



Backyard Composting

Peter DuBois



What do you do with your food scraps?

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

BEFORE



AFTER



shaker test:

- Sand will settle first
- Silt will settle slowly
- Clay may not settle at all

Measure the height of each layer and the total height of all three layers.





Call Composting Pete





Learning objectives

Techniques for composting

Using Compost

Speeding up the process

How to store and manage your organics



1 week later

What is Composting?

- It's Nature's way, she designed decay
- In Nature it is called Humus
- When you do it in your bin and speed up the process under controlled conditions it's called compost

<https://www.youtube.com/watch?v=iAiRNq8JXw8>



Why Compost?

3 weeks later

- Has anyone ever taken all the crayons and colored them together?



What is Compost?

7 weeks later

- Sponge or glue – holds on to the nutrients and H₂O
- Food to feed soil organisms that supply the nutrients to the plants
- Rich, dark crumbly, earthy smell from the decomposing remains of many once-live (organic) entities
 - Largely cells and skeletons of all the microorganisms that participated in the process
 - Partially decomposed particles of organic matter (cellulose & lignin)
- Some inorganic particles (rock) other mineral elements (came in on organic material)
- Long hard to break chains of carbon molecules with a large surface area which carry electric charges which attract and hold mineral particles and H₂O
- A teaspoon of healthy (living) soil contains:
 - 1 billion invisible bacteria (20-30,000 different species)
 - several yards of invisible fungal hyphae
 - several thousand protozoa
 - few dozen nematodes

- **Nutrient rich soil amendment
(happy plants)**

Passive Composting

1. Dump kitchen scraps
2. Cover with “dry/browns”
3. Repeat



What is the difference between Hot (active/batch) & Cold (passive composting/add as you go/dump and run)?

- Add leaves, garden trimmings whenever
- In 6 months dig out compost at bottom of pile
- Return rest to bin/pile
- Sandcastle analogy for turning / harvesting material
- Lower temp bacteria work with micro and macroorganisms (worms)
- Weed seeds will not be cooked

Use the **SMART** method for success

- **S**ize
- **M**oisture
- **A**eration
- **R**atio
- **T**ools



- Keep food scraps and their valuable nutrients out of the landfill
- Healthier soil; healthier food; healthier people
- Reduce or eliminate the need for chemical fertilizers and pesticides

Size Clip, Chop, Tear, Rip, Chip



- Microorganisms need surface area to work – secrete enzymes (like saliva in our mouth)
- Chopping or shredding exposes more surface area to help composting critters break it down
- 2 to 4" pieces
- Lawn mower good for chopping up vines leafy greens, etc.



**Moist like a
wrung-out
sponge**

- Not too dry
- Not too wet

- Microorganisms need water to survive
- Too dry – microbial activity slows down
- Too wet – clogs air space / anaerobic (stinks)
- Cells / membranes / moist
- Wire mesh bin - cover with a tarp (keeps out rain during wet months; keeps in moisture during dry months)
- Turning your pile lets you see what is happening. Add dry brown ingredients if your moisture level is too high (smelly) and rewetting materials or add wet greens) if too dry (no action).

Aeration supports aerobic organisms

- Turn and fluff
- Stir in place



Microorganisms like us require oxygen

Turning Frequency:

- When pile temperature drops
 - Once a week
 - Twice a month
 - When the mood strikes you
 - Never!
-
- Control for adding more food, water
 - Renews decomposing activity (oxygen)

Ratio 1 part browns : 1 part greens



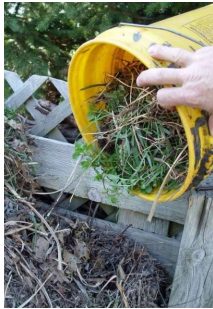
- Exception – grass clippings should be 1"
- Try not to put in wet leaves – mat together

Examples of Browns



- www.getchipdrop.com – mulch
- Straw vs. Hay

Examples of Greens



- www.sharewaste.com
- www.makesoil.org
- Do's and Don'ts of food
- Grasscycling
- Weeds
- Raw manure
 - At this time, the FDA does not object to farmers complying with the USDA's National Organic Program standards
 - 120-day interval between the application of raw manure for crops in contact with the soil
 - 90 days for crops not in contact with the soil.

Grass: Green or Brown



Tools - which compost system?



Bigger pile (up to 3'x3'x3' more insulated) most plastic bins are ½ cubic yard or less

Craigs list, freecycle, Next Door, neighbors, Facebook Marketplace

- Lifetime Compost Tumbler – 80 Gal (not 65 gal)
- Earth Machine Composter – 80 Gal
- Enviroworld – 80 Gal (\$45 - <https://clarkcountycomposts.org/buyacomposter>)
- Wire Mesh Bin ($V=\pi r^2 h$) 3' x 3' = 150 Gal.
 - 4' x 12' x 1/2" hard ware cloth (19 gauge)
 - Note: Fold 6" on top and bottom to reinforce bin
 - Insulated wire for twist ties (14 gauge)
 - Heavy Duty Tarp and strap/bungees to secure
 - Note: Cheap blue tarps will deteriorate and leave blue plastic strands



Critical Tips:

Keep it covered (reduces leaching and oversaturation during winter, keeps appropriate moist during the summer)

Appropriate moisture (like a moist sponge)

Aeration and turning

2:1 Green (manure) to Brown (bedding – can take a long time to break down)

Don't spread during the wet season

Benefits of composting manure:

Reduce flies

Reduce odor

Cut pile size in half

Reduce parasites and pathogens

Reduce weed seeds

Improve marketability

Even out grazing patterns

Improve soil aeration and water retention

Enhance beneficial bacteria, earthworms, and pH

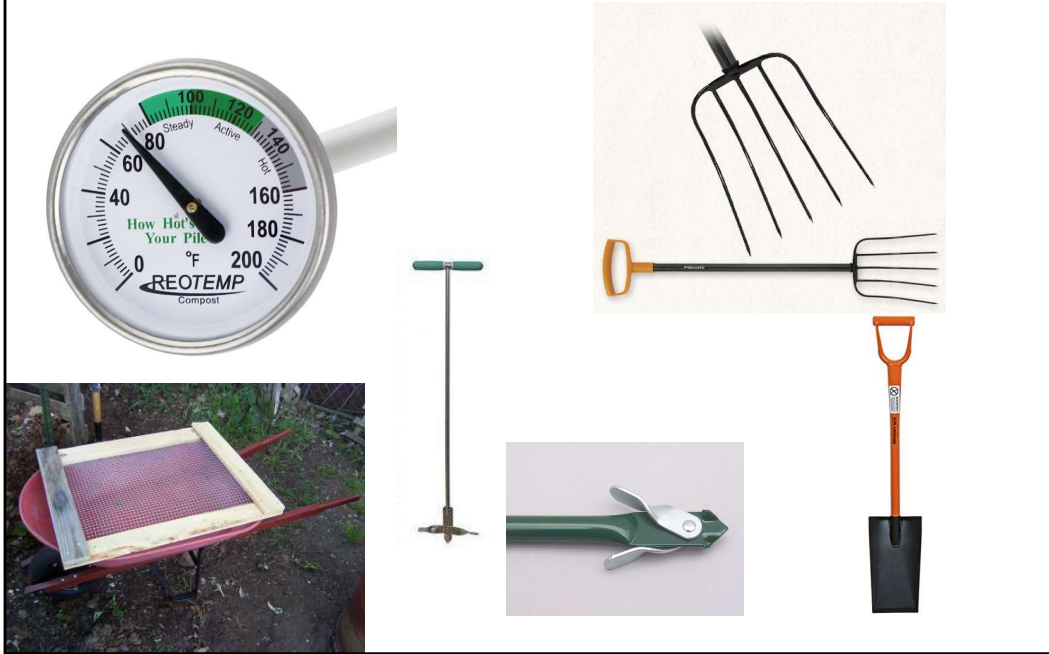
Supplies nutrients

Protects Water Quality (by reducing nutrient runoff)

Protects fish and wildlife

Conserve natural resources

More tools to compost like a pro



Reotemp 20 Inch Fahrenheit Backyard Compost Thermometer
Approx. \$25

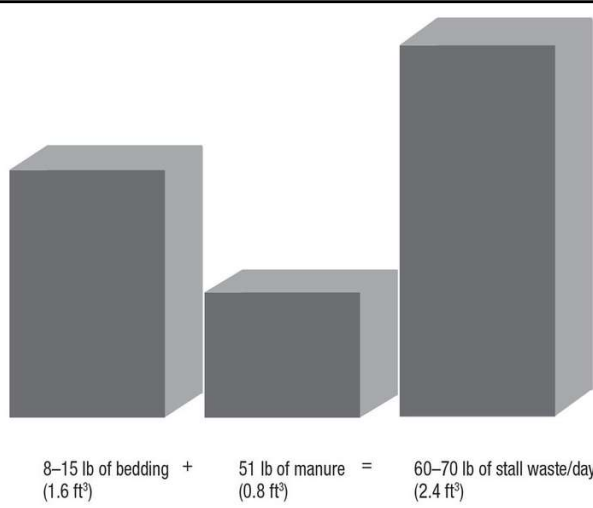
Maintaining Your Tools



Linseed oil for wooden tool handles

Mineral oil for sand bucket to dip tools in

Stall Waste
1 horse = 1
ton per mo.



Manure N-P-K, Organic Matter

Kind of animal	Nitrogen (N)	Phosphate (P2O5)	Potash (K2O)	Organic Matter
Alpaca	1.7	0.7	1.2	
Rabbit	2.4	1.4	0.6	33
Chicken	1.1	0.8	0.5	25-45
Sheep	0.7	0.3	0.9	32-34
Horse	0.7	0.3	0.6	22-26
Steer	0.7	0.3	0.4	17
Cattle	0.6	0.2	0.5	17
Pig	0.5	0.3	0.5	14
Goat	0.7	0.3	0.9	

What is in our compost pile?

The Living:



The Dead:



The Transformed:



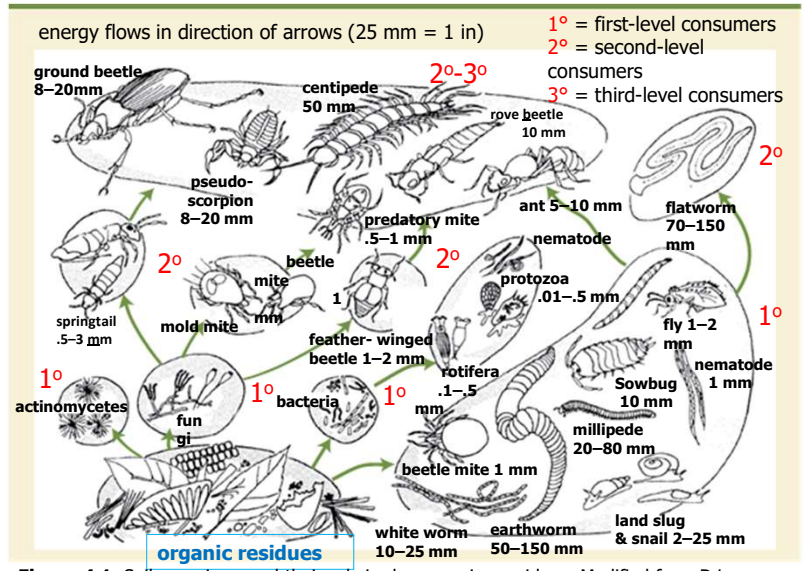
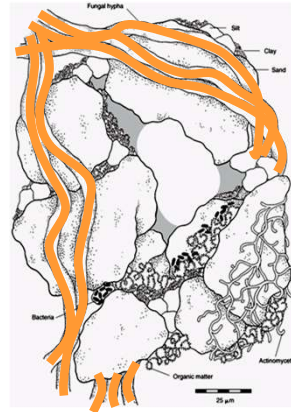


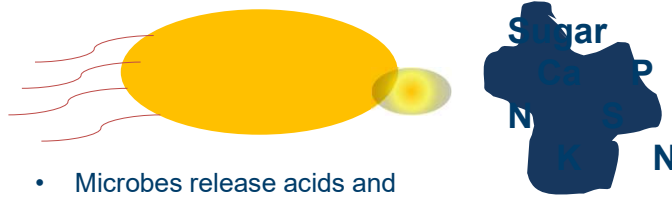
Figure 4.1. Soil organisms and their role in decomposing residues. Modified from D.L. Dindal (1972).

What are they doing?...

- Are PART OF the Soil Organic Matter
- Decay organic materials
- Transform inorganic nutrients
- Fix nitrogen
- Degrade pollutants
- Bind soil particles
- Improve or inhibit plant growth



Mineralization by microbial extracellular enzymes



- Microbes release acids and enzymes, which make nutrients available
- But effectively compete with plants for nutrient uptake
- Death and predation release nutrients again
- Generations = pulses of nutrients available

- 1 - 2" if amending or mulching
 - garden beds; exposed soil areas, around drip-line of plants/trees
- ¼" – ½" if top dressing



Using the compost you made

Why use compost on your soil?

- Slow-release source of plant nutrients
 - N, P, K, S, micronutrients
- Increases soil moisture-holding
- Improves soil tilth and structure
- Provides food and habit for soil biotics



Now you have compost.....

Compost quality determines its best use

5 best uses for “chunky” compost:

- Potting soil addition
- Soil amendment: Spring-Summer
- Turf top-dressing
- Garden amendment: Fall
- Mulch (particularly for C:N > 20)

The closer the plant contact (in space and time), the greater the quality and maturity must be!

Use lower quality compost as mulch or several months prior to planting in the soil.

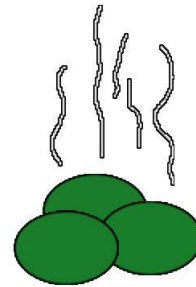
Troubleshooting

- Situation:
 - Ammonia like odor
 - Rotten eggs or worse



- Problem:
 - Too wet / no air

- Solution:
 - Turn the pile and add more brown material to balance the pile.





Critters you might encounter

FAQs

- What about inks from papers?
- Will my compost pile catch fire?
- Should I add commercial activators?
- Can I plant straight into compost?
- Will weed seeds be killed?

- To kill weed seeds need 140 degrees

Other Questions?



info@clarkcountymcomposts.org

564.397.7333

www.clarkcountymcomposts.org

Leaf Mold Compost

