The "Alchemy" of Composting:

Demystifying and Simplifying Composting

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Cowlitz County Master Gardeners
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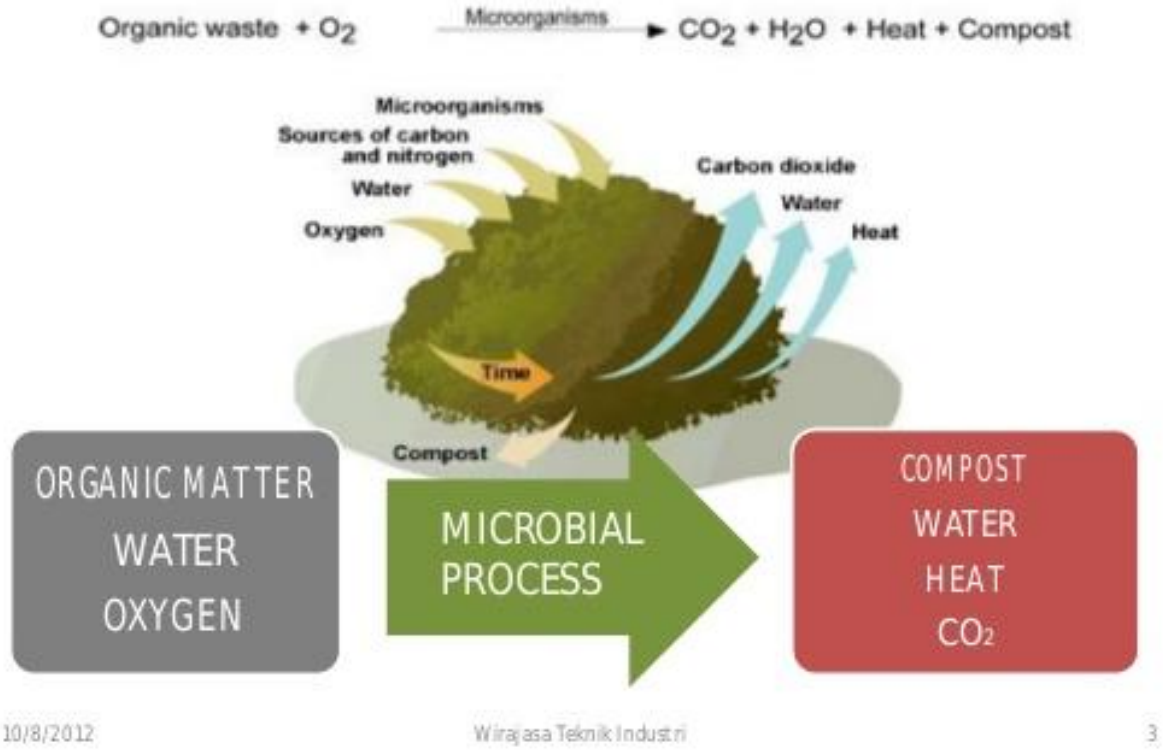
Composting is a bit like Alchemy…

Alchemy: any seemingly magical process of transforming or combining common substances, usually of little value, into a substance of great value. (Lead ⟶ gold)

Composting: an understood and natural process by which ordinary kitchen and yard waste materials are combined and allowed to decompose into a rich soil amendment. (Yard & Kitchen waste ⟶ "black gold")

Derived from Dictionary.com

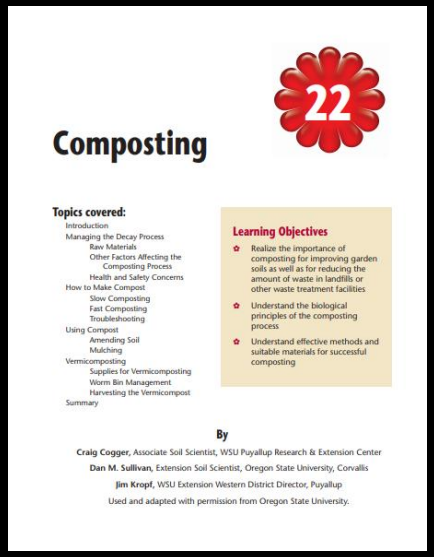
COMPOSTING PROCESS

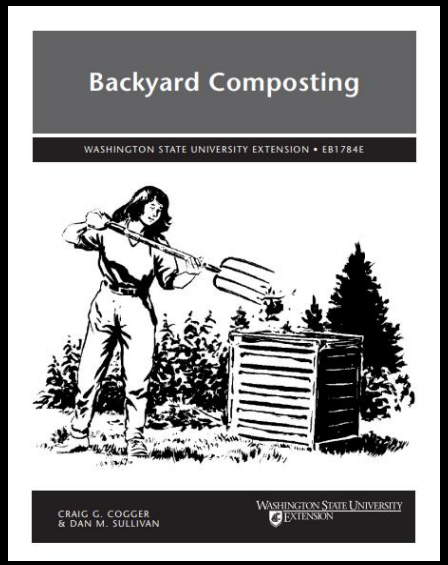


Composting might seem “magical” or mysterious. Or, complex and daunting. But, the science is understood. And, the practice can be relatively simple.

The scope of this presentation will not focus much on technical stuff…
Rather, my aim is to simplify and demystify it so you will go out and “just do it!”).. .

composting-process-and-organic-fertilizers-production-3-638.jpg (638×451) (slidesharecdn.com)





Want to get more scientifical?

Lots and lots and lots of resources. Here are but a few…

[Advanced Composting for Beginners (oregonstate.edu)]

[wrkngmulch.png (825×485) (ca.gov)]

[Compost stuff (oregonstate.edu)]

Composting:
turning kitchen and yard waste into a mulch and a soil amendment for the home gardener

"Alchemy"

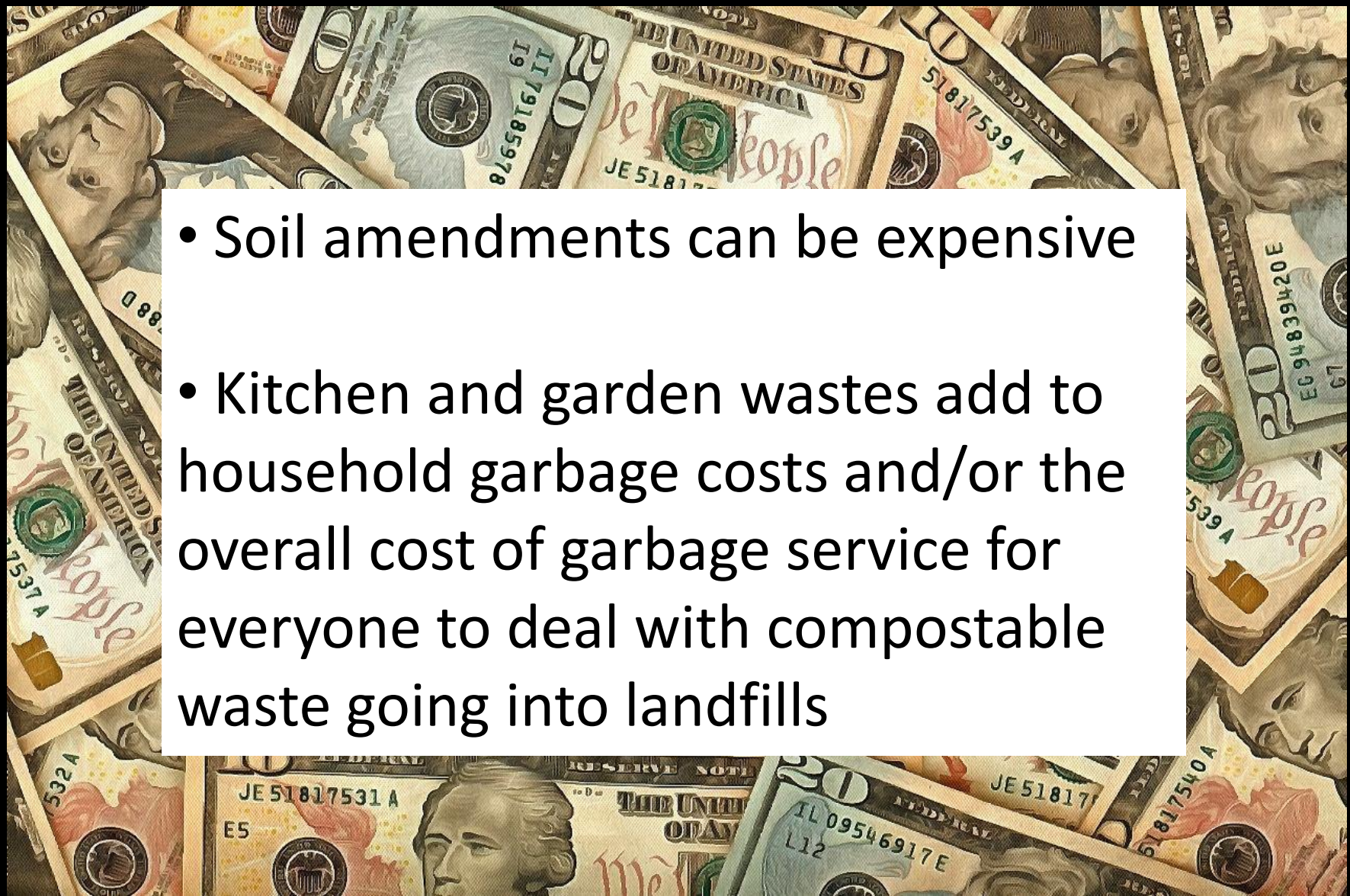
Hot composting vs. Cold Composting
(Active vs. Passive)
I will cover hot composting

Composting:

Why?
What?
How?

Why bother to compost?

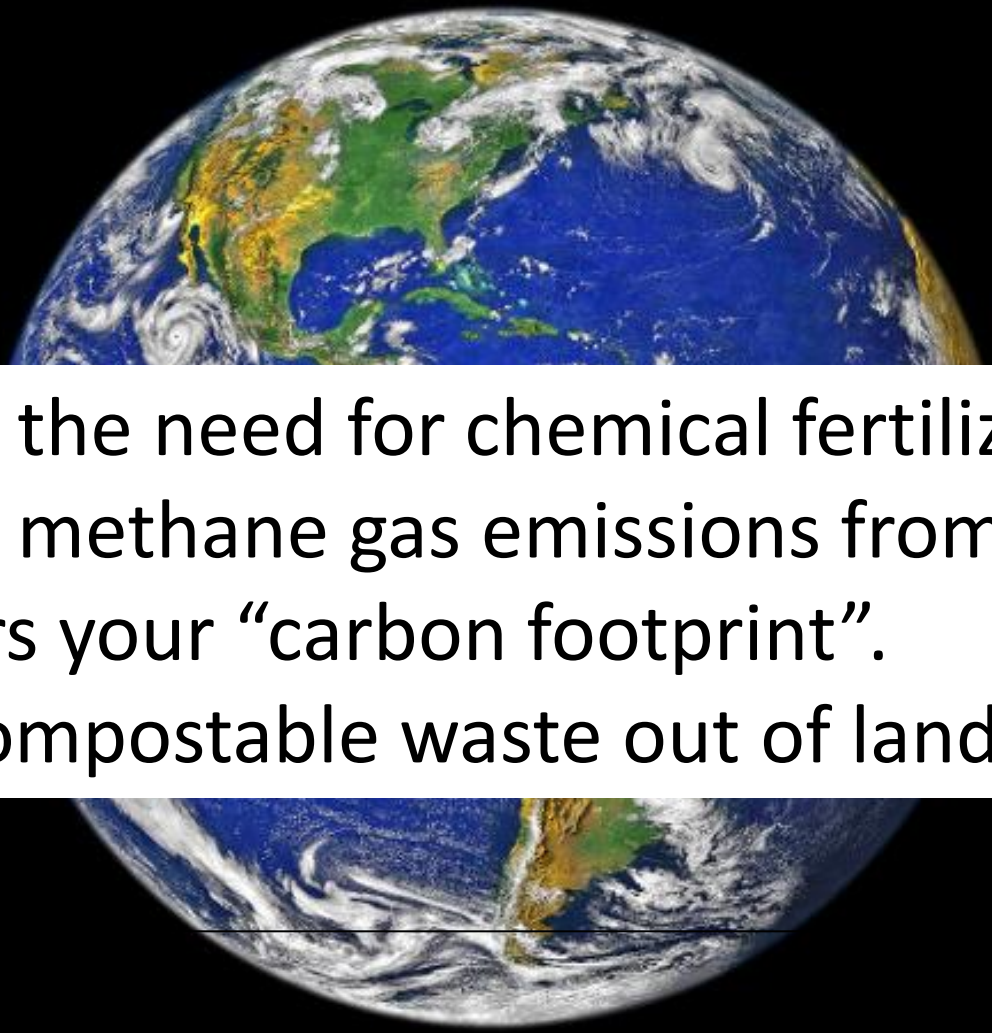
Composting – why?: Saves $



- Soil amendments can be expensive

- Kitchen and garden wastes add to household garbage costs and/or the overall cost of garbage service for everyone to deal with compostable waste going into landfills

Composting – why?: Environmentally Friendly

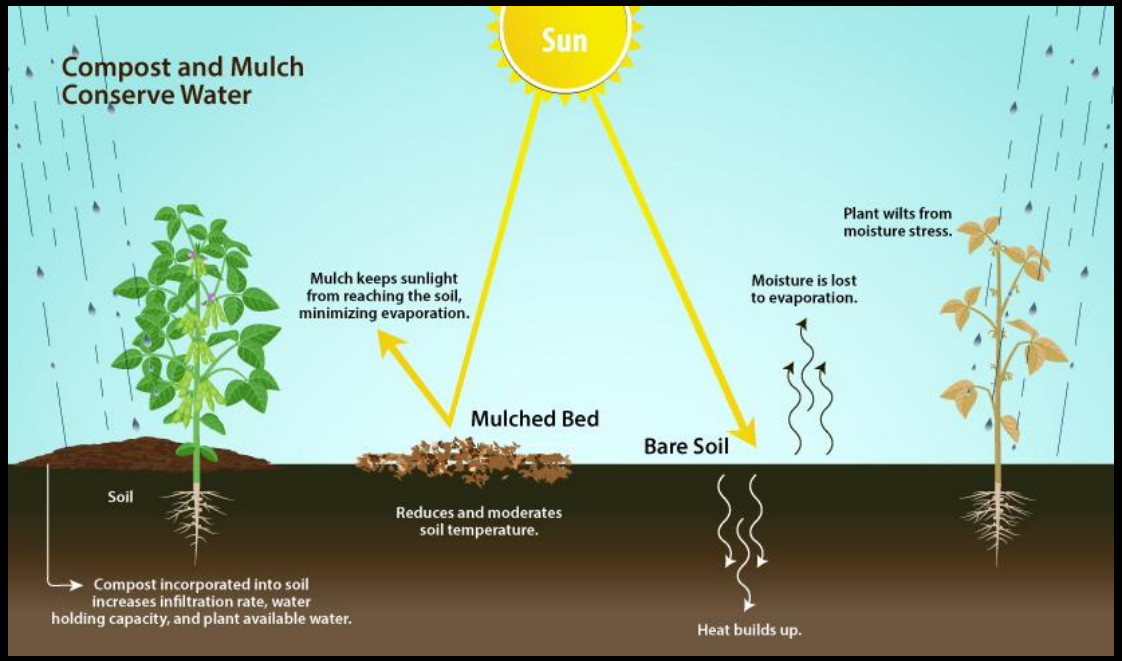


- Reduces the need for chemical fertilizers.
- Reduces methane gas emissions from landfills and lowers your “carbon footprint”.
- Keeps compostable waste out of landfills.

Composting – why?: Saves on watering

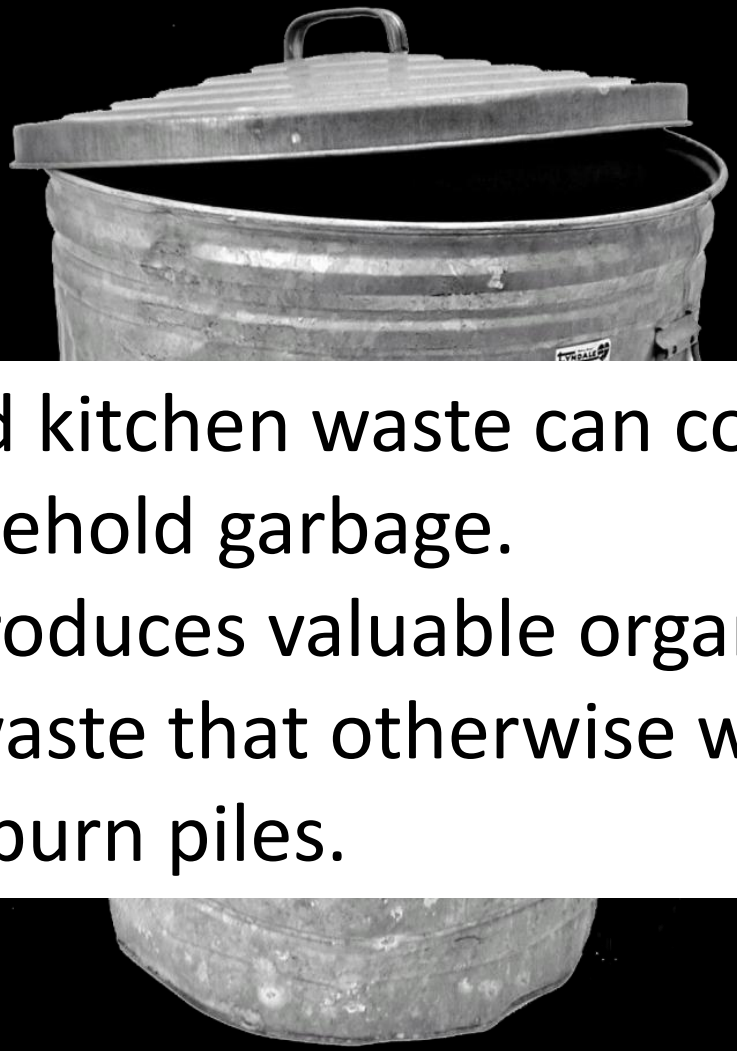
- For each percent of organic matter added to a cubic foot of soil, roughly 1.5 quarts of plant-available water can be retained in that soil.

- Using compost as a top mulch reduces surface evaporation of water



www.canr.msu.edu/news/compost_increases_the_water_holding_capacity_of_droughty_soils

Composting – why?:
Adds Value to Your Garbage ("Alchemy!")



- Yard waste and kitchen waste can comprise 20% or more of household garbage.
- Composting produces valuable organic matter for your soil from waste that otherwise would go to landfills or into burn piles.

Composting – why?: Helps to grow an amazing garden and yummy veggies!

- What can be composted?

What can be composted?

"Green" (higher N)	"Brown" (higher C)	"Balanced"
Grass clippings	Wood chips	Ground up tree and shrub trimmings (leaves+twigs/branches)
Dairy, chicken, or rabbit manure	Sawdust	Horse manure mixed with bedding
Fruit and vegetable waste	Grass hay	Deciduous leaves
Garden trimmings	Wheat straw	Legume hay (pea, vetch, etc.)
Coffee grounds; tea leaves	Corn stalks	
	Shredded newspaper	

What can be composted?

Manures: Rule of Thumb

[Advanced Composting for Beginners (oregonstate.edu)]


What can be composted?
Tomato plants
Mowed leaves
Dahlias, etc.
Mulched leaves
Leaves
(before mower
mulching)
Grass


Kitchen scraps
(don’t forget!)

"Alchemy!"

Free coffee grounds from Starbucks not going to the landfill


What NOT to compost?

What not to compost…

Can create odor or attracts pests	Might survive composting process	Might contain harmful agents
Dairy products	Diseased or insect-infested plants	Pet dog or cat waste; including soiled cat litter
Bones and scraps from meat or fish	Certain weed seeds and certain weed roots or stems (cold composting)	Yard trimmings treated with chemical pesticides (might persist)
Fats, lard, oils		Bracken fern*

*Human carcinogenesis and bracken fern: a review of the evidence
Human carcinogenesis and bracken fern: a review of the evidence - PubMed (nih.gov)

- How to compost?

Compost: A Three-legged Stool

How to compost?... first, some basics

(hopefully not too technical)!

[Advanced Composting for Beginners (oregonstate.edu)]

Air (oxygen)

The microorganisms that do the work need to "breathe"… O_2 to live

Water

They also need water to survive, but not too much or too little.

- Materials should be damp and not soaking wet.

- Materials should feel like a damp sponge but not able to squeeze water out.

Food

Remember to keep the “little guys” fed, but give them a proper diet!

Your compost pile will thrive with a balanced diet

Your pile will struggle if diet not balanced.

C:N ratio (a.k.a. brown : green)

The ideal
C : N ratio
(carbon to nitrogen) is
30:1

Material	C:N ratio
Wood chips	641:1
Corrugated cardboard	563:1
Sawdust	500:1
Rotted sawdust	208:1
Newspaper	170:1
Wheat straw	128:1
Dried leaves	70:1
Corn stalks	60:1
Horse manure with litter	60:1
Pine needles	60:1 to 110:1
Peat Moss	58:1
Timothy hay	58:1
Oat straw	48:1
Fresh leaves	40:1
Hay	40:1
Horse manure	30:1
Red clover	28:1
Oak leaves	26:1
Coffee grounds	20:1
Alfalfa pellets	20:1
Cattle manure	19:1
Vegetable produce	19:1
Alfalfa hay	18:1
Composted dry chicken manure	15:1
Fresh grass clippings	17:1
Cottonseed meal	7:1
Soybean meal	6:1
Blood meal	4:1
Urine	0.6:1

But, how do I compost?

(I like to keep it a bit more simple)

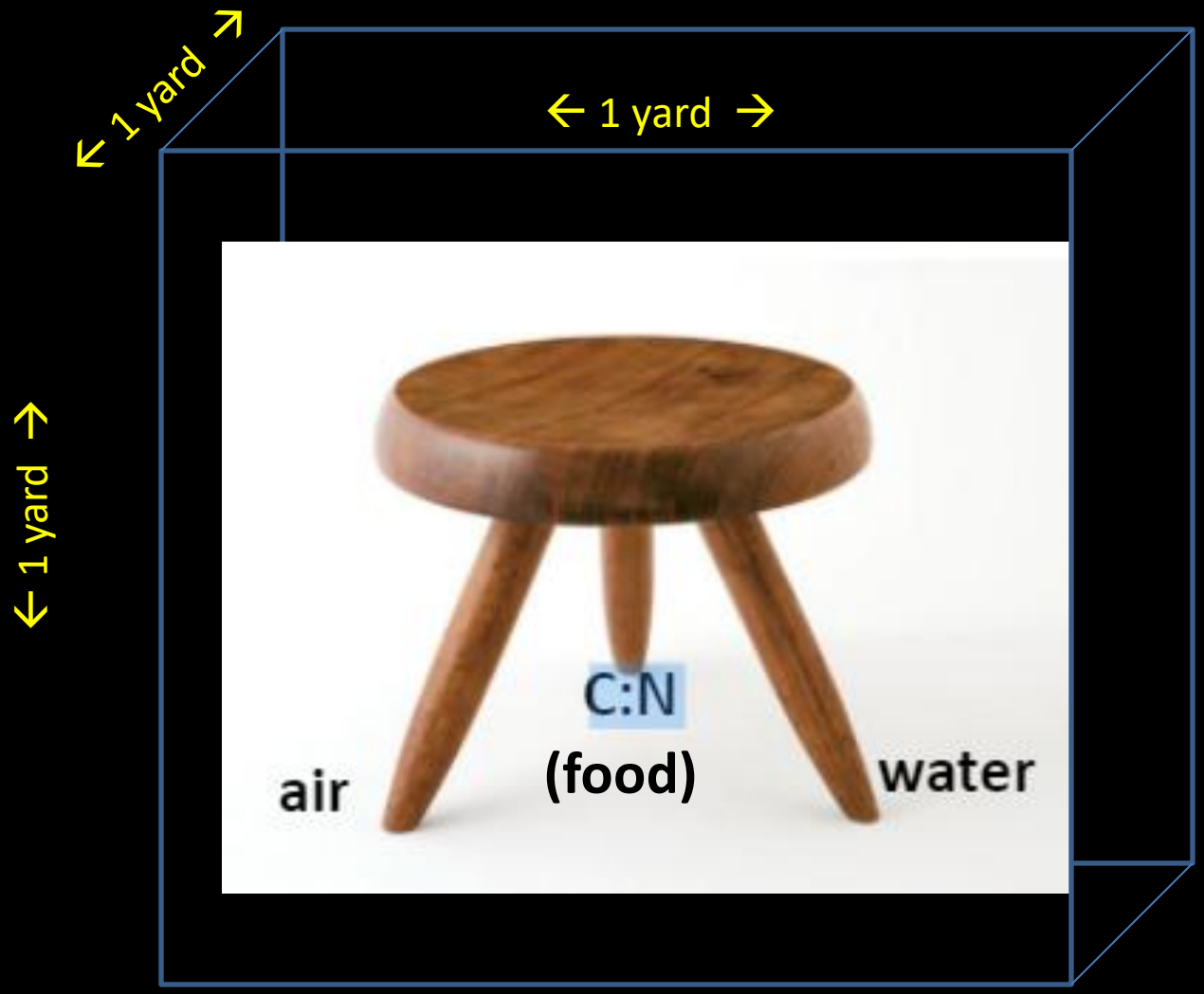
[Advanced Composting for Beginners (oregonstate.edu)]

Brrrr….

The right “habitat” is important for effective, hot composting.

All 3 of these factors might be in place, but without suitable "habitat” for hot composting to occur, it'll be a struggle.

1 cubic yard



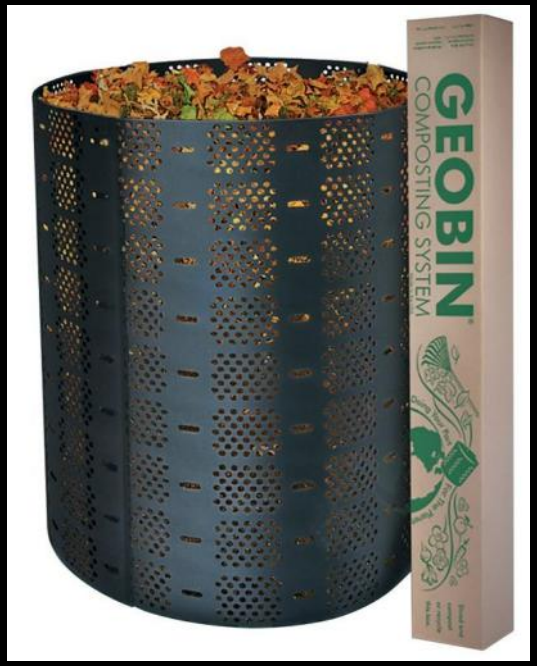
Ideal hot composting "habitat" is 1 yd^3 mounded or contained

How to compost? (cont'd)

Compost bins make managing and containing compost easier…

Compost bins… quite an assortment:

A few examples. These contain the materials and aid in creating “critical mass” (habitat)



Compost bins… quite an assortment:

My choice…
It works well, and, it was free using materials I had on hand

- 7 pallets
- 2 pieces of plywood
- Hinges
- Scavenged Cinder blocks

Compost bins v3.0 and v3.1

(It’s been an evolutionary process)

TOOLS:

It’s your choice…
but, here’s what works for me


Thermometer!!!
Hose and nozzle
Rake
Leaf blower
Pitch fork
Shovel


Tools cont'd: wheelbarrow
TRUPER


Optional:
½ inch hardware cloth screen
(to sift finer compost for top mulch)

Optional:
½ inch hardware cloth screen (to sift finer compost for top mulching)


Tools cont'd:
Mulching lawnmower
with/without catcher

BEFORE

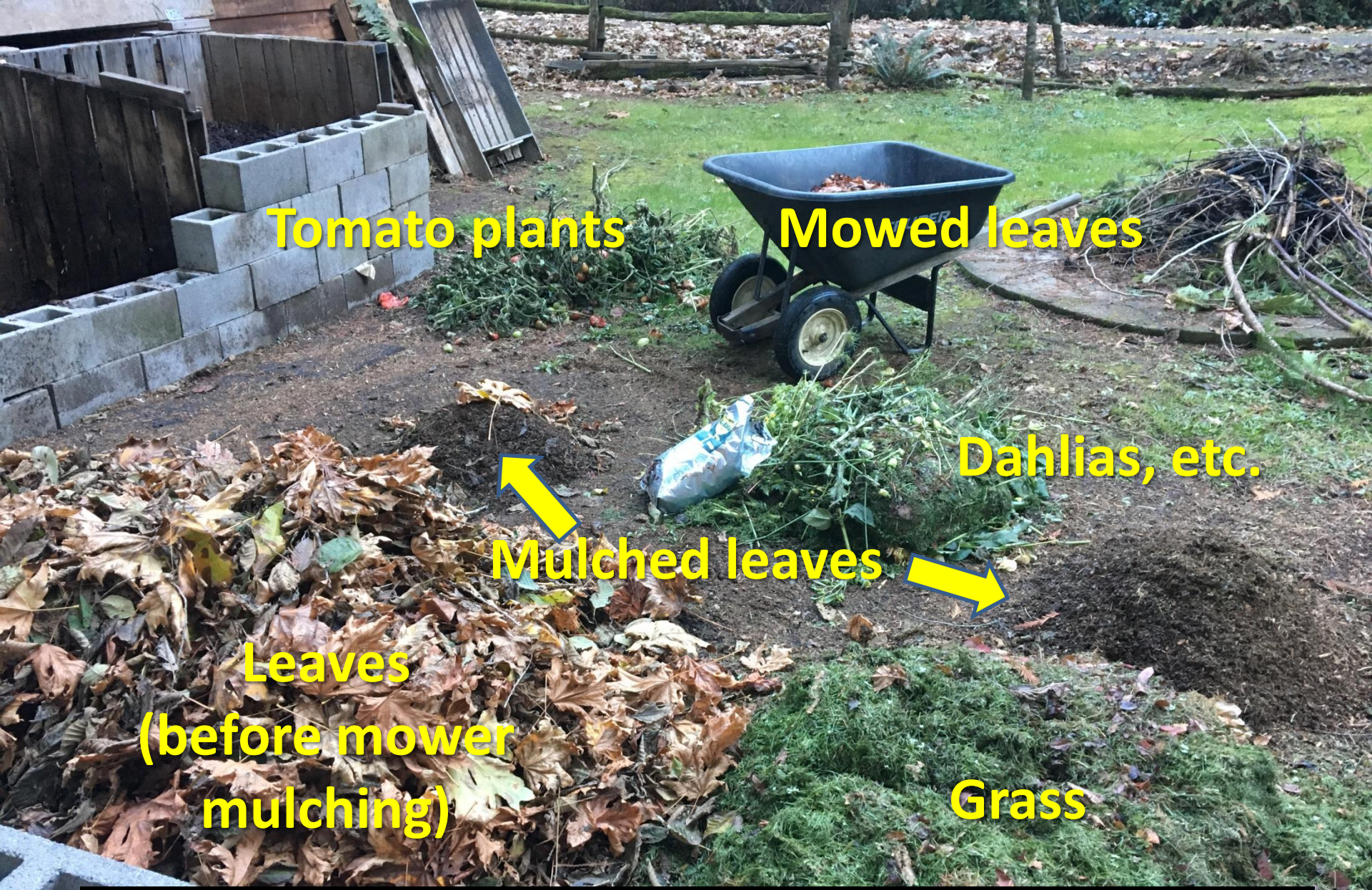
AFTER

Elapsed time: 10 minutes

Results of mowing leaves with a catcher


Before
mulching


After “mulching”
(no mower bag)



How to compost? (get ready and just do it!)

Basic Compost Recipe

One part green stuff

Four parts brown stuff

Air and water as desired

1 + 4 = COMPOST


1st day… Wednesday 3:40pm
55 degrees F


2nd day… Thursday 1:50pm
84 degrees F

4th day… Saturday 10:20am
132 degrees F

8th day… Wednesday 10:15am
119 degrees F

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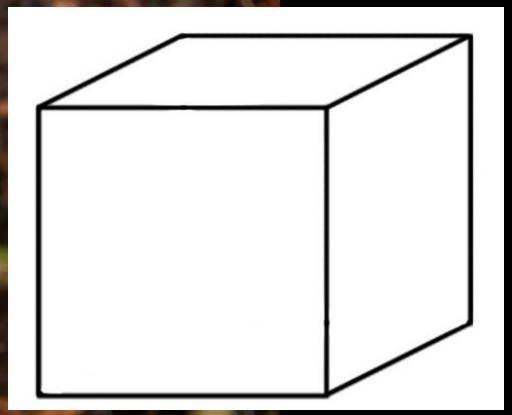
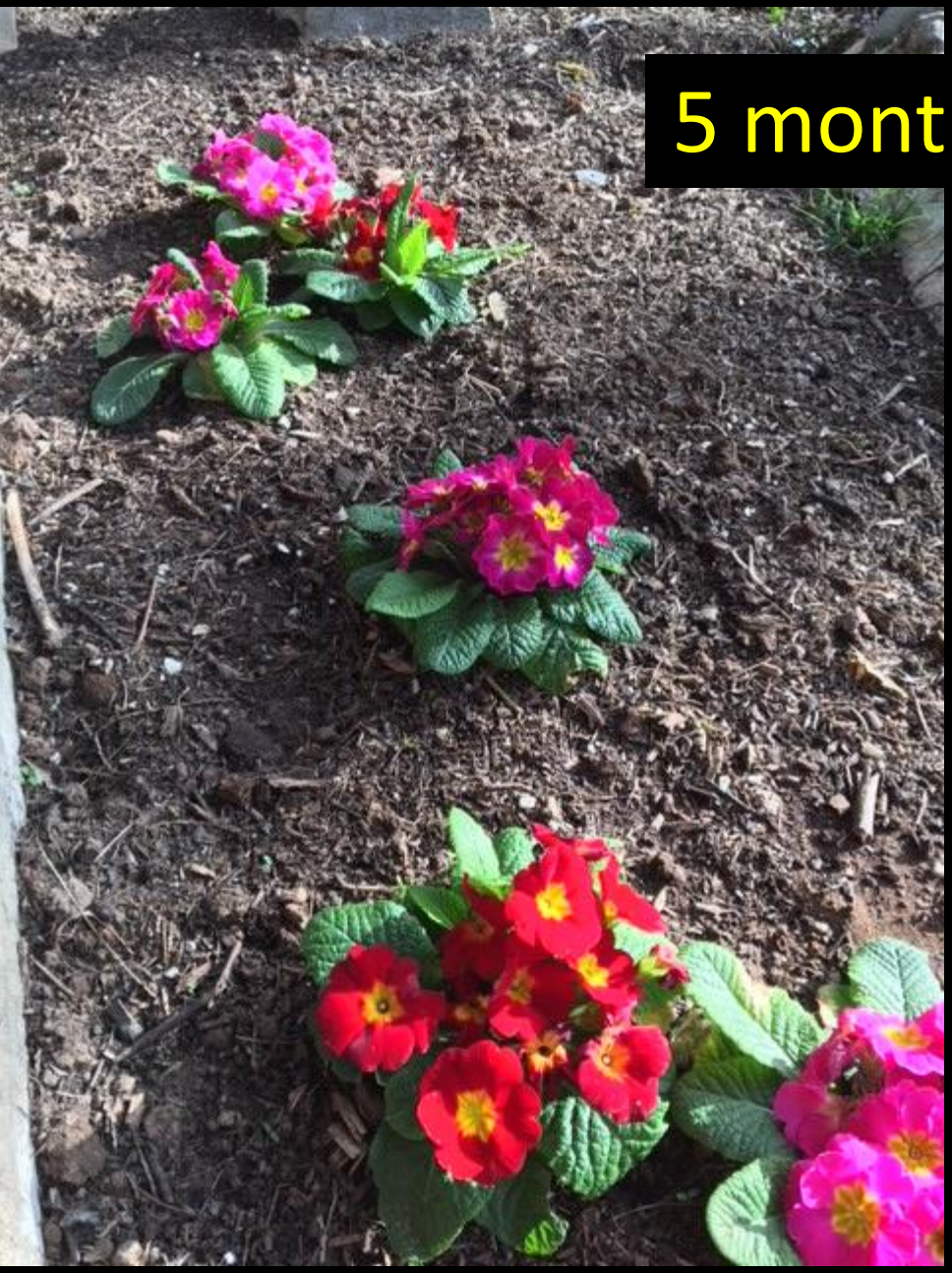
119 degrees F

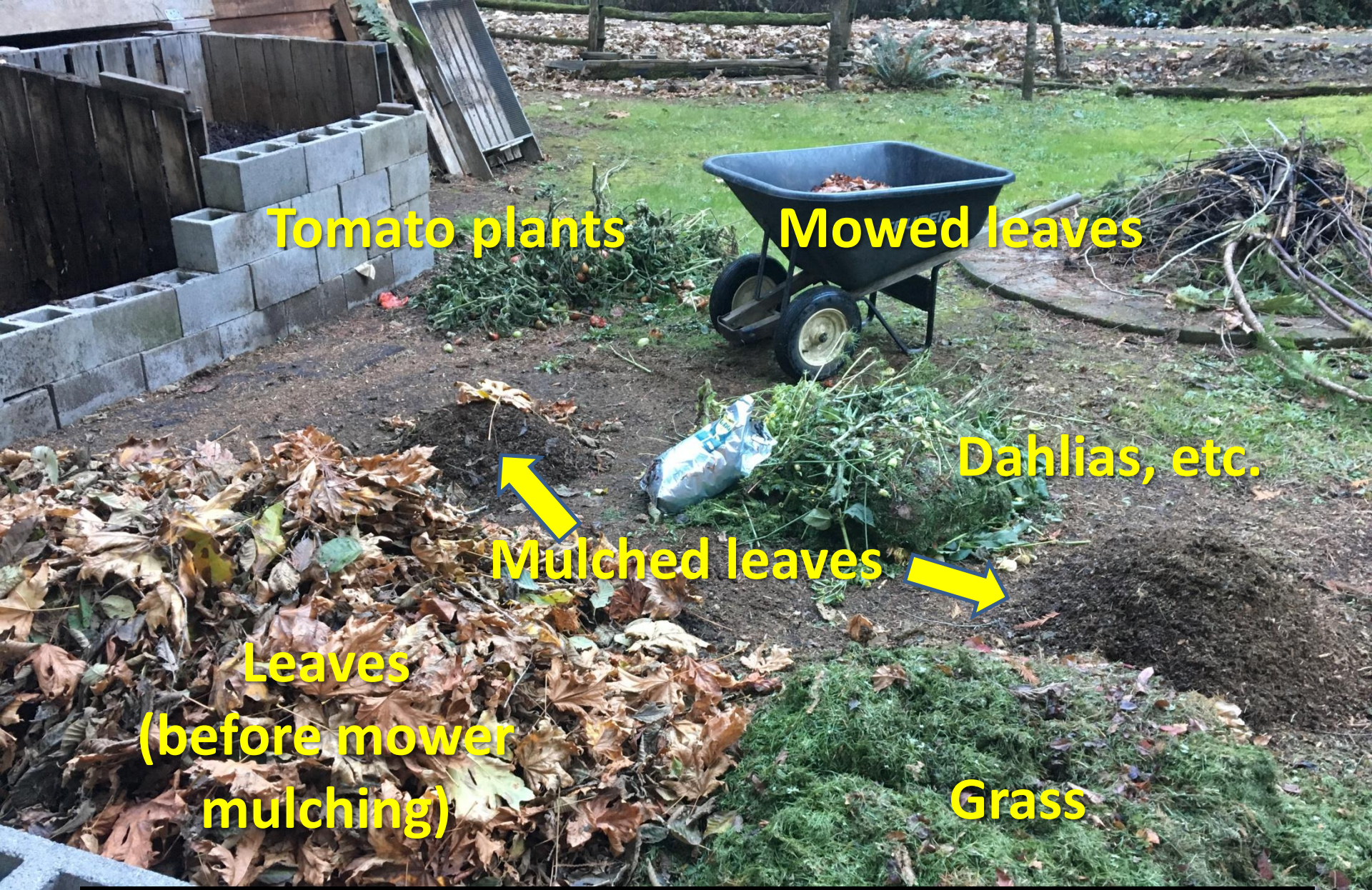



25 days later


25 days later



5 months later…

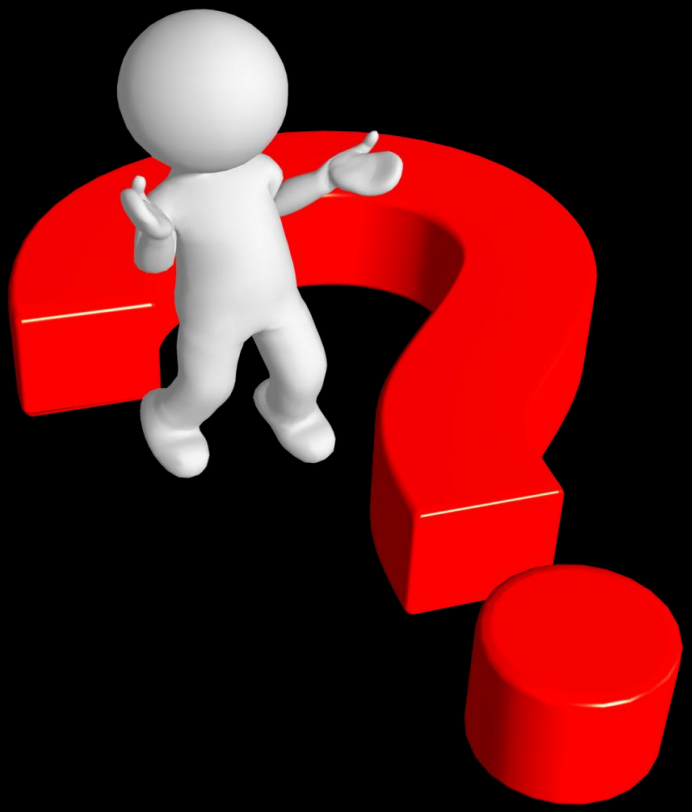


Now is a great time to compost!

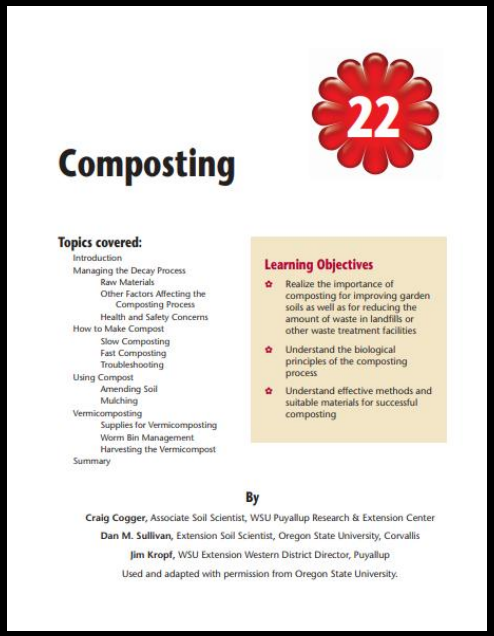
Cover your pile for the winter. Don’t drown your pile or lose your nutrients through leaching

Why bother tocompost?
What to compost?
How to compost?

(I hope I've addressed these questions… at least a little bit???)



References used:



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Composting

Topics covered:

- Introduction
- Managing the Decay Process
  - Raw Materials
  - Other Factors Affecting the Composting Process
  - Health and Safety Concerns
- How to Make Compost
  - Slow Composting
  - Fast Composting
  - Troubleshooting
- Using Compost
  - Amending Soil
  - Mulching
- Vermicomposting
  - Supplies for Vermicomposting
  - Worm Bin Management
  - Harvesting the Vermicompost
- Summary

Learning Objectives

- Realize the importance of composting for improving garden soils as well as for reducing the amount of waste in landfills or other waste treatment facilities
- Understand the biological principles of the composting process
- Understand effective methods and suitable materials for successful composting

By

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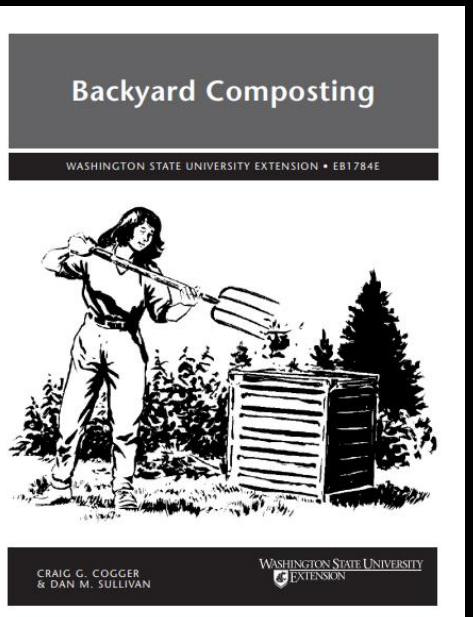

Backyard Composting

WASHINGTON STATE UNIVERSITY EXTENSION • EB1784E

CRAIG G. COGGER
& DAN M. SULLIVAN

WASHINGTON STATE UNIVERSITY EXTENSION

Oregon State UNIVERSITY OSU

Advanced Composting for Beginners

LINDA J. BREWER
DEPARTMENT OF HORTICULTURE
OREGON STATE UNIVERSITY

Composting

* Basics
* Tips
* Tricks

WSU Cowlitz County
Master Gardeners Composters

Reduce
Reuse
Recycle

[Advanced Composting for Beginners (oregonstate.edu)]

[wrkngmulch.png (825×485) (ca.gov)]

[Compost stuff (oregonstate.edu)]

Questions???