

Compost & Mulch

Presented By:

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Overview

- What and why
- Composting process
- 5 rules of composting
- How to make a compost system
- Benefits of mulch
- Types of mulch
- Sheet mulching

What Is Compost?

- Decayed organic material used as a plant fertilizer



Why is it good?



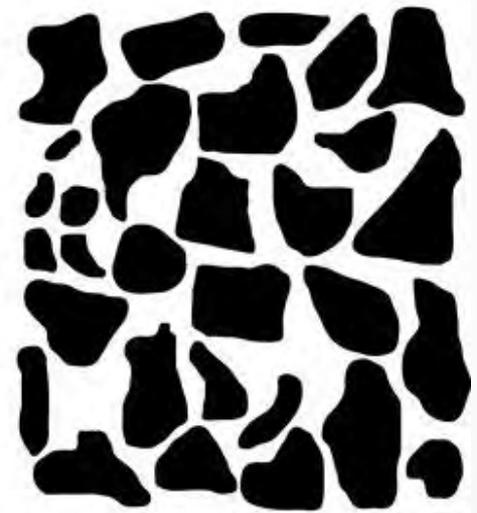
Full of nutrients

P

N

K

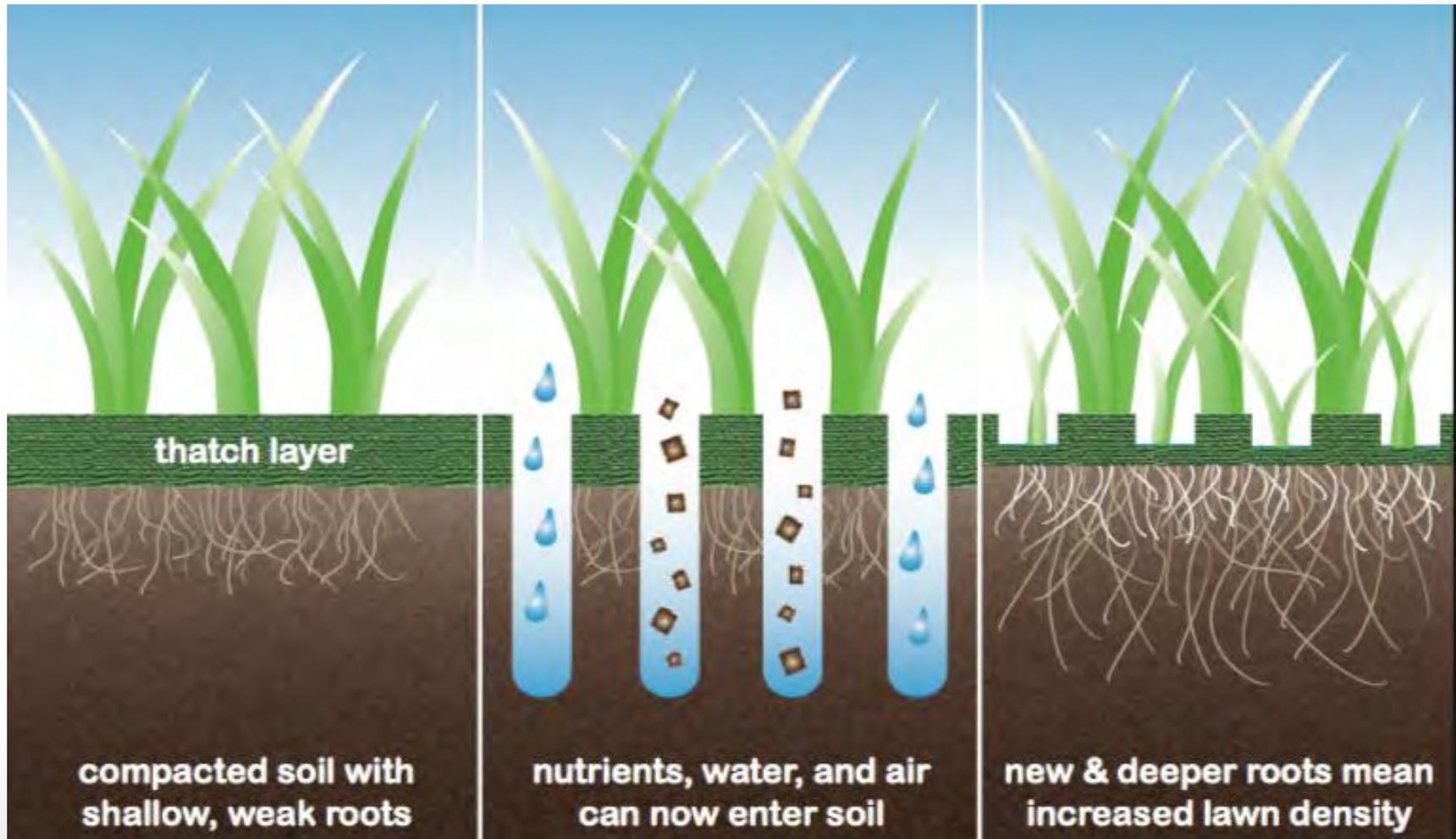
Increases water holding capacity



Reduces rainwater runoff



Increases drainage and aeration



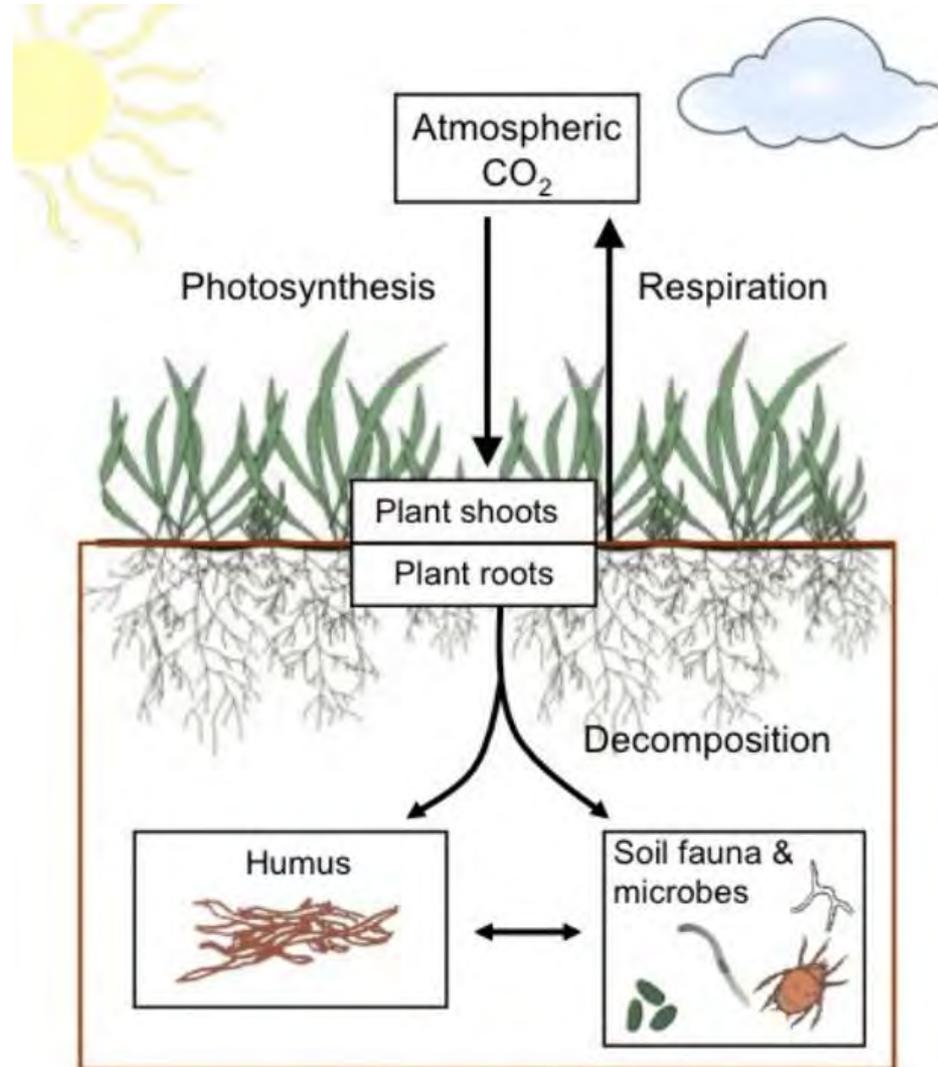
Reduces need for fertilizers



Immobilizes and degrades pollutants



Carbon Sequestration



Reduces waste





#1 in landfills

50%



60 million tons



\$160 billion



How Does it Work?





Compost Worms

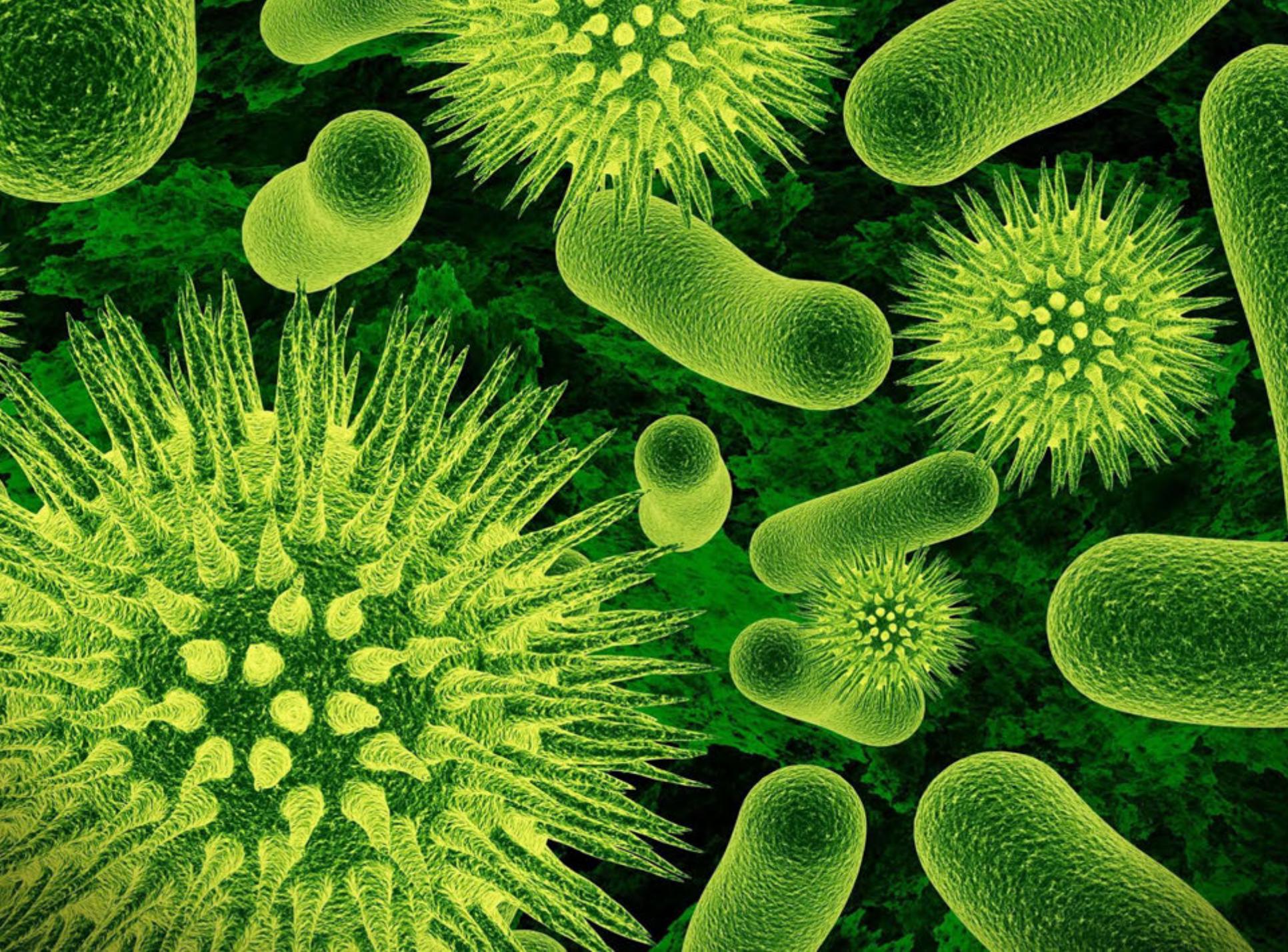
- All worms are compost worms, some are just more efficient than others.
- Red Wigglers are highly efficient.
- Reproduction is relatively quick
 - 2-3 capsules per week, hatch every 3-4 weeks



Compost Worms

- This is a good thing!





Bacteria

- **Aerobic** (require oxygen) **bacteria** most important
 - Usually takes up to a few months
- When oxygen drops below 5%, 90% of the aerobic bacteria die
- **Anaerobic bacteria** take over at this point and the process slows down and smells terrible
 - Can take 6 months to a year

How Hot Composting Works

- **Psychrophilic bacteria** (from ancient Greek meaning cold or frozen) begin the composting process between 55-70°
- Produces enough heat for **Mesophilic bacteria** to take over heating the pile from 70-100°
- Then the **Thermophilic bacteria** take over, raising the temperature from 100° to potentially 160°
- Recommended pile (pre-compost) should be 1 cubic meter (35 cubic feet), equal parts green and brown, shredded to a small size
- Turn often to keep temperature in check
- Reaching 140° has its advantages
 - Kills pathogens, weeds, and larvae, but not always necessary

5 Compost Rules

1. Allow for oxygen
2. Balance the nutrients
3. Manage for Moisture
4. Watch the temperature
5. Cover the pile

1. Allow for oxygen

- Turn it every 5-10 days



1. Allow for oxygen

- Add a **ventilation stack**



1. Allow for oxygen



2. Balance for nutrients

- Ratio of Carbon: Nitrogen (C:N) is important
 - Unbalanced C:N slows the process by reducing microbial growth
 - Not enough carbon causes volatilization of nitrogen



2. Balance of Nutrients

- Most scientists agree that the most effective range is between **25:1** and **30:1** C:N
- This can be difficult to calculate...
- C:N ratio tables can help
- In general: “Juicy” materials are higher in nitrogen, whereas drier older woody materials are higher in carbon.
- Too much carbon= very slow decomposition
- Too much nitrogen= smelly and messy

Estimated Carbon-to-Nitrogen Ratios

Browns = High Carbon	C:N
Ashes, wood	25:1
Cardboard, shredded	350:1
Corn stalks	75:1
Fruit waste	35:1
Leaves	60:1
Newspaper, shredded	175:1
Peanut shells	35:1
Pine needles	80:1
Sawdust	325:1
Straw	75:1
Wood chips	400:1
Greens = High Nitrogen	C:N
Alfalfa	12:1
Clover	23:1
Coffee grounds	20:1
Food waste	20:1
Garden waste	30:1
Grass clippings	20:1
Hay	25:1
Manures	15:1
Seaweed	19:1
Vegetable scraps	25:1
Weeds	30:1

Material	Carbon/Nitrogen	Info
table scraps	Nitrogen	add with dry carbon items
fruit & vegetable scraps	Nitrogen	add with dry carbon items
eggshells	neutral	best when crushed
leaves	Carbon	leaves break down faster when shredded
grass clippings	Nitrogen	add in thin layers so they don't mat into clumps
garden plants	--	use disease-free plants only
lawn & garden weeds	Nitrogen	only use weeds which have not gone to seed
shrub prunings	Carbon	woody prunings are slow to break down
straw or hay	Carbon	straw is best; hay (with seeds) is less ideal
green comfrey leaves	Nitrogen	excellent compost 'activator'
pine needles	Carbon	acidic; use in moderate amounts
flowers, cuttings	Nitrogen	chop up any long woody stems
seaweed and kelp	Nitrogen	apply in thin layers; good source for trace minerals
wood ash	Carbon	only use ash from clean materials; sprinkle lightly
chicken manure	Nitrogen	excellent compost 'activator'
coffee grounds	Nitrogen	filters may also be included
tea leaves	Nitrogen	loose or in bags
newspaper	Carbon	avoid using glossy paper and colored inks
shredded paper	Carbon	avoid using glossy paper and colored inks
cardboard	Carbon	shred material to avoid matting
corn cobs, stalks	Carbon	slow to decompose; best if chopped up
dryer lint	Carbon	best if from natural fibers
sawdust pellets	Carbon	high carbon levels; add in layers to avoid clumping
wood chips / pellets	Carbon	high carbon levels; use sparingly

Compost Recipe

1 bucket of “green” material + 2 buckets of “brown” material + air and water = one heck of a good compost pile



What Not to Add



Dairy



Whole eggs



Meat and Seafood





Greasy or oily foods

Pet waste





Charcoal ash
(wood ash ok)

Plants with pesticides



Diseased plants





Black Walnut
Juglans nigra



Perennial weeds/
seeds/root spreading



How Do You Make It?

- Include the necessary ingredients.



How Do You Make It?

- Buy A Compost Bin



How Do You Make It?



Do what works for you



How Do You Make It?

- Make sure you aerate the compost by turning it frequently



Methods for Composting:

- Compost Bin



Methods for Composting:

- Compost Heap



3 & 5. Manage Moisture

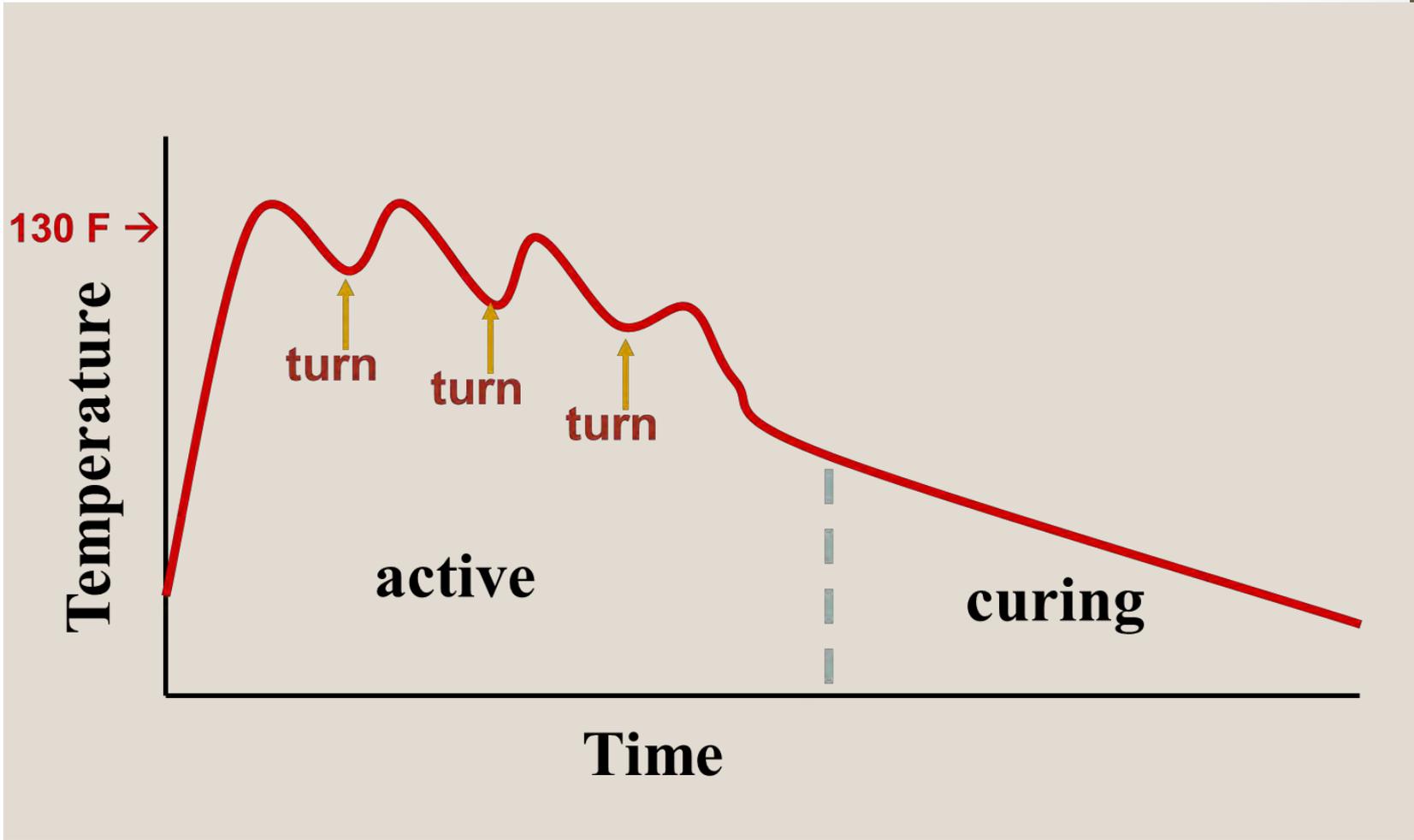
- Cover piles
 - Prevent leaching
 - Greater control over amount of water in pile
- Rule of thumb: Squeeze and handful of material into your fist. If it drips it's too wet, if it falls apart it's too dry. A film of water on your palm is just right.



4. Watch the Temperature

- 3+ ft thermometer
- Hot = good!





Food Scrap Composting



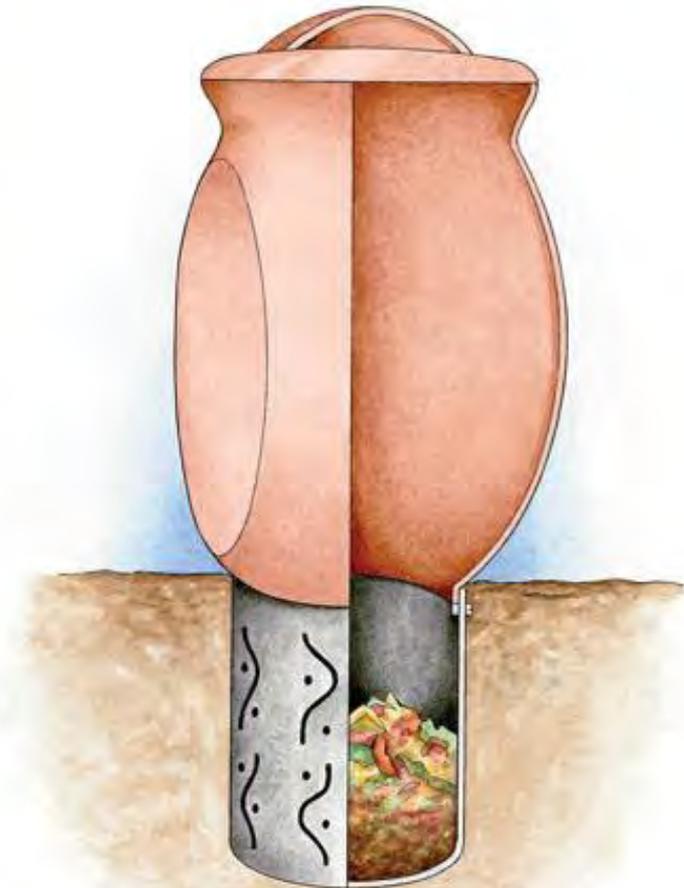
Worm bins



Burying food scraps



Food digesters



Food digesters



Considerations

- Location
 - Neighbors, drainage, accessibility
- Materials
 - Seasonal availability, odors, risk, storage
- Method
 - Time, space, management



Problem Solving

Problem	Cause	Solution
Bad Odor (rotten smell)	Too much moisture	Turn the compost or add dry, porous material
Bad odor (ammonia smell)	Too much nitrogen Compacted leaves Inadequate air	Add high-carbon materials Turn the compost Make pile smaller
Low compost temperature	Pile too small Too little moisture Too much moisture Too little air Lack of nitrogen Cold weather Particle size too large	Increase size, insulate sides Add water and turn Turn the compost Mix in dry materials Increase pile size or insulate pile with straw or plastic Chip or grind materials
Pile is dry throughout	Not enough water, too much wood	Turn pile and moisten, cover pile
Compost pile is damp and warm only in middle	Pile is too small	Mix pile with more material and moisten
Pest infestation –dogs, rodents, insects	Improper food scraps added Food scraps not covered	Don't add meat or meat by-products Place kitchen waste in center of pile Use rodent resistant bin
Neighbor complains	Compost is ugly	Get attractive bin or cover

Compost Tea:



Compost Tea:

- Equipment:
 - Bucket or barrel
 - Air pump (fish tank)
 - Piping with holes
 - Bag or basket to hold compost



Compost Tea:

- Simple tea recipe (5 gallons):
 - 1.5 lbs of balanced compost
 - 1.6 oz of humic acids
 - 1 oz of liquid kelp
 - 1 oz soluble un sulphured black-strap molasses (includes minerals such as potassium that feed microbes)





Let's talk mulch



Controls weeds

Retain soil moisture



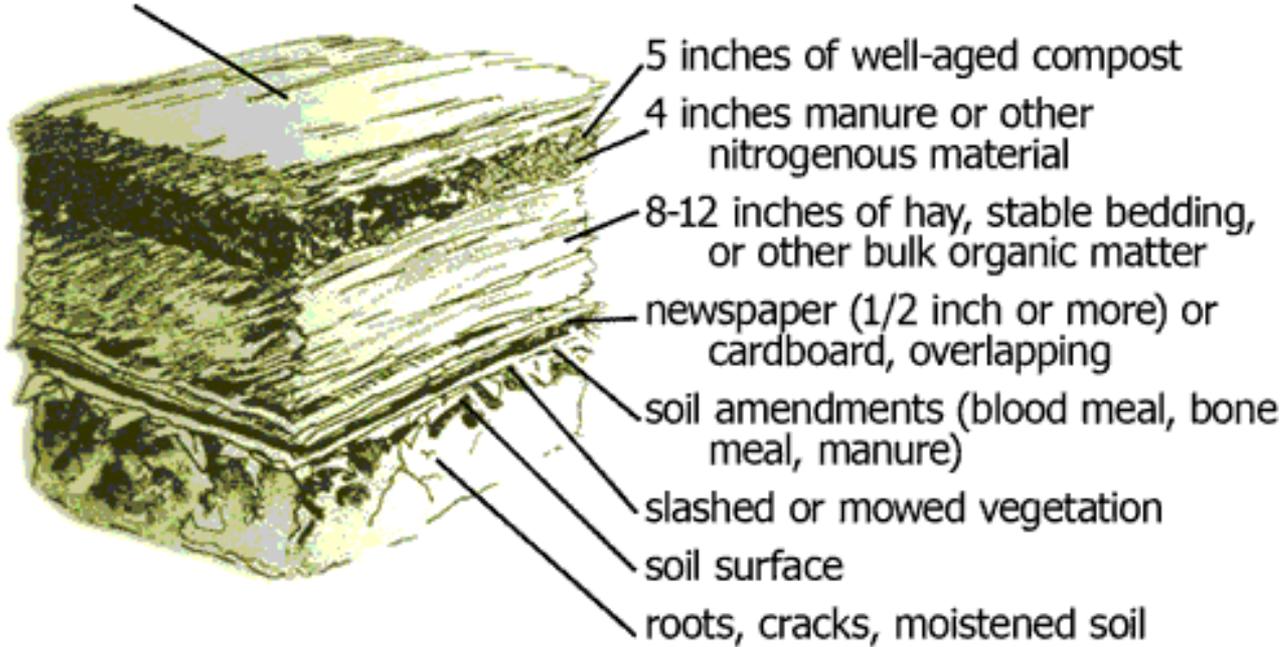


Reduces soil compaction



Sheet Mulching:

2 inches of straw, leaves, or other seedless mulch







Pros and Cons

- **Sheet Mulching**
 - Can easily convert part of your lawn into a garden bed
 - Smothers weeds
 - Builds the soil
 - Some people don't like the way that it looks
 - Doesn't kill weed seeds or pathogens

Bark Mulch

- Varying sizes (fine, medium, coarse)



Wood Chips

- Slow to decompose
- Tendency to float



Shredded Wood Mulch

- Creates a mat which helps with weed control
- Less likely to sluff if applied to slopes



Too Much Mulch!



LAWNS TO LETTUCE

Reduce lawns by growing food in sustainable ways.



Snohomish Conservation District

working together for better ground since 1941



33rd Annual Plant Sale

- 15% discount
- February 10th
- 8:30am – 4:00pm
- www.snohomishcd.org/annual-plant-sale

Resources

- Betterground.org
- [Rodales Organic Life](#)
- [Old Farmers Almanac](#)
- [Seattle Tilth](#)
- [Grow smart grow safe](#)
- [Oregon Metro](#)
- [Mother earth news](#)
- [Old world garden farms](#)

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