
Make Compost!

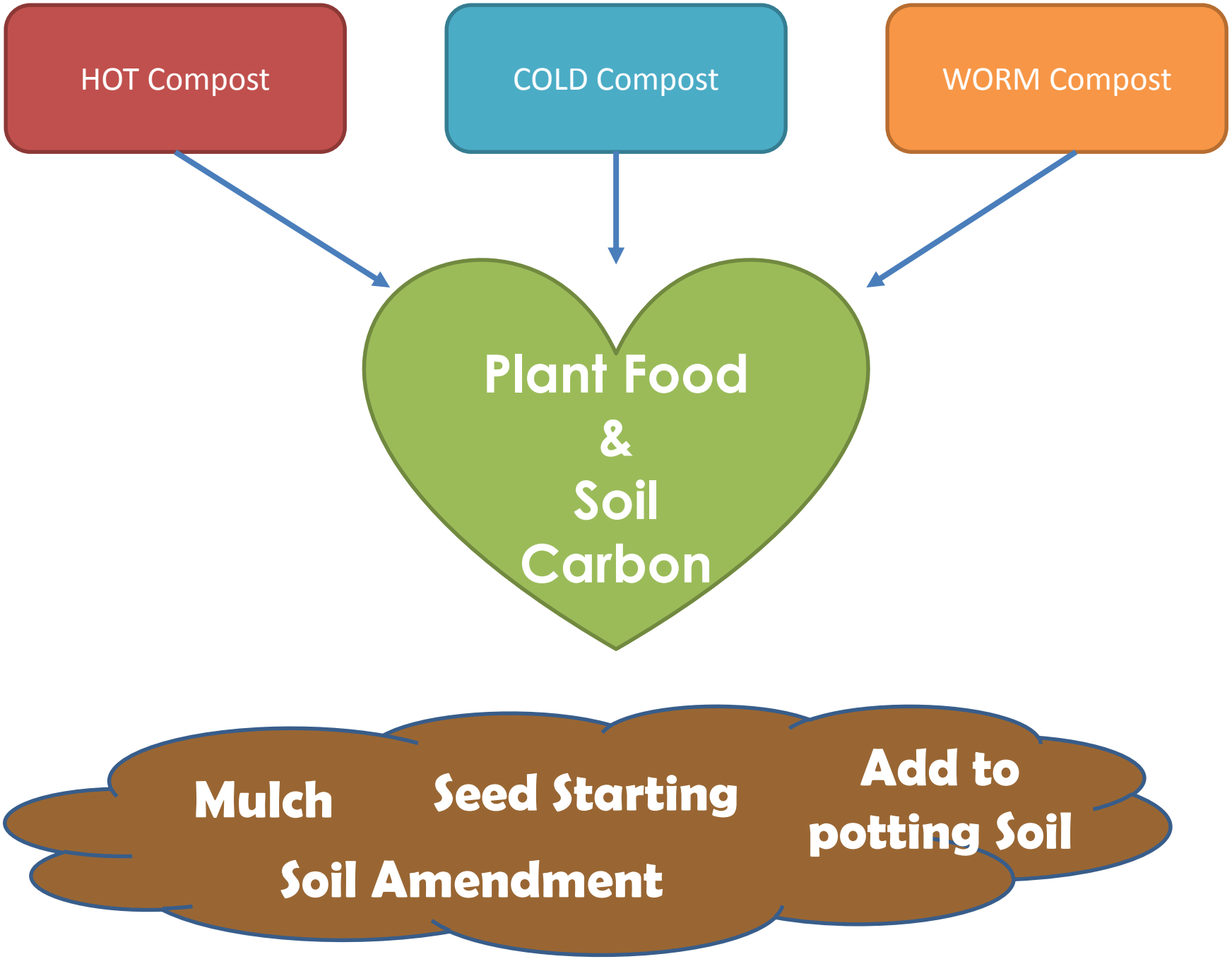
Compost Microbes

Soil Microbes

Compost according to Merriam-Webster
N: a mixture that consists largely of decayed organic matter and is used for fertilizing and conditioning land

V: to convert (a material, such as plant debris) to compost

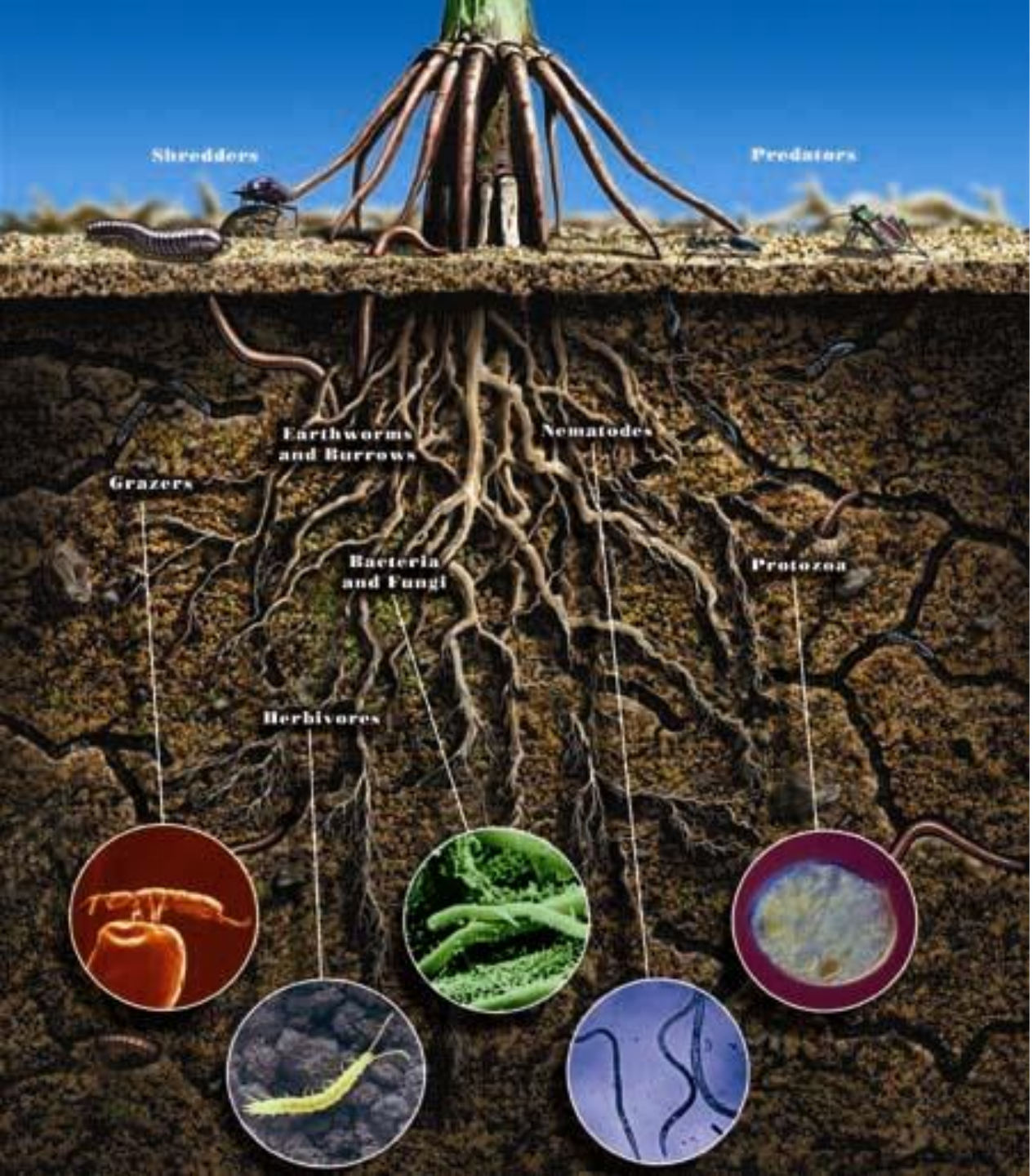
Composting according to Caitlin
Microbe Farming
(and sometimes worm farming)


HOT Compost
COLD Compost
WORM Compost
Plant Food
&
Soil
Carbon
Mulch
Seed Starting
Soil Amendment
Add to
potting Soil

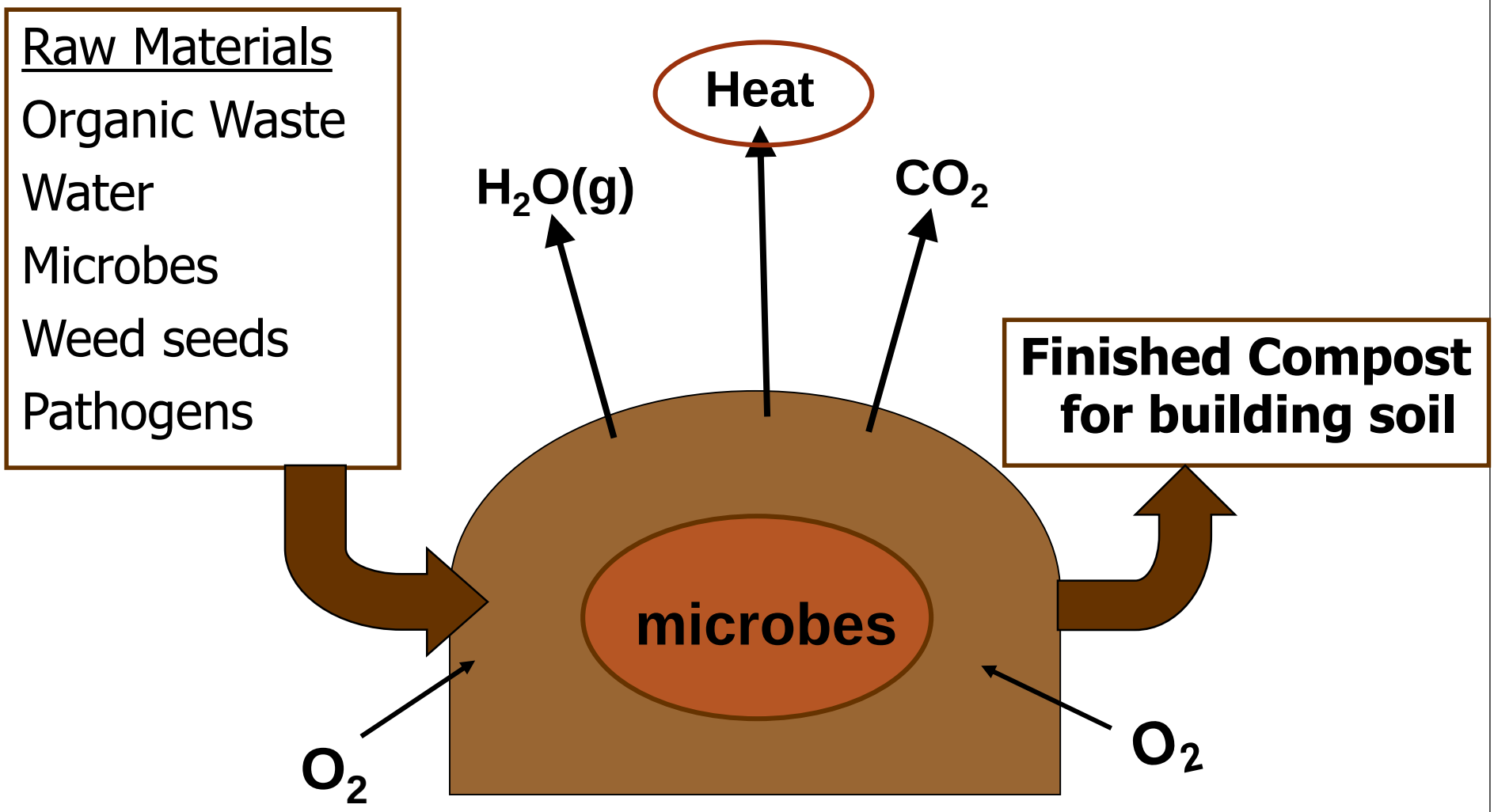
COMPOST BIOLOGY

+

+



A single shovelful of soil can contain more species of organisms than live above ground in the entire Amazon rain forest!

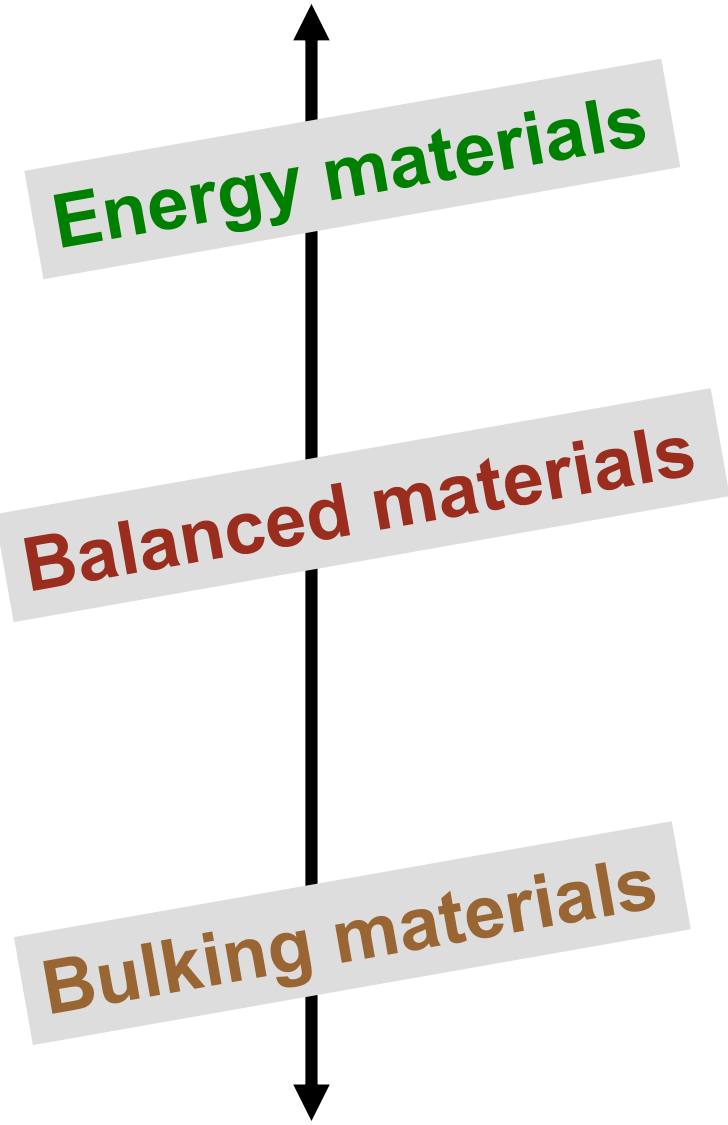

Raw Materials
Organic Waste
Water
Microbes
Weed seeds
Pathogens
Heat
$H_2O(g)$
CO_2
Finished Compost for building soil
microbes
O_2
O_2

FOOD

Your microbes need carbon and nitrogen in a specific ratio to thrive (C:N ratio)

The optimum C:N for active composting is ~30:1

Material	C:N ratio
Food waste	15:1
Coffee grounds	20:1
Grass clippings	15-20:1
Sheep manure	20:1
Horse manure	30:1
Hay	20-30:1
Leaves	40-80:1
Straw	80-100:1
Sawdust	200-500:1



Formulating a Recipe

Start with simple volume ratios, based on how "green" or "brown" your raw materials are

1 volume of "green"+
2 volumes of "brown"
+ a little bit of air and water
= good compost

WATER

Too much water = smelly, *anaerobic* piles

Not enough water = very slow decomposition

Squeeze a handful of material in 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!

AIR

Oxygen is essential for *aerobic* microbes, the most efficient decomposers

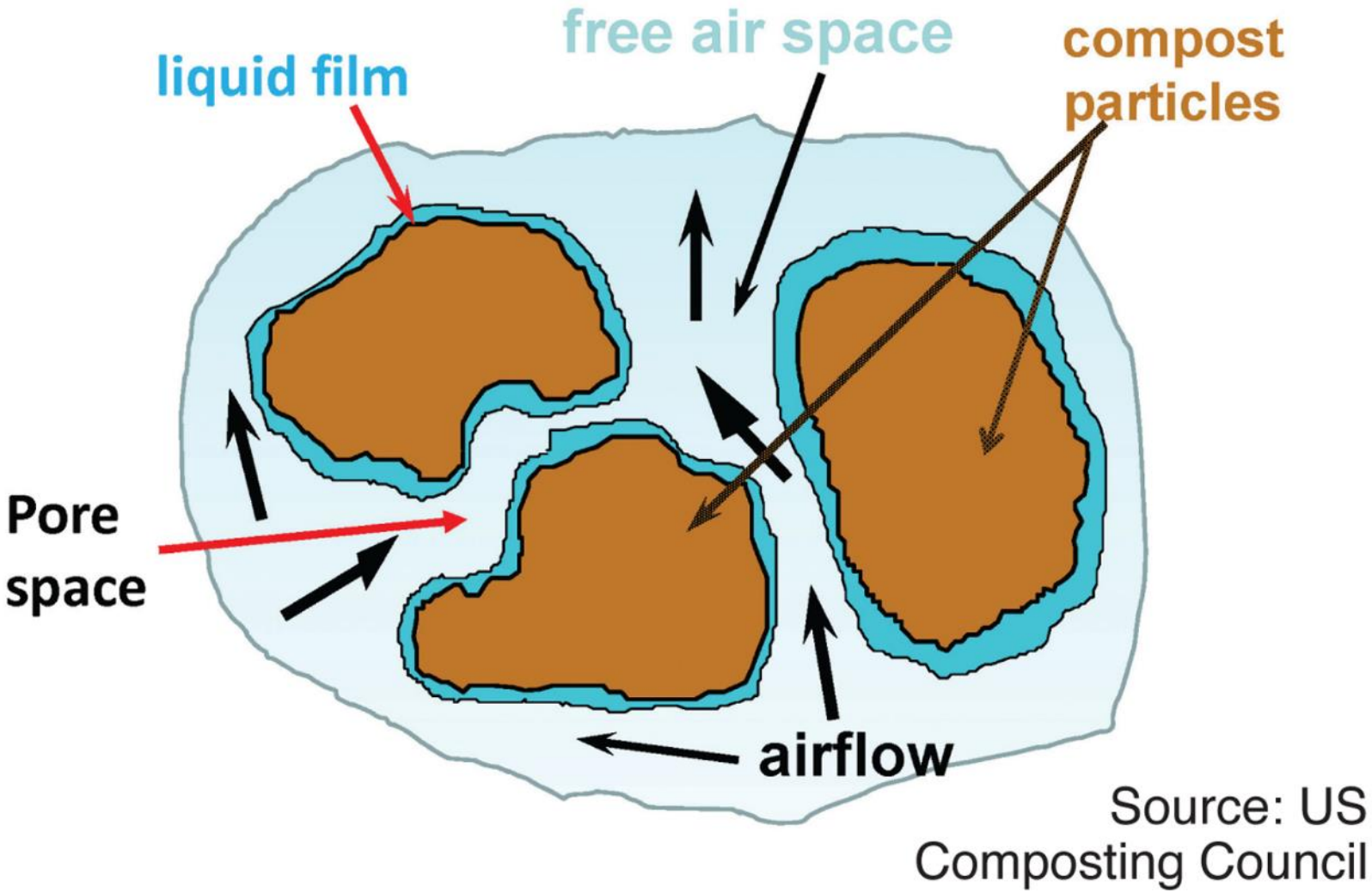
Not enough air = soggy, stinky pile (anaerobic)

Too much air = very slow decomposition

Area between particles filled with air OR water

Particle size: 1/8 to 1 inch

Turn to mix and aerate

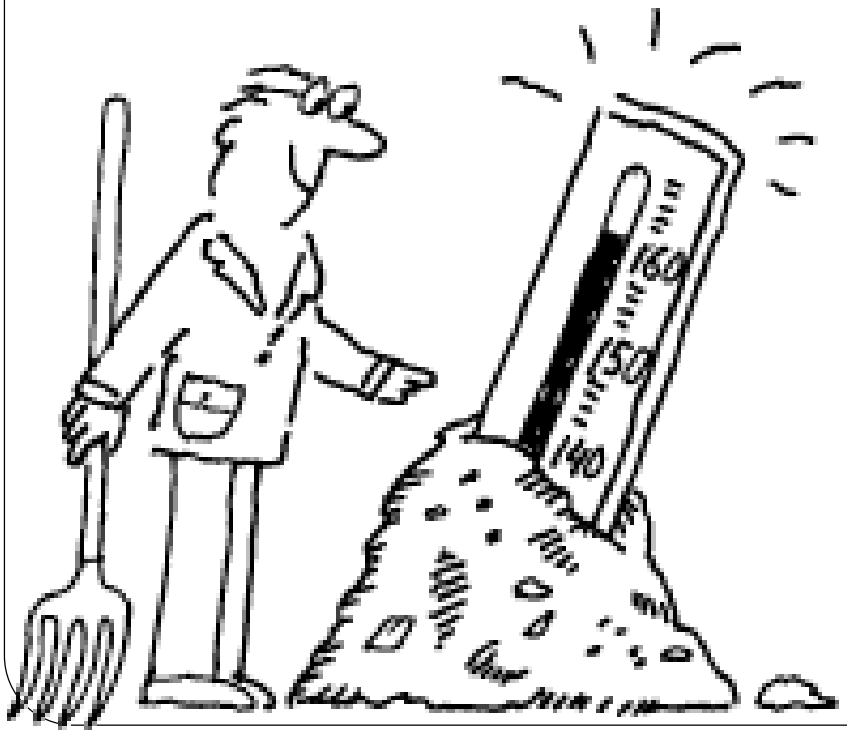


Too much water = Not enough air

Too much air = Not enough water

HOT Composting

- Compost microbes consume raw materials
- Heat is produced faster than it can escape
- Internal temperatures reach 105 to 160ºF



- ✓ Most efficient microbes
- ✓ Heat kills pathogens and weed seeds
- ✓ > 130ºF for 3 days

Use a 3+ foot temperature probe to monitor temperature

If it's warmer on the inside than the outside, you are doing a good job!

>131^{0}F for pathogens/weeds


Pipes for air


Water

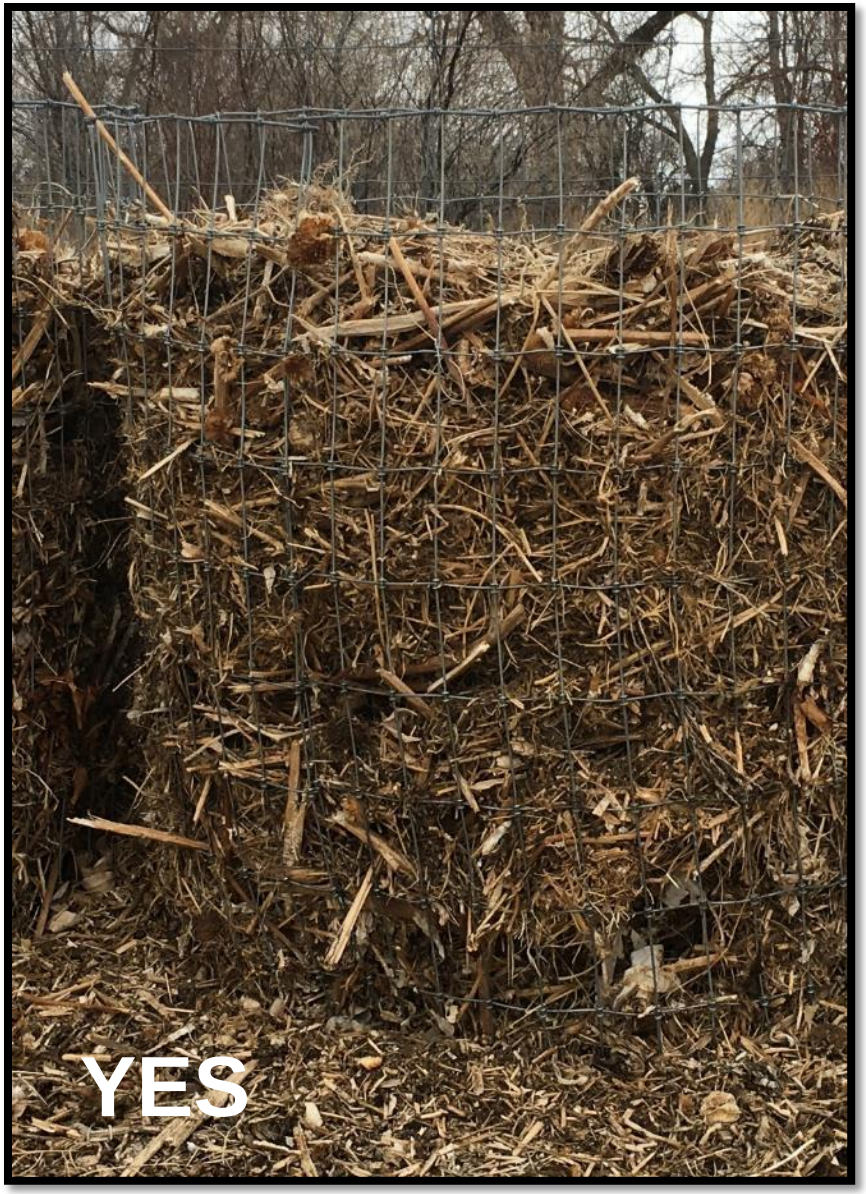
HOT composting is good for:

- **Manure**
- **Compost to sell**
- **Materials with weed seeds in them**

COLD Composting

- **Same biology**
- **Still need food, air, water**
- **Decomposition happens more slowly**
- **Usually gets warm but not hot, and may not kill pathogens or weed seeds**
- **Easier**


Don’t forget water!



October

March


NEW
compost


OLD compost

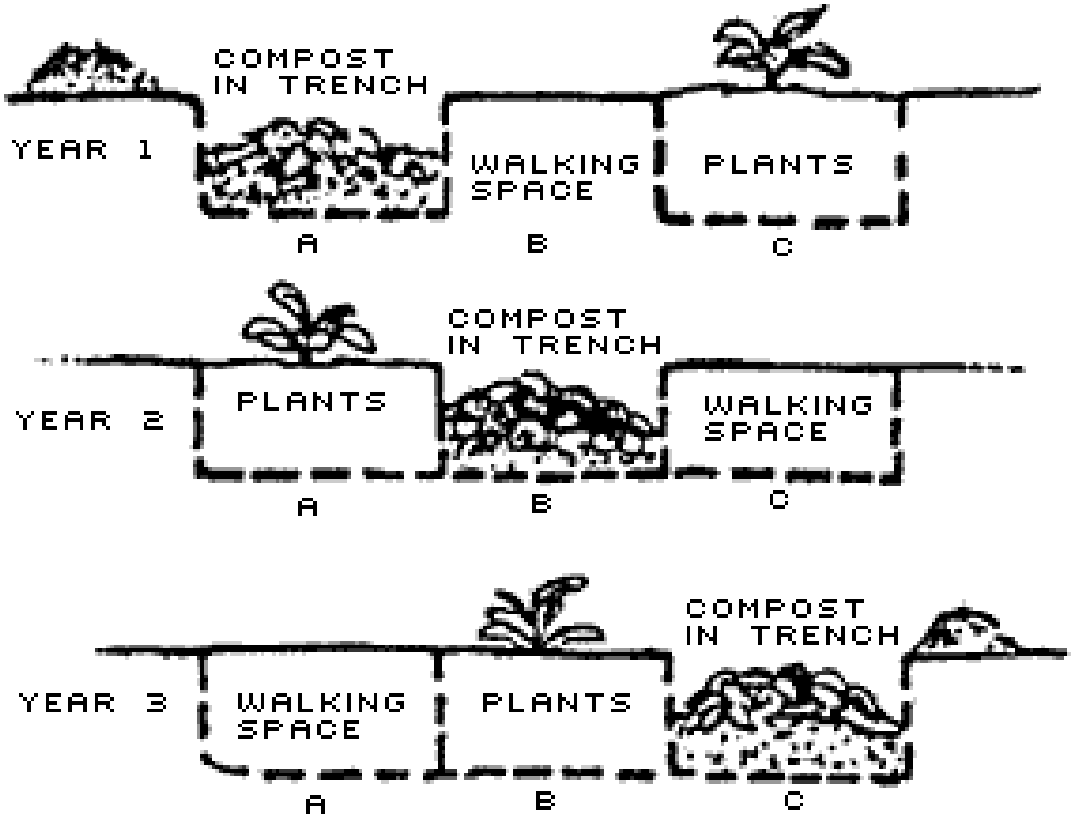
Open on bottom allows worms

Compost bins / tumblers

- Convenient, tidy
- Remember the biology!

Trench Composting

- Dig a trench ~ 12 inches deep
- Fill with 4-5 inches of organics
- Rotate as needed



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Straw Bale Composting

Lasagna Composting or Sheet Mulching

Start in the Fall

Remember the biology: food, water, air

Ready to plant in the Spring

Layers of wood chips, moldy alfalfa hay, straw, coffee grounds, grass clippings, and compost

This takes time!

Filling Raised Beds


COFFEE GROUNDS


LEAF COMPOST

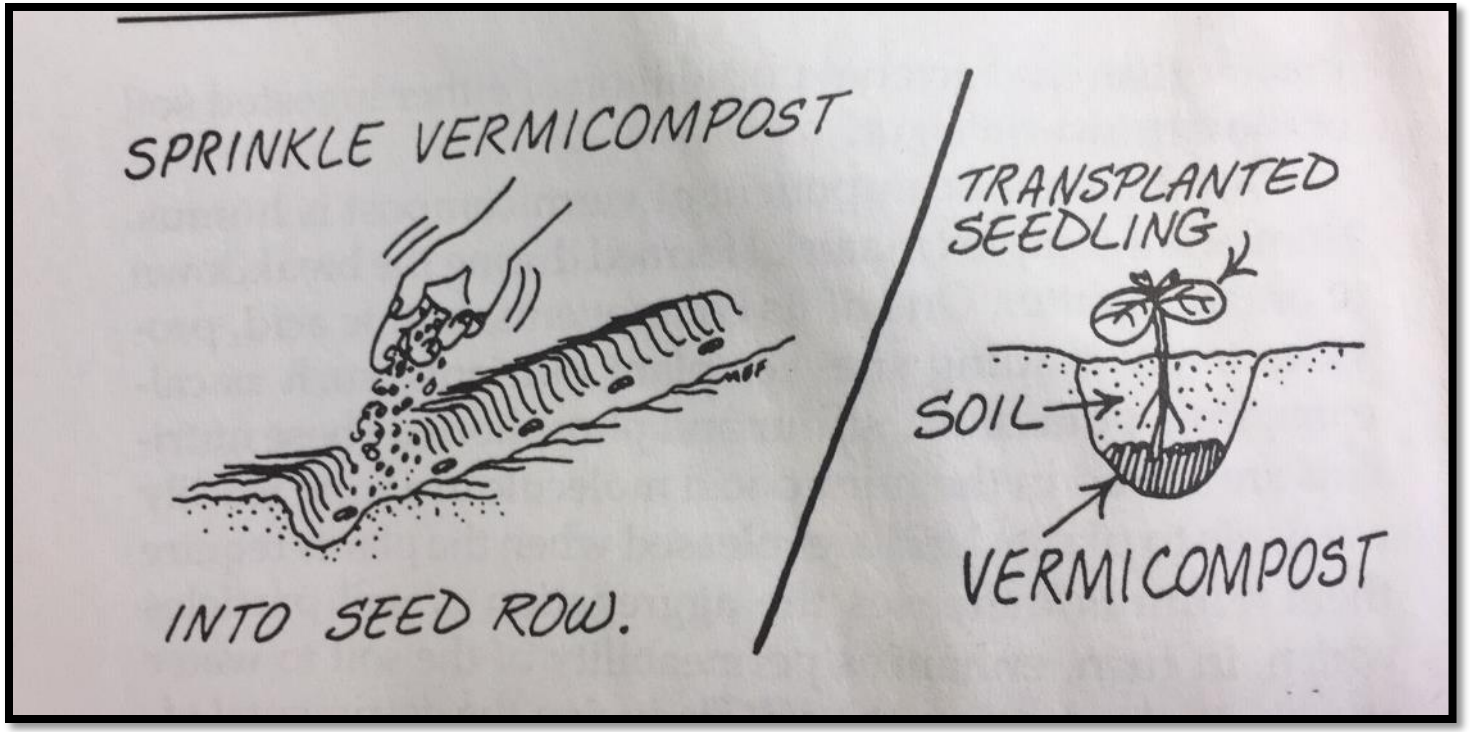
WORM Composting

- Great option for food scraps
- Indoors or outdoors
- Low risk of pests or odor
- Worm “castings” can be used in gardens, house plants, or starting seeds

Use “red wigglers”, not earthworms

- Process large amounts of organic waste
- Reproduce quickly
- Thrive at 59-77^{o}F
- Food, water, air…

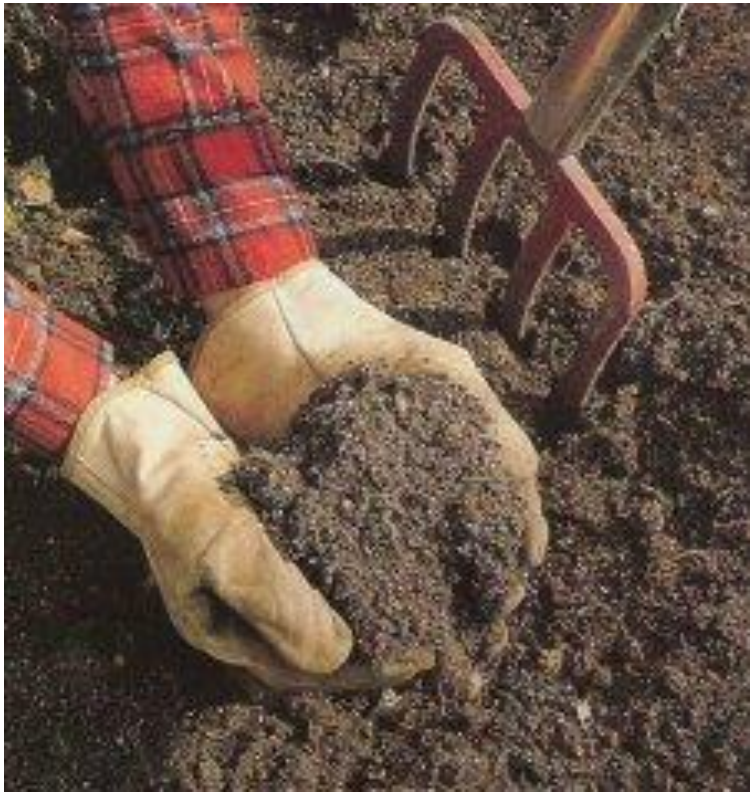

COMMANDER
XL
17 GAL



Images courtesy of Mary Appelhof

Using Compost

- Soil amendment
- Mulch
- 2-3 inches of compost into new garden beds
- “Aged” vs. “Composted” manure



Using Compost

Plant available nutrients

- Long-term, slow release

Soil organic matter

- Boost for soil biology
- Improve water holding capacity
- Improve saline soils
- Reduce compaction

City of Worland Compost Yard

Washakie County EXTENSION UW

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AGRICULTURE & HORTICULTURE

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Gardening in the Big Horn Basin

Gardening can be challenging in the Big Horn Basin. Our native soils are low in organic matter; the arid climate causes salts to accumulate in the soil; an unexpected late or early frost can kill plants. But we also have some advantages here like the long hot summers, low humidity, and relatively little wind compared to much of Wyoming.

Please be sure to come visit the Worland Community Garden this summer, and sign up for our Horticulture email list.

Here are some resources that will help you get off to a good start, and hopefully inspire many years of fun and productive gardening.

Articles by Dr. Caitlin:

- Growing Healthy Soil in the Garden
- Fall Soil Prep
- Saline Soils Present Special Problems

Getting Started:

- UW Extension: Vegetables in Wyoming
- UW BnB: Garden Economics
- UW BnB: Strawberries
- UW BnB: Raspberries

Raised Beds and Containers

- UW Extension: Container Gardening
- WSU Extension: Strawbale Gardening
- USU Extension: Raised Bed Gardening

Newsletters

Contact

Agriculture & Horticulture Contact

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