

Compost Made Easy

An introduction to
home composting

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City of Lawrence, Solid Waste Division

What is Compost?

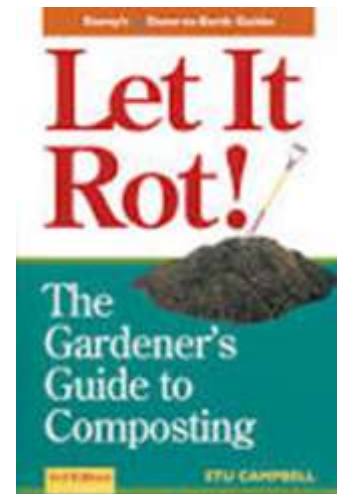
- * “Compost is the product resulting from the *controlled* biological decomposition of organic material... it has the unique ability to improve the chemical, physical, and biological characteristics of soils.” (USCC 2008)
- * Decomposition is the result of interactions of organic matter and bacteria, fungi and other micro and macro organisms



What is Compost?

“The modern practice of composting is little more than speeding up and intensifying natural processes.”

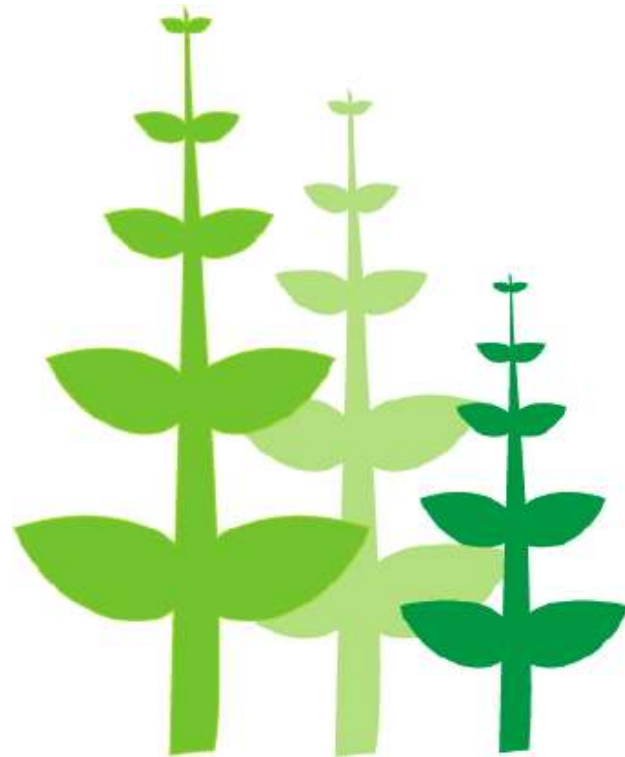
-Stu Campbell



Why Compost?

Manage
Waste

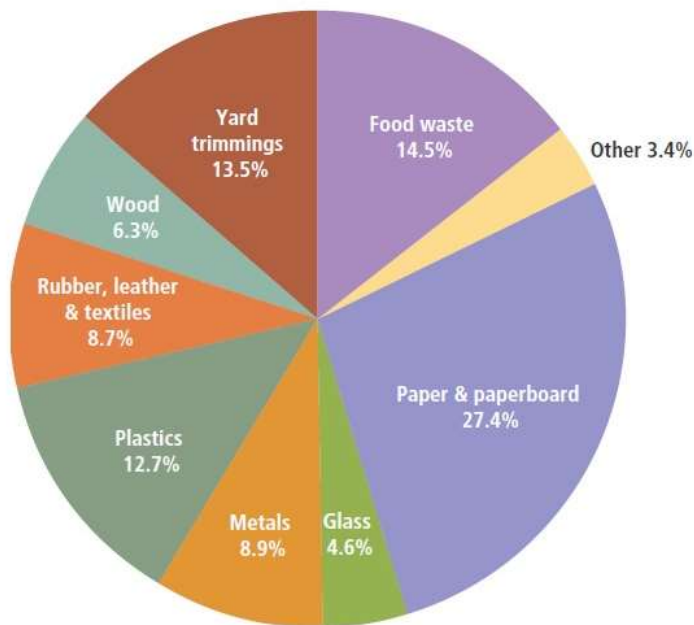
Recycle
Nutrients



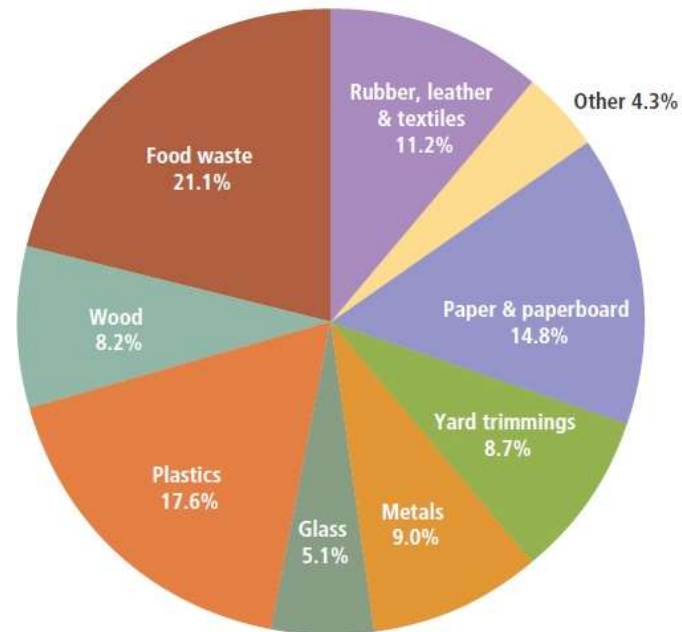
Benefits of Composting

Landfill Reduction

- * Organics constitute 28% of the Waste Stream (before recycling & composting) and 29.8% (after recycling & composting)



**Total MSW Generation
before recycling**



**Total MSW Discards after
recycling and composting**

Benefits of Composting

Plant Health

- * Increases plant health and bioavailability of nutrients
- * May increase yield
- * Plant pathogen suppression
- * Reduces need for synthetic fertilizers

Soil Health

- * Improves soil structure in sandy or clay-rich soils
- * Prevents erosion
- * Reduces need for irrigation due to increased water holding capacity



What can be Composted?

Plant Based Materials

- * Kitchen scraps, including egg shells
- * Grass and weeds
- * Brush and leaves
- * Newspaper, paper, cardboard
- * Dryer lint, vacuum dust



What cannot be Composted?

Animal Based Materials

- * Meat scraps
- * Bones
- * Dairy products
- * Oil and grease
- * Pet waste



Be careful of 'compostable' products.
These are typically only able to be
processed in a large scale operation.

Household Collection



Methods of Composting

DIY Backyard Composting Bins



Methods of Composting

Earth Machine

- * \$40 for Lawrence residents
- * Sold at the Solid Waste Administrative Office



Tumblers

- * Easy to turn material
- * Sold online and local retailers



Consider the amount of food and yard waste typically generated by your household and choose your size accordingly.

Methods of Composting

Windrow Composting

- * Used in municipal or industrial composting settings
- * Method employed by the City of Lawrence



Getting Started

Placement

- * **Sunlight:** Located as to receive more sunlight in the winter than in the summer
- * **Water:** Near a water source in case material gets dry
- * **Visibility:** Shielded from neighbors if possible
- * **Surroundings:** At least 6 feet away from tree trunks in an open area to allow rainfall infiltration

Getting Started

Size

- * Large enough to hold heat and moisture, but small enough to allow airflow to the center of the pile.
- * Typically about a cubic yard, 3ft by 3ft.
- * Small piles tend to dry out quickly and require more water added to the process.
- * Larger piles may be harder to manage or achieve uniform mixing.

Major Factors of Composting



- * Nutrients (C:N)
- * Oxygen
- * Moisture
- * Temperature
- * Acidity (pH)
- * Time

Nutrients – C:N Ratio

Carbon = “brown” feedstocks

- * Examples include leaves, brush & woodchips, cardboard, paper.

Nitrogen = “green” feedstocks

- * Examples include kitchen scraps including coffee grounds, grass clippings, manure.

Ideal C:N ratio = ~25:1

- * So 25 parts carbon to one part nitrogen.

Nutrients – C:N Ratio

Ingredients	C:N Ratio
Alfalfa Hay	12:1
Kitchen Wastes	15:1
Grass Clippings	19:1
Rotted Manure	20:1
Coffee Grounds	20:1
Leaves	60:1
Straw	80:1
Papers	180:1
Wood Chips	300:1
Wood	700:1

The carbon to nitrogen ratio indicates the nutrient composition of the feedstock. Kitchen wastes are much higher in nitrogen whereas leaves and papers have a relatively high carbon content.

Aerobic vs. Anaerobic Conditions

Aerobic (with oxygen)

- * Reduces smell.
- * Increases the speed at which compost is made.
- * Microorganisms in compost breathe - they need oxygen, too!
- * Need air space in the compost, use a wide range of particles size (small twigs, brush, woodchips, etc.).
- * Avoid water saturation.
- * Turn/aerate the pile.
- * Most compost is done in aerobic conditions.

Aerobic vs. Anaerobic Conditions

Anaerobic (without oxygen)

- * Smelly!
- * Different set of microorganisms live in these conditions.
- * Lowers the pH of compost.
- * Parts of the compost pile may anaerobic part of the time.

Managing Your Compost

Active Composting

- * Involves turning the pile (anywhere from every day to every two weeks).
- * Increases the compost pile temperature.
- * Aerates the pile, creating aerobic conditions.
- * Speeds up the time to a finished product.

Passive composting

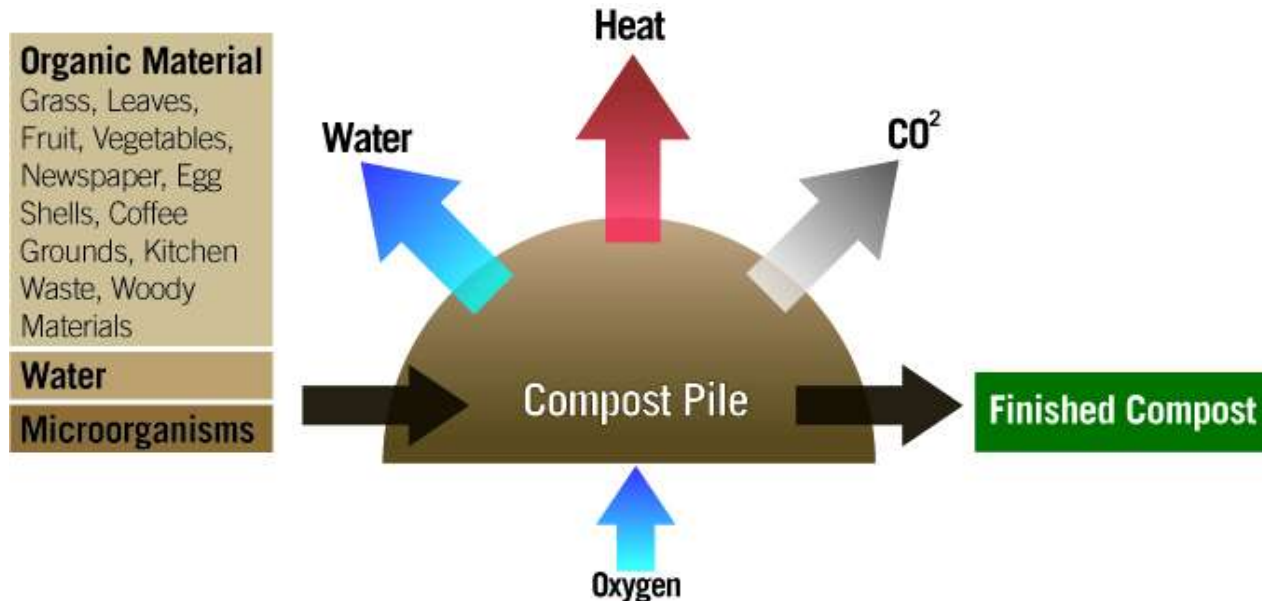
- * Does not involve turning the pile.
- * Takes a longer time to reach the final product.
- * Can become anaerobic.



Managing Your Compost

Temperature

- * 90°F – 140°F: Compost is most efficient at breaking down material.
- * +131°F: Pathogens are killed; +145°F weed seeds are killed.



Managing Your Compost

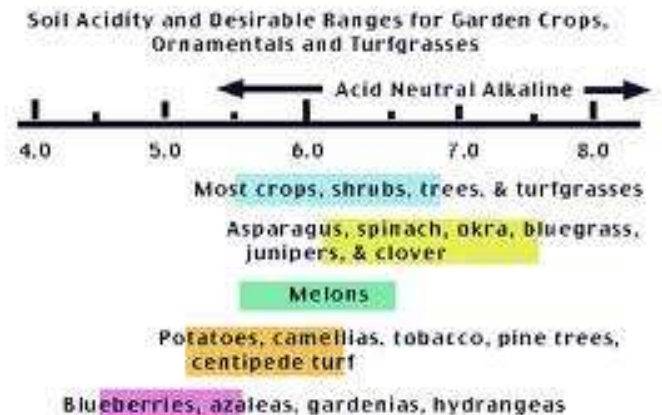
Moisture

- * Compost should be about as wet as a damp sponge.
- * Needed for micro-activity.
 - * Can make the pile hotter.
 - * Speeds up the process of compost.
- * Too much water can cause anaerobic conditions.
- * Add water if your compost materials are dry.
- * Add dry material or turn frequently if your compost materials are very wet.

Managing Your Compost

pH

- * Low pH is acidic, high is alkaline.
- * The pH of compost should be about neutral when it is finished (somewhere between 6.5 – 8.0).
- * It is very good at regulating itself.
- * Don't worry about composting citrus!



Managing Your Compost

Finished Product

- * Material in the compost pile should be unrecognizable.
- * Compost should have a rich, earthy smell.
- * The appearance should be crumbly and a dark color.

Tips

- * Crush up egg shells.
- * Chop up large pieces.



Trouble Shooting

Problem	Remedy
Wet, foul smelling	Turn pile, add “browns”
Dry, with little decomposition	Turn pile, wetting layers and cover to retain moisture
Damp but warm only in middle	Increase amount of material, moisten
Damp and sweet smelling, little heat	Increase “greens” and turn
Matted undecomposed layers of leaves or grass clippings	Break up layers by turning, avoid adding heavy layers without shredding
Large undecomposed items	Screen out and use to start next pile

Vermicomposting

Use worms to decompose organic matter

- * Worms will eat food scraps, yard waste, newspaper & cardboard
- * Final product is called worm castings
- * Great for apartments and small spaces



Vermicomposting



Compost Uses

- * Soil Amendment for
 - * Raised beds
 - * Gardens
 - * Potted plants
 - * Nursery field stock
 - * Agricultural row crops
- * Lawn top dressing
- * Backfill material
- * Soil remediation
- * Top soil blend
- * Landscape mulch
- * Erosion control

City of Lawrence Composting Program

Facility

- * 8 acre asphalt pad on the east side of town.
- * The City of Lawrence began City-wide composting in 1993.
- * Collected more than 13,000 tons of material in 2016.
 - * This equates to about 6,500 tons of material produced.
- * City Departments, Landscapers, and the Solid Waste Curbside collection all drop off material at the facility.

Material

- * Brush is dropped off in separate piles and ground into woodchips.
- * Yard waste and small woody debris is processed into compost.

Mark, Facility Operator



City of Lawrence Composting Program

Curbside Yard Waste Collection

- * Weekly collection, year-round (as winter weather permits).
- * 95-gallon yard waste carts.
- * Compostable paper bags, bundles.
- * 5,825 tons collected in 2016.
- * Christmas Tree Recycling:
21 tons collected this
past holiday season.



City of Lawrence Composting Program

Compost & Woodchip Sale Events

- * Three day events, currently held twice a year.
- * Loaders on-site.
- * \$10 per scoop, cash only.
- * Fall Dates: Today! September 14th – 16th, 8:00 am to 3:00 pm.



City of Lawrence Composting Program

Saturday Drop-Offs, Compost and Woodchip Sales

- * \$5/pickup truck load to drop off brush.
- * \$10/pickup truck load to pick up compost or woodchips.
- * Self-load, bring a shovel!
- * NEW: First Saturday Loading April-October.
 - * October 7th will be last Saturday Loading for 2017.



Thank you!



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www.LawrenceRecycles.org

www.facebook.com/LawrenceRecycles