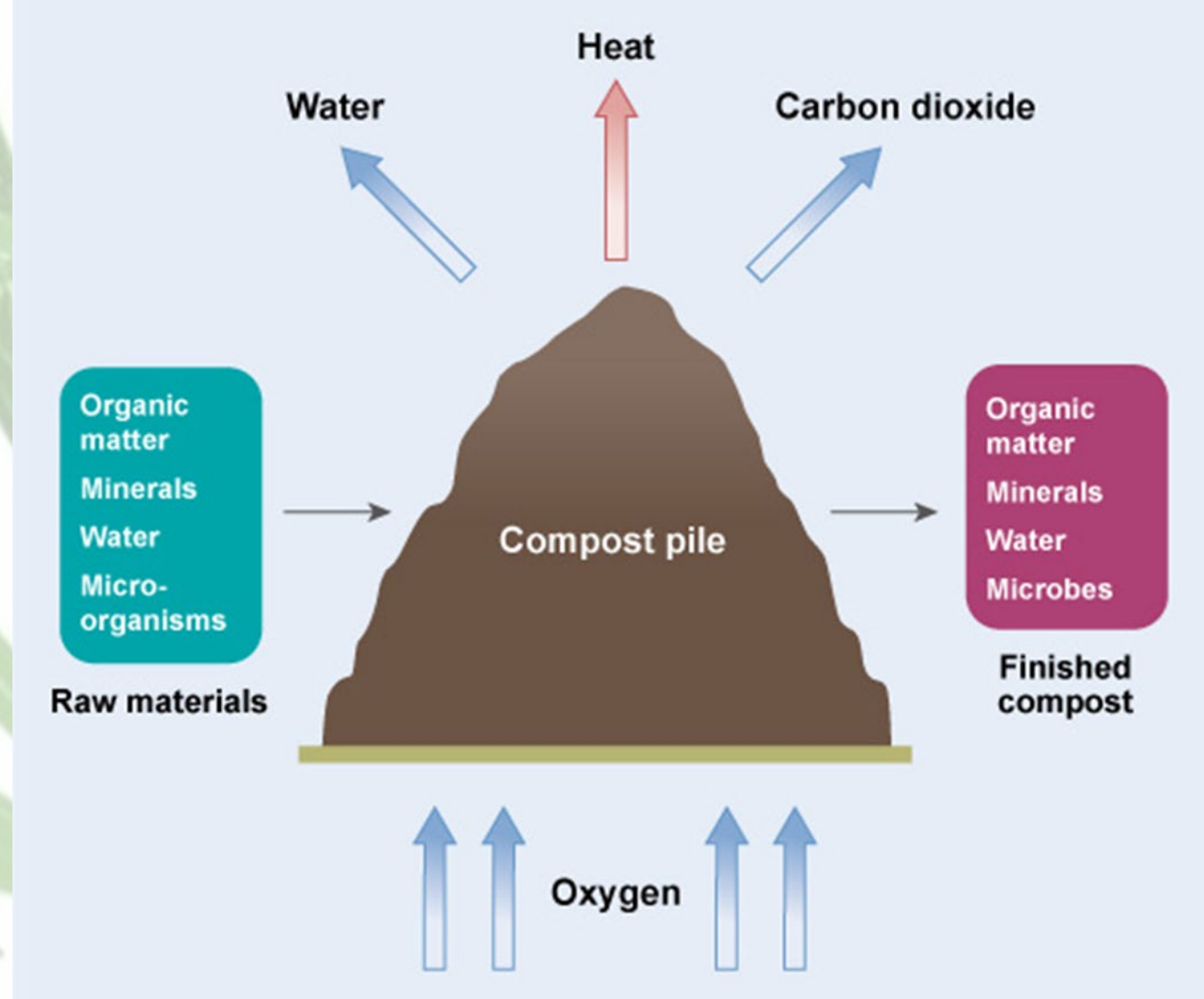


Module 06.03: Composting Parameters - Aeration



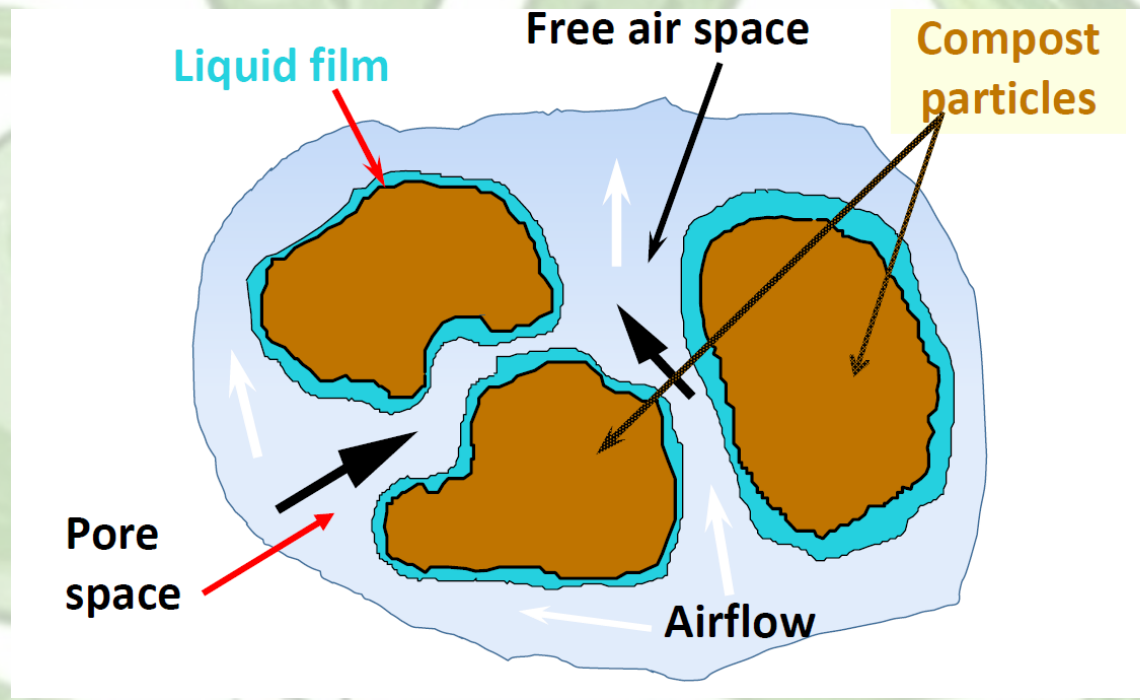
LSU AgCenter Home Composting Certificate Course

Dr. Joe Willis, Anna Timmerman & Chris Dunaway



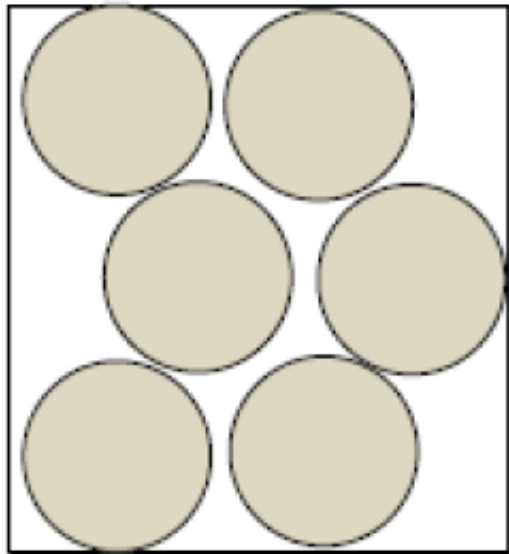
Recall this graphic? The dynamic of O_2 in and H_2O and CO_2 out depends on pore space and mechanical aeration.

- Particle size is an important factor in composting because it increases surface area.
- However, if pieces are TOO small, compaction increases and limits aeration.
- Porosity is a measure of the non-solid volume divided by the total volume of your compost pile – the non-solid portion of the pile.
- Determined by size and type of particles, and size of the pile

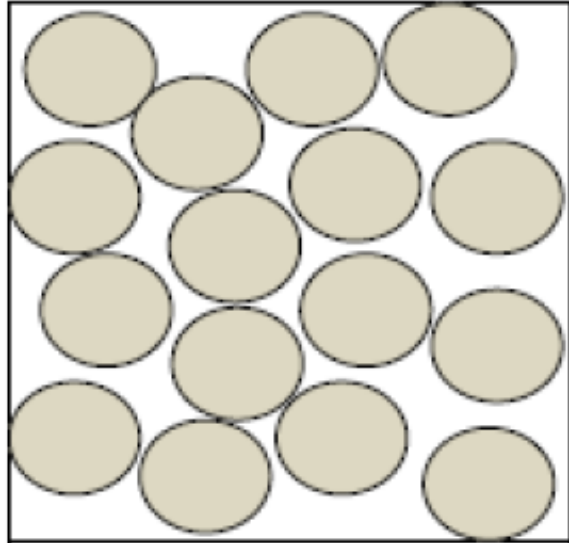


Amount of Free Air Space determines aeration.

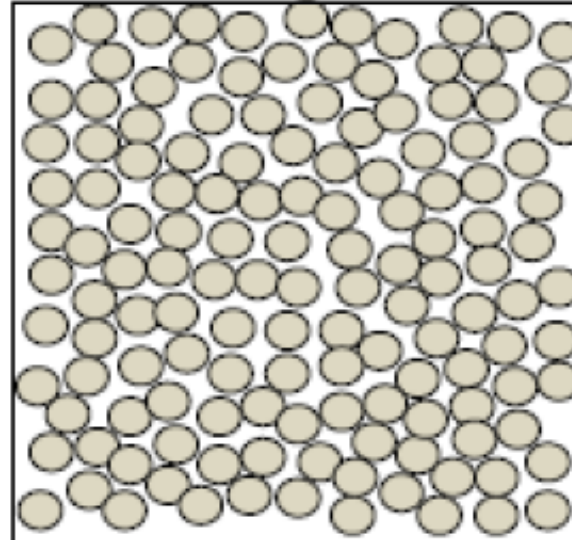
Particle sizes and pore space:



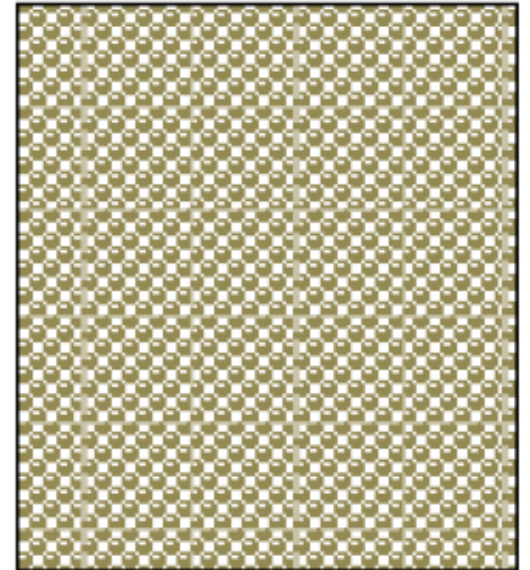
Gravel 2 mm to 75



Sand 0.05 mm to 2 mm



Silt .002 mm to 0.05 mm



Clay less than 0.002

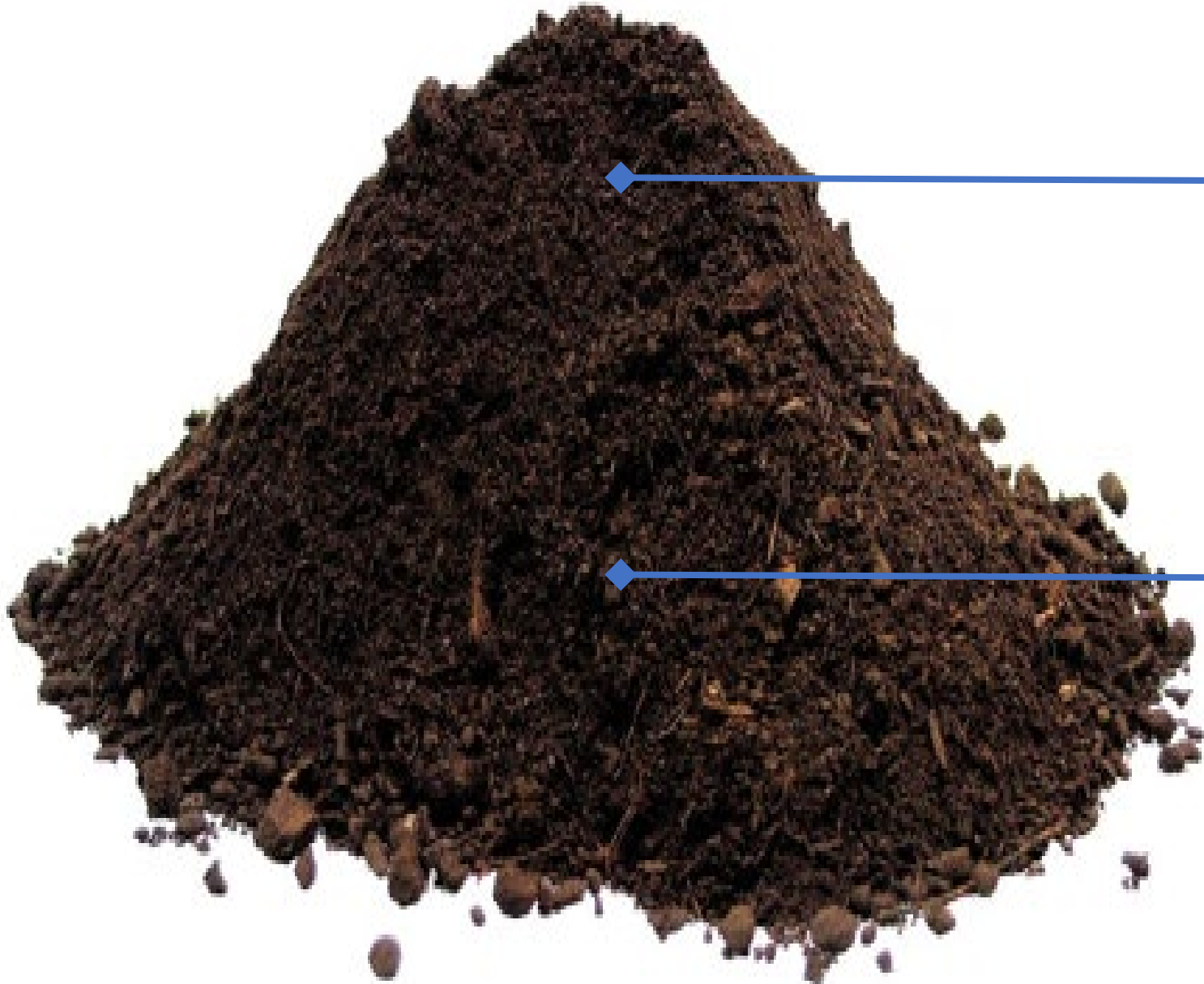
This graphic illustrates the particle size to pore space relationship.

Mixture of particle sizes works best to provide balance.

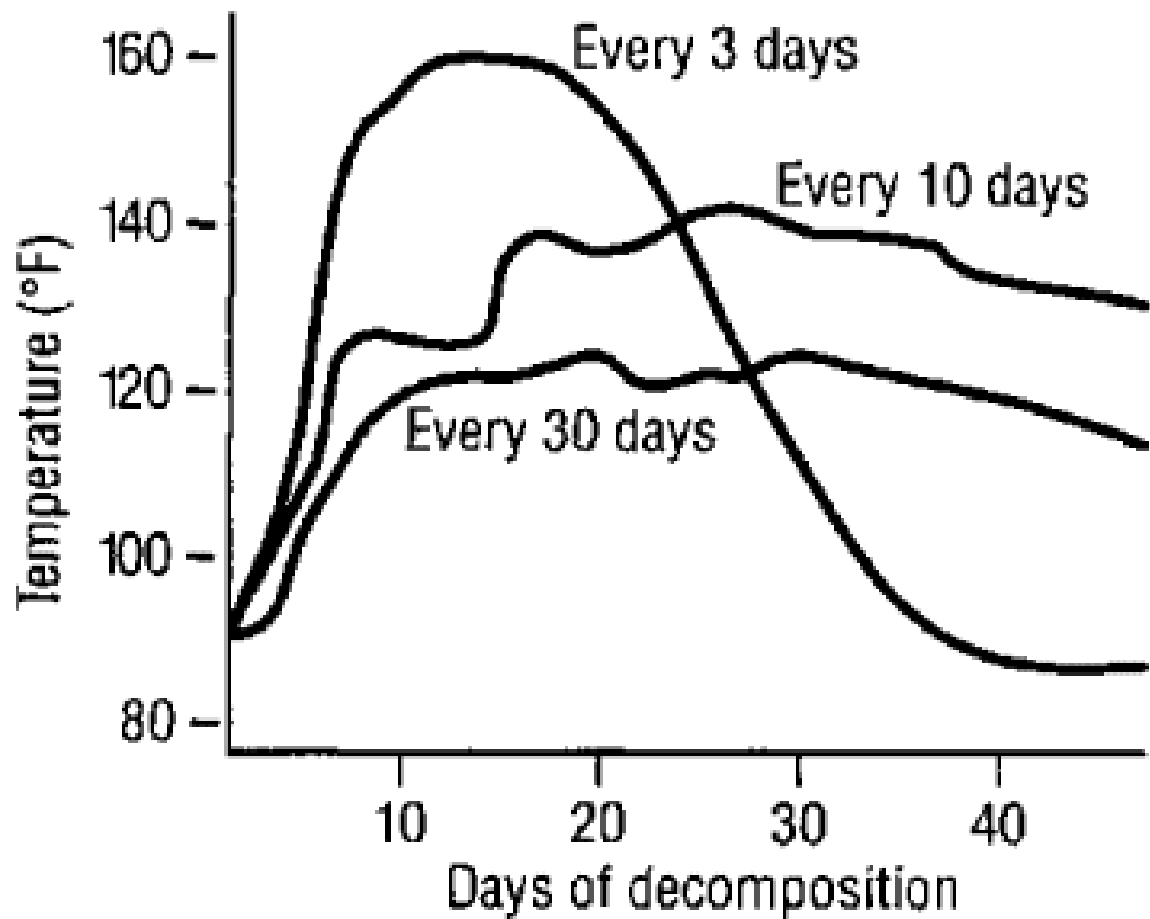
Pile makeup changes due to compaction

- Air Space 40%
- Water 30%
- Solids 30%

- Air Space 20%
- Water 40%
- Solids 40%



Turning Frequency Effects on Composting



What Happens When You Turn The Compost Pile

- **Compaction Reduced** – Turning compost will fluff the pile, create pores and increase aeration preventing the development of an anaerobic environment.

What Happens When You Turn The Compost Pile

- **Moisture** – If a compost pile is too wet, turning helps to drain away the water and reopen the pores to air instead of water.
- If a compost pile is too dry, water can be added while turning.

What Happens When You Turn The Compost Pile

- **Microbes** – When you turn the compost, healthy microbes and undigested material will be mixed into the center of the pile, while more finished material will be moved to the outside of the pile - this keeps the process going.

What Happens When You Turn The Compost Pile

- **Overheating** – As microbes do their job, they also produce heat. If the temperatures get too high ($>160^{\circ}\text{F}$), it can kill the beneficial microbes.
- Turning the compost releases some of this thermal energy and will redistribute the hot compost in the center into the cooler compost on the outside and vice versa.



Please post all your questions and results to the message board .

