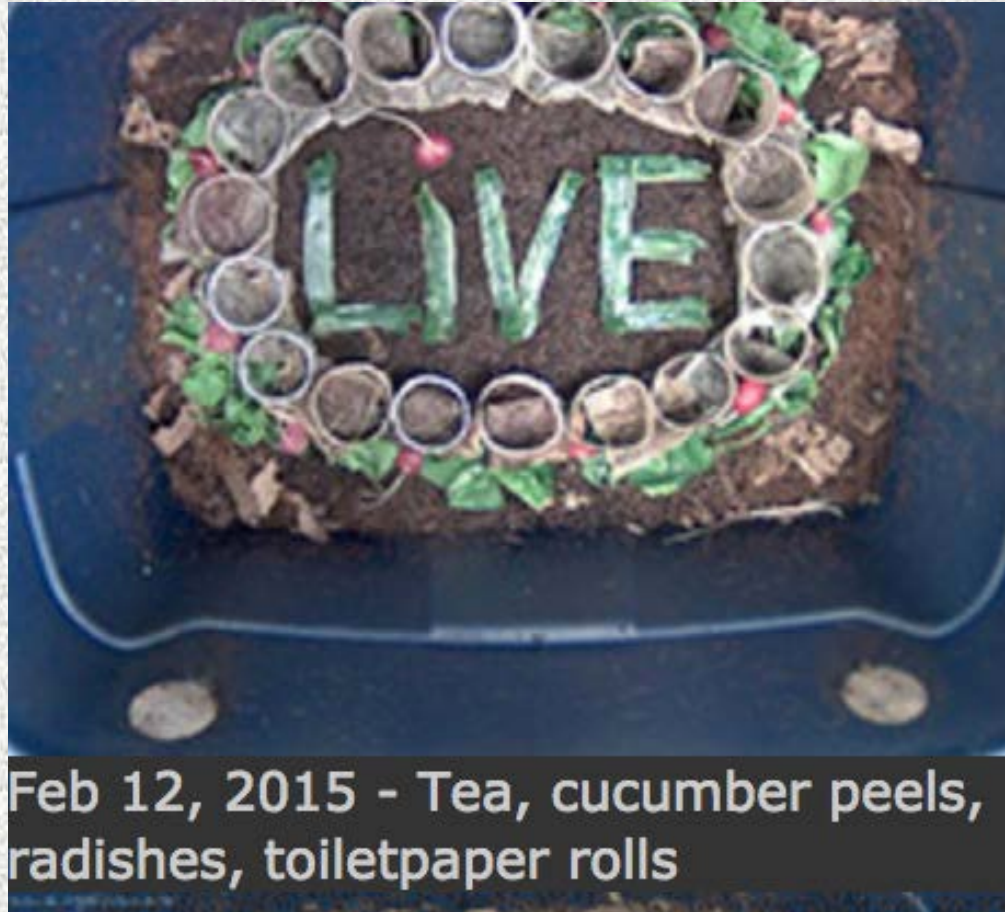
Jan. 27, 2015 - Coffee, cardboard, eggshells

Make Art!



Mar 24, 2015 - Apple, teabags, cantaloupe and shredded paper.

Make Art!



Make Art!



Worms at Work

20 days in the bin

<https://youtu.be/n9Mnf9ysNSs>



Re-Cover



Critters in the Bin

MicroOrganisms

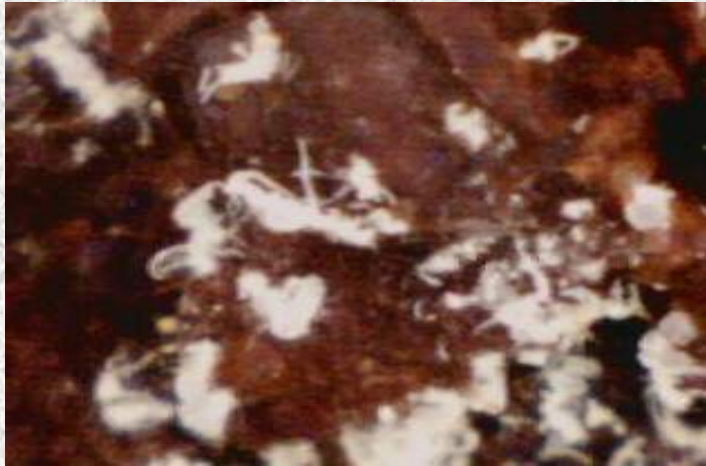


Critters in the Bin

Fruit flies



Mold and Fungi



More Critters in the Bin

Mites

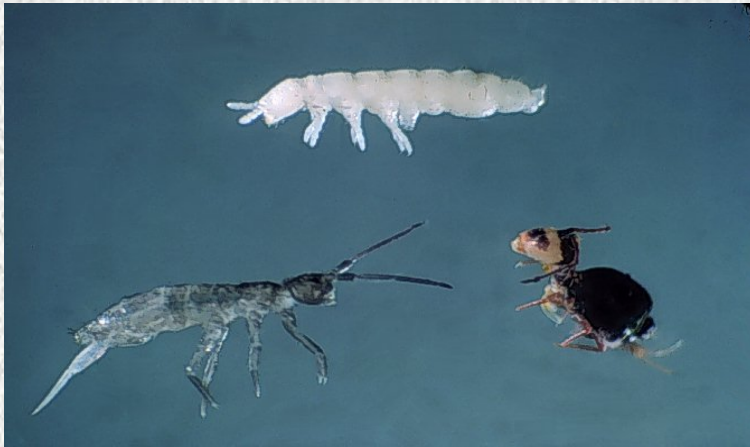


Soldier fly larvae



More Critters in the Bin

Springtails



Pillbug/Sowbug





Vermicompost



Harvesting Methods

- Dumping & sorting
- Migration
 - Vertical
 - Horizontal
- Sifting



Dumping and Sorting



If Too Wet

- Dump onto newspaper
- Gently aerate
 - Gloved hands
 - Hand fork



Migration Method

- Prepare new bin
- Place “harvesting” bin on top



Sifting



Voila! Vermicompost



The Finished Product

- **RICH STUFF!**
- Stimulates plant growth
- Aids in suppression of diseases
- Increases microbial activity in the soil



Using the Vermicompost



- Concentrated soil amendment
- Transplanting
- Potted plants

Don't let it dry out!

Troubleshooting



Most common problem

- Insufficient bedding
 - Causing excess moisture
 - Anaerobic conditions in the bin



Troubleshooting

Symptom	Problem	Solution
Bin smells bad	<ul style="list-style-type: none">•Poor air circulation•Improper food scraps added•Too much food	<ul style="list-style-type: none">•Add fresh bedding•Remove meat, bones or other animal products•Feed less

Troubleshooting

Symptom	Problem	Solution
Worms are dying	<ul style="list-style-type: none">•Not enough food•Bin too dry•Bin too wet•Too many castings	<ul style="list-style-type: none">•Add food into bedding•Moisten until slightly damp•Add bedding•Harvest

Troubleshooting

Symptom	Problem	Solution
Fly infestation	<ul style="list-style-type: none">•Food exposed	<ul style="list-style-type: none">•Cover bedding•Cover worms•Secure lid

Wrap up and Questions

Worm compost trivia

Who is considered the father of worm composting?



Charles Darwin



Don't be Prickly ... Take Our Survey.

Our follow-up survey provides us the tools we need to grow and improve the quality of our program.

UCCE

El Dorado Master Gardeners



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