

Assignment:

1. Write an outline for a future presentation that you might give. Any aspect of home composting is acceptable. (e.g. Home Composting Basics, Home Composting Made Easy, Composting with Red Worms, The Ideal Backyard Composting System, Setting up a Worm Box, Constructing a Compost Heap, etc...)
 2. Write brief objectives for your presentation. What do you want the group to know when you are finished?
 3. Mention your target audience, e.g. adults, children.
 4. Mention your teaching aids, e.g. posters, handouts, brochures, PowerPoint presentation, worm box, compost bin, tools, etc...
 5. Estimate the amount of time it will take to deliver the presentation.
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OUTLINE: Composting 101

1. Welcome the audience, always.
 2. Thank the audience for attending and the people/organization who invited me, always.
 3. Introductions
 - a. Be sure the hosting/sponsoring person(s)/organization have an opportunity to introduce themselves and/or make announcements.
 - b. Myself (and co-presenters)
 - c. Consider having audience members introduce themselves if it is a small group (under 25).
 4. Announcements
 - a. Tell them about BCEMC training/volunteering program
 - b. Have them sign-in so that you can follow-up and include them on the public Facebook Fan Page.
 - c. Give them incentive for staying – the reward of the “Home Composting Basics” brochure will be distributed at the end of the presentation.
 5. Ask the audience: “Are there any other announcements that should be made at this time?” (They may know about things we don’t . . . especially if the presentation is being made out-of-town . . . they need to get plugged-in to their local network.)
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main body & content

1. Set perspective/tone
 - a. Let us not take the science/art of composting so seriously that we cannot speak of it lightheartedly and laugh . . . decay is a humorous thing and you will experience many bloopers and follies in your composting journey. . . approach composting playfully and patiently . . . it is a learning process.
 - b. “.... if I wanted to have a happy garden, I must ally myself with my soil; study and help it to the utmost, untiringly. Always, the soil must come first.” - Marion Cran, *If I Where Beginning Again*



2. Introduce basic definitions
 - a. *Composting* is the controlled decomposition of organic materials by microorganisms.
 - b. *Compost* is partially decomposed organic matter.
 - c. *Humus* is completely decomposed organic matter.
 - d. *Mulch* is organic or inorganic materials spread in a layer on the soil surface (compost can serve as a possible mulch).
3. Benefits/uses of compost
 - a. Improves soil tilth, condition, structure
 - b. Increases the soil's ability to hold water/nutrients
 - c. Supports living soil organisms
 - d. Helps dissolve mineral forms of nutrients
 - e. Buffers soil from chemical imbalances
 - f. May provide biological control of certain soil pests
 - g. Helps return organic materials to the soil (keeps them out of landfills/waterways)
 - h. Can be used as a mulch, a liquid "fertilizer" or incorporated into the soil (or potting mixes)
4. Dispelling common composting myths (getting past “no”)
 - a. It shouldn't be stinky
 - b. It doesn't have to look junky
 - c. There is WAY MORE than one “right way” to do it
 - d. It can be done inexpensively

- e. It can be done relatively quickly
 - f. Troubleshooting is easier than you may have thought . . . you have many resources available to you
 - g. It doesn't have to be high-maintenance
 - h. You don't have to be a homeowner or gardener to compost.
 - i. You don't need a lot of space to compost.
 - j. You don't need a lot of technical knowledge to compost.
5. Key Players and Important Factors
- a. You (the caretaker), your pitchfork, & your water source
 - i. establishing & maintaining
 - ii. turning, moistening, measuring, modifying
 - b. Raw Materials
 - i. do's & don'ts

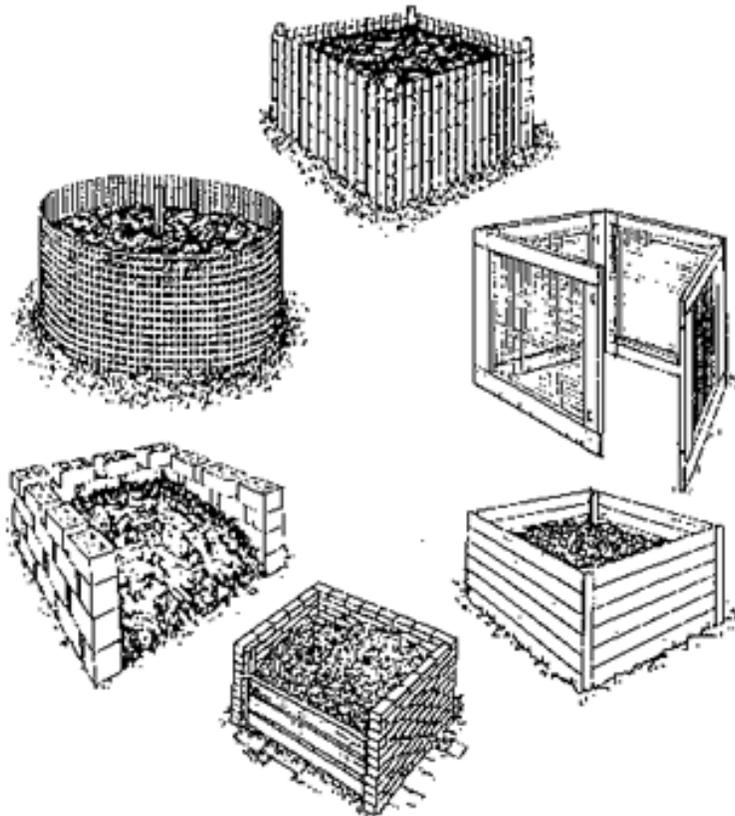
Yes Brown	Yes Green	No
Dry Grass Clippings	Grass Clippings	Meat, bones, fat, grease
Straw & brown hay	Weeds (without seeds)	Peanut butter, oils
Shredded newspaper	Fruit and vegetable scraps	Dairy products
Paper	Manure (not dog or cat)	Cooked foods w/butter or sauce
Coffee filters	Coffee grounds, tea bags	Dog/Cat manure
Sawdust	Egg shells	Large branches
Wood chips	Bread and grains (if bin is rodent resistant)	Diseased plants
Pine needles	Seaweed	Weeds gone to seed
Dried plant materials (trimmings, leaves, vines)	Hair, fur, feathers	Weeds which spread by roots or runners

ii. ratio guidelines

1. organic material, ideally in a carbon-to-nitrogen ratio of 30:1,
2. aim for diversity = a mix of green material (high nitrogen) with brown, dried material (high carbon)
3. consider maximizing surface area
 - a. shredding/chopping; freezing/thawing

iii. "use what you have" & adjust from there

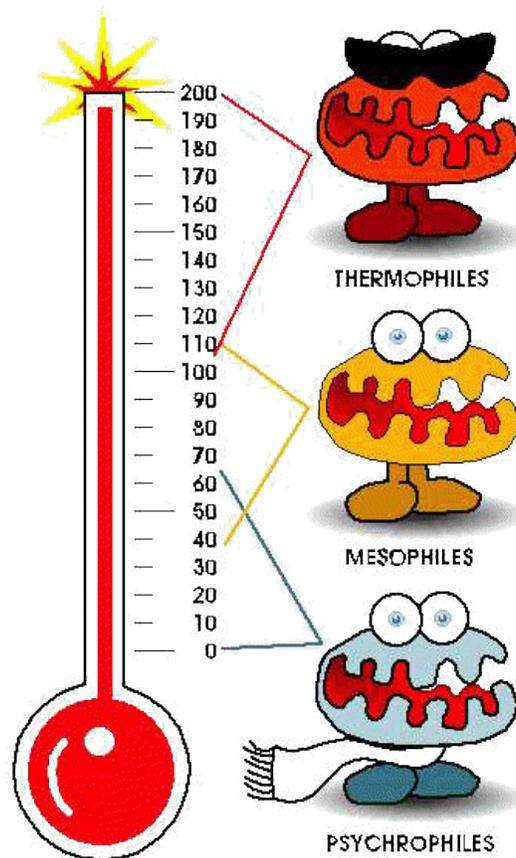
- c. Air
 - i. oxygen supports aerobic organisms
 - ii. anaerobic organisms produce stinky methane gas
- d. Moisture
 - i. The organisms need a thin film of moisture to live in
 - ii. Compost should be 40-60% moisture = a wrung-out sponge
- e. Volume
 - i. “hot composting methods” require a minimum of 3'x3'x3'
 - ii. “cold composting methods” require less space
 - iii. “vermi-composting methods” require less space
- f. Aggregate collection approach
 - i. Collecting-up raw materials in concentrated areas retains heat/ moisture
 - ii. Looks neater than loose piles
 - iii. In urban areas, a rodent-proof bin is advised
 - iv. Wide variety of styles to choose from



1. Make-your-own
2. Purchase a ready-made (buyer beware – seek reviews)

g. Microbes and More

- i. your neighborly mini-digesters at work
- ii. microbes workers @ different temperatures
(microbial diversity is critical to composting success)



1. low-temperature microbes: *Psychrophiles*
 - a. can grow at temperatures down to -10°C , but whose optimum temperature is 15°C (59°F) or lower
2. medium-temperature microbes: *Mesophile*
 - a. live at medium temperatures, $20\text{--}45^{\circ}\text{C}$ ($68\text{--}113^{\circ}\text{F}$)
 - b. includes human pathogens
3. high-temperature microbes: *Thermophile*
 - a. thrive above 45°C (113°F)
 - b. some live at or above the boiling point of water
4. higher-temperature microbes: *Hyperthermophiles*
 - a. thrive in temperatures of 80°C (176°F) or higher

5. *Actinomycetes* (medium temperature colonizers)
 - a. colonize after thermophilic bacteria are done
 - b. they produce the grayish, cobweb-like growths throughout the compost that give a pleasing, earthy smell
6. *Fungi* (simple plants that lack chlorophyll)
 - a. most active in the later stages of the compost pile where they finish the decomposition of materials partially-decomposed by bacteria
7. *other critters* help, too (stretch your comfort level) ☺
 - a. insects, bugs
 - b. little animals
- h. Time considerations
 - i. this varies depending upon the method you've selected
 1. hot composting = fastest method
 2. cold composting = provides compost for later use
 3. vermi-composting = depends upon # of worms



6. Troubleshooting problems
 - a. lots of help available here
 - i. Bernalillo County Extension Master Composters
 - ii. Master Gardeners hotline
 - iii. Books, websites, workshops/classes

b. Helpful chart

Symptom	Possible Cause	Possible Solution/Alternative
Compost pile is damp and warm in the middle, but nowhere else.	The pile may be too small.	Gather enough materials to form a pile 3 ft. x 3 ft. x 3 ft. and/or insulate the sides and cover the top.
Compost pile isn't heating up.	If it seems damp and sweet-smelling, there may be a lack of oxygen.	Mix in fresh grass clippings, manure, blood meal or other material high in nitrogen. If it is difficult to turn the pile, create holes in the pile and add the nitrogen-rich material.
	Not enough oxygen.	Turn or fluff the pile.
	Cold weather.	Increase pile size and/or insulate it with straw or plastic cover.
	The pile may be too small.	Gather enough material to form a 3 ft. x 3 ft. x 3 ft. and/or insulate the sides and cover the top.
	Pile was built over several months.	Don't worry about it. Let pile compost "cold." Check for finished compost.
	Compost may be finished.	If it looks dark and crumbly and smells earthy (not moldy or rotten), it may be done. Use it!
The pile is dry throughout.	Lack of water.	Turn the compost pile and add water. Moisten new materials before adding to the pile. If the pile is out in the open, consider covering with straw or plastic cover. The pile should be damp as a wrung-out sponge throughout.
Matted, undecomposed layers of leaves or grass clippings.	Compaction, poor aeration.	Break up layers with garden fork, or shred them, then re-layer the pile. Avoid adding heavy layers of leaves, grass clippings, hay or paper unless first shredded.
Large, undecomposed items.	Size and composition of materials.	Screen out undecomposed items Reduce size if necessary and use in a new pile.
Compost pile has a bad odor like a mixture of rancid butter, vinegar and	Not enough oxygen, too wet.	Turn the pile and add coarse, dry materials such as leaves to soak up excess moisture. Protect the pile from rain using a plastic film or other cover.

rotten eggs.		
	Not enough oxygen, compacted	Turn the pile and shake materials apart to aerate.
Compost pile has a bad odor like ammonia.	Pile may have too much nitrogen.	Add materials high in carbon such as shredded leaves and aerate.
Compost pile contains fire ants.	Lack of water.	Turn the pile and add water. In order to keep fire ants out of the pile, pour molasses powder around the perimeter of the pile.
Compost pile contains earwigs, slugs and/or other insects.	Pile is composting correctly.	Insects are a good sign of a productive pile. Note: slugs live happily in compost piles. If the pile is next to a garden, barriers can be placed between the pile and nearby garden with traps, metal flashing, etc.

7. Harvesting

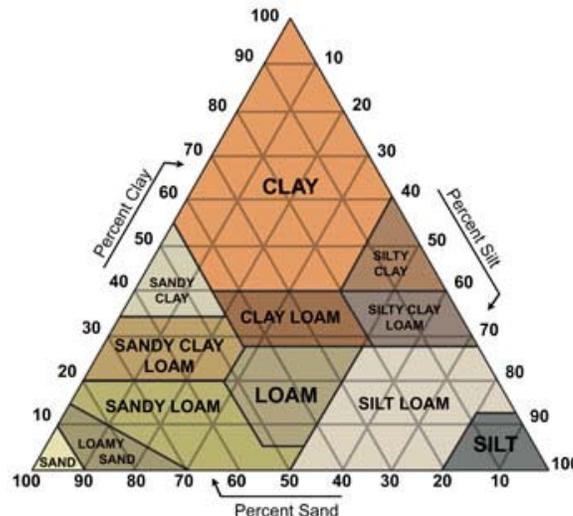
- a. Finished compost is black, crumbly, and “sweet smelling”
- b. Process is complete when raw materials are unrecognizable
- c. Sift the compost through a framed piece of metal screening
 - Undecomposed materials should be thrown back into the compost bin
 - i. the screening may be 7mm - 21mm (1/4 inch - 3/4 inch), depending on the desired coarseness of the compost.

8. Uses of Finished Compost

- a. add directly to the garden or flower bed and work into the soil
 - i. Compost is a great soil conditioner and amender and corrects soil imbalances

1. Soil Science (clay vs. silt vs. sand)

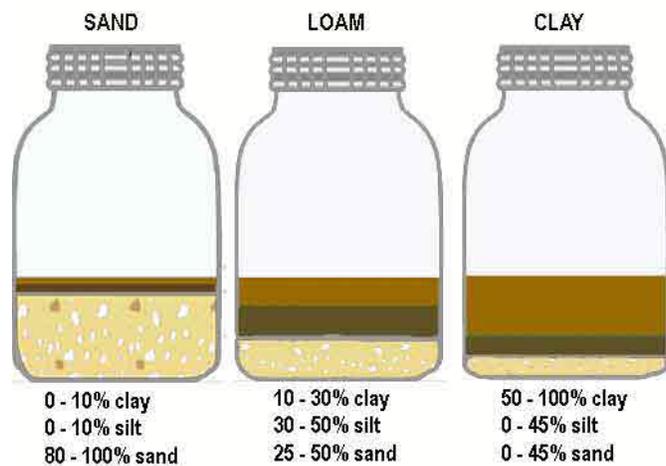
a. Soil Texture Triangle Chart



2. Jar Test for soil type

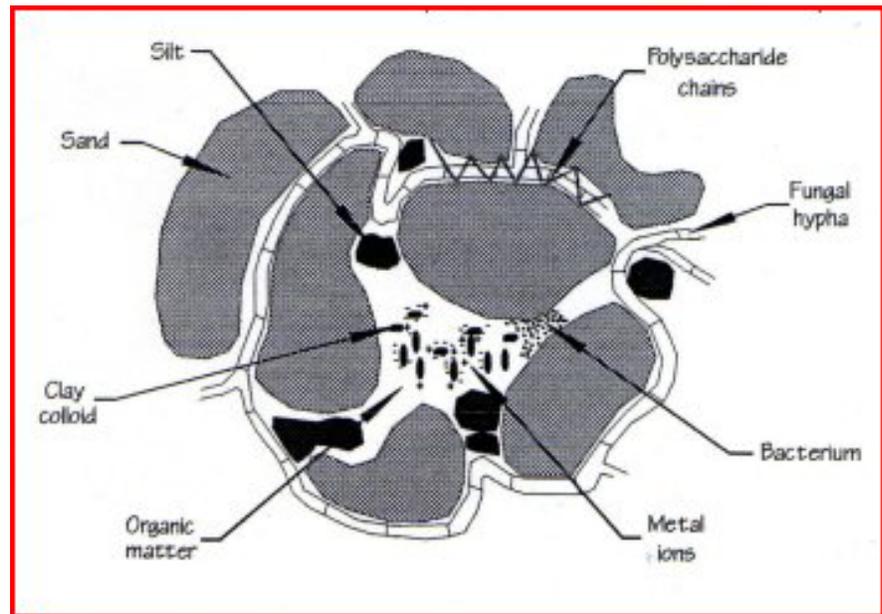


JAR TESTING FOR SOIL TYPE



3. Soil Structure

Granular: Resembles cookie crumbs and is usually less than 0.5 cm in diameter. Commonly found in surface horizons where roots have been growing.	Blocky: Irregular blocks that are usually 1.5 - 5.0 cm in diameter.	Prismatic: Vertical columns of soil that might be a number of cm long. Usually found in lower horizons.
Columnar: Vertical columns of soil that have a salt "cap" at the top. Found in soils of arid climates.	Platy: Thin, flat plates of soil that lie horizontally. Usually found in compacted soil. <small>Soil Science Society of America</small>	Single Grained: Soil is broken into individual particles that do not stick together. Always accompanies a loose consistence. Commonly found in sandy soils.



- ii. Mound compost up around the base of plants and trees during the growing season. The nutrients from the compost will leach into the soil and roots of the plants. In the fall, just work it into the garden
 - iii. Top dress your lawn, by spreading the compost in a thin layer over the grass. It will incorporate itself into the soil
 - iv. May be appropriate to use for bedding certain plants
 - v. Add to your house plants
 - vi. For starting or transplanting, use a mixture of half compost and half potting soil
 - vii. Brew some compost tea
 - 1. Place some compost in a burlap sack or nylon sock and soak it in water. The nutrients from the compost will be leached into the water
 - 2. Use the “tea” to water flowers, edibles, and indoor plants.
 - viii. **HELPFUL HINT:** If you are worried about bugs when using the compost in the house, sterilize it.
 - 1. bake the compost in the oven at 175° F for about 30 minutes
9. Step-by-step pointers for the beginner (now that a basic understanding is achieved)
- a. Select a location
 - i. Shade is preferable
 - ii. Out of the wind
 - iii. Within reach of water
 - b. Select your method (hot, cold, vermi-composting)
 - i. Within your method, choose technique(s)
 - 1. e.g. Sheet composting, Hole composting
 - 2. Large- or small-scale projects
 - 3. Open vs. Closed systems

In Review:

Presentation Objectives:

Provide a basic understanding of Backyard Composting to **ANY AGE**.
(For younger ages, certain details could be omitted and visual aids emphasized)

This presentation could be minimized down to **ONE HOUR**
and maximized out to **FIVE HOURS** by adding-in more details & stories.

Post-presentation, **the audience will understand** these basics:

- * Backyard composting refers to a variety of practices individuals can use to manage organic materials at home.
- * All backyard composting techniques utilize the natural activity of bacteria, fungi and other soil organisms to decompose organic materials and return them to the soil.
- * Decomposed organic material - compost - is essential to healthy gardens & landscapes
- * The process should be fun and experimental . . . if at first you don't succeed, try again

Visual Aids will include:

- * "Backyard Composting Made Easy" brochure (by NMED & Solid Waste Bureau)
 - * "Rainwater Harvesting: Supply From the Sky" booklet by Albuquerque Bernalillo County Water Utility Authority (available in ABQ libraries)
 - * several composting fold-out posters I've acquired & made which illustrate various techniques, bin types, etc.
 - * soil sampling demo
 - * small, portable worm bin in-action
 - * small, portable FINISHED compost tub (smell, feel, see)
 - * small, portable SEMI- composted tub (smell, feel, see)
 - * composting books I like will be displayed & held-up
 - * when multimedia technology is supported (i.e., a projector), a PowerPoint presentation will be used
 - * a helpful list of composting-relevant websites
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Wrap-up & Thanks & Additional Announcements