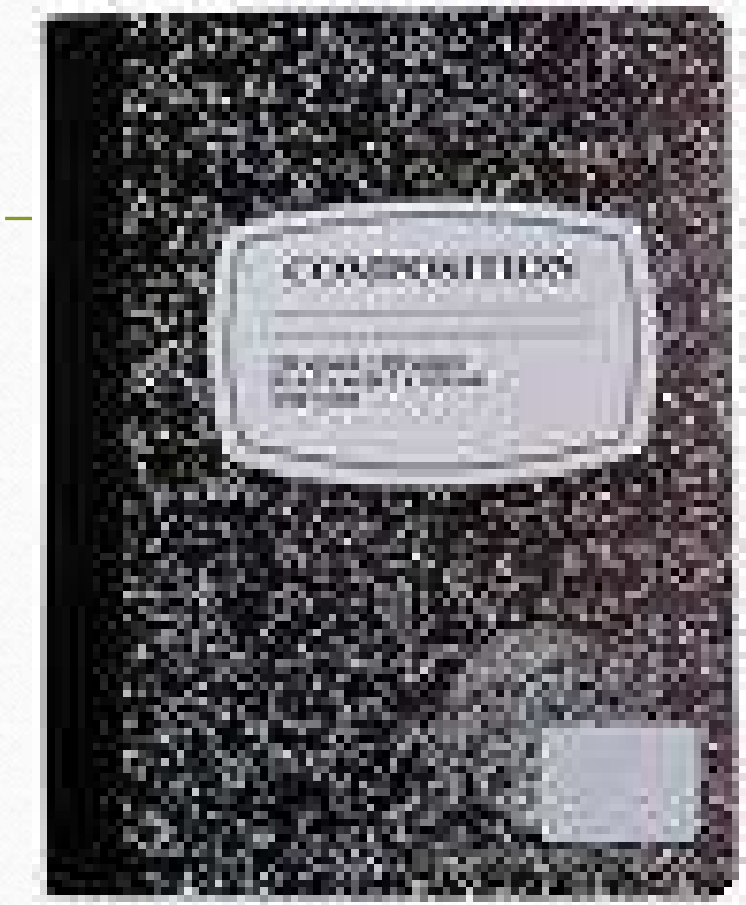
Healthy Soil

Farm to Fork 1

August 17 - 24



- ***Front Cover:***

  Name, (Ag)Biology, F2F Rm.3 Bryte McAllister, Fall Term, 2016

- ***Table of Contents***: page 1 - 7:

  Date, Title, Page #

- ***Page 8***, 1st Warm – Up

  Ag Biology - Agriculture

Biology – Levels of Organization

Healthy Soil

- What does it take to create healthy soil?
- Does it drain well? Can it hold onto nutrients that plants need? What temperature should it be? How does Compost help?

8/18 Compost

Obj. TSW examine the process of decomposition by adding compost to soil. P. 8NB

1. What is the difference between dirt and soil?
2. What is compost?
3. Why is it good for the garden?

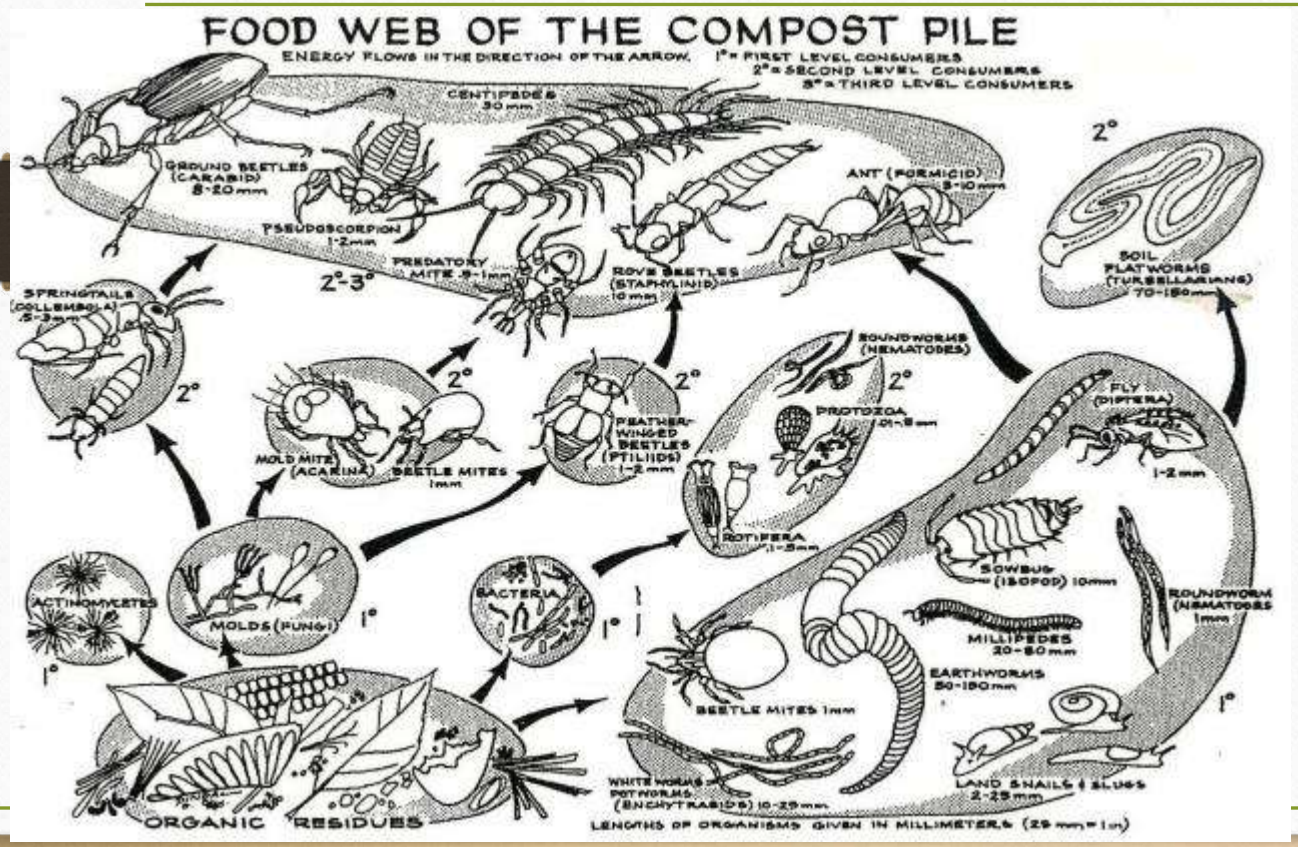
Edible Plant Game

- Have 1 or 2 partners.
- Get 1 card to share among the 2 – 3 of you.
- Someone starts by reading the description at the bottom.
- Whoever's description is on someone else's card Identifies what it is: " Carrot"
- Then the "Carrot" reader reads the description on the bottom of their card, etc.

California Agriculture Quiz Answers

1. T
2. T
3. R
4. T
5. T
6. California $43 B, Iowa $29.9B, Texas $22.7 B
7. Milk & Cream, Almonds, Grapes, Cattle & Calves, Nursey Products, Strawberries, Hay, Lettuce, Walnuts, Tomatoes
8. 78
9. 81
10. 312
11. 420
12. 43.5

Compost



- It happens in stages
- It starts out layered
- 2/3 Brown, Dried Matter
- 1/3 Green, wet, fresh Matter
- Add worms and water
- Turn 1x, maybe 2x/ week.

Compost Notes p. 9NB

- Compost – any plant material that can be broken down by microbes, insects, and worms.
- Adds moisture, nutrients, and biodiversity to garden bed.
- 30% Green Nitrogen containing Compost
- 70% Brown Carbon containing Compost
- Keep moist, turn regularly
- Add red wiggler worms, worm castings are good for the soil
  - More productive
  - Aerate the soil
  - Help breakdown organic matter into usable nutrients for plants

New Compost Pile

- What can we add to our new compost pile?
- What are the ingredients for healthy compost?

Worms

- How do worms help the soil?
- Aerate the soil
- Provide a habitat for worms
- Worms recycle nutrients from decomposed organic matter to the soil
- Worm casting add fresh matter to the soil

Worms help loosen the soil so plants can get at more nutrients and grow bigger

Watering

- How do you know if you are watering enough?
- Hand check – Use your finger
- Water in the Morning – give plants a drink before temp. or wind increase
- Watering with purpose – seedlings and transplants need more frequent watering, can be more shallow
  - But more established plants need deep watering so roots can grow deep into the soil.
- Adding Compost – increases the moisture content
- Mulching – adding a top layer of rice hulls, dried grass clippings, straw
  - Prevents evaporation from the surface layers of the soil

How to write an AXES Paragraph

- **A**ssertion – Statement or claim
- e**X**ample – Write an 1 – 3 examples of your statement/ claim
- **E**xplanation – How does your statement or claim or example happen?
- **S**ignificance – Why is it important? Why do we care?

HW - AXES Paragraph F2F
Email to me: jmcallister@wusd.k12.ca.us

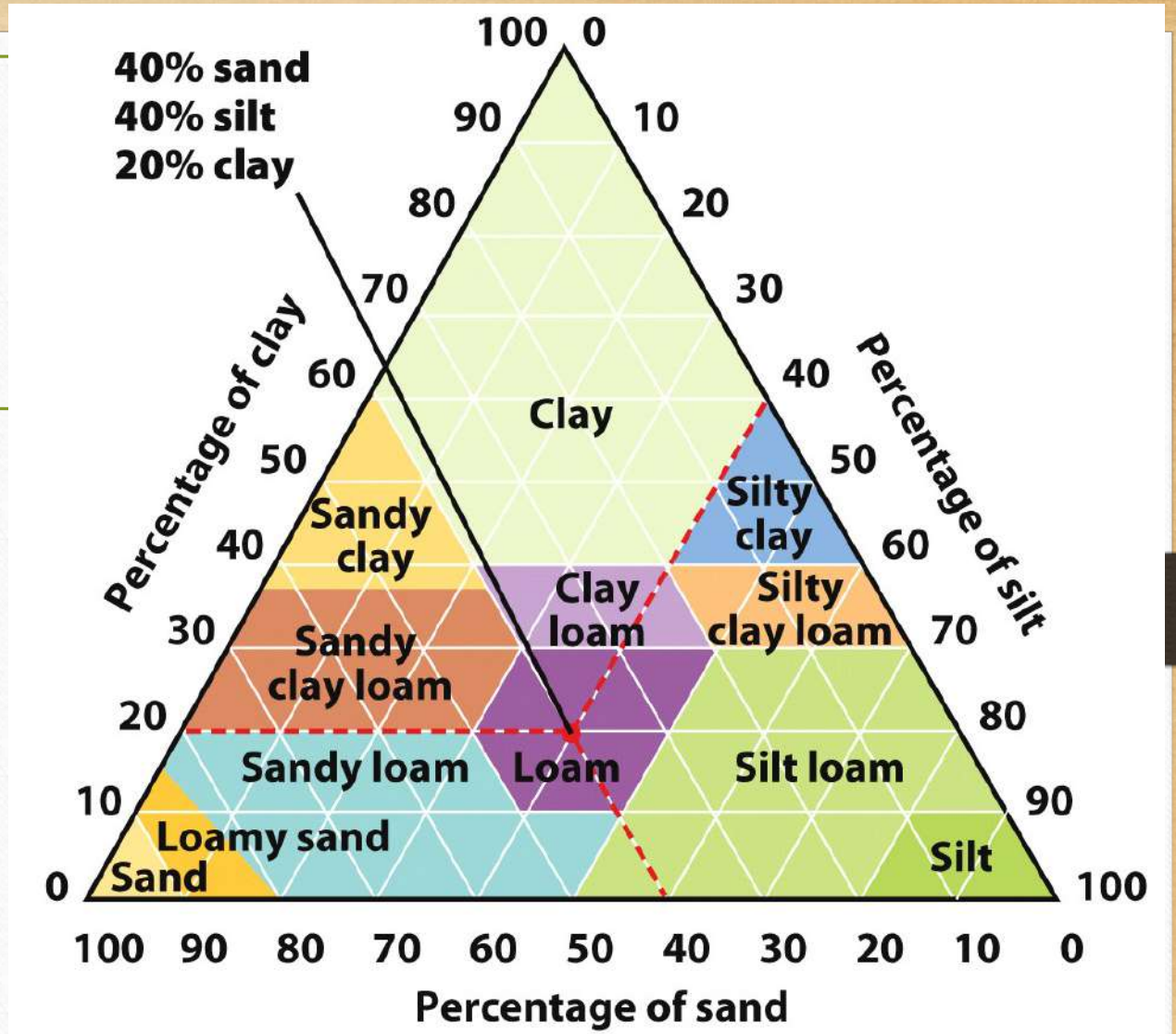
- Using your knowledge of how to write AXES, write a paragraph about what F2F is, what it means to you and how it is a sustainable practice.

Yolo Tomato Production & Sustainability

- Resource Management

How to read a Soil Texture Chart

- Your % must add up to 100%
- Start with Clay on the left.
- Read the % line horizontally.
- Next, Read the % line for Silt.
- Read the % Silt line diagonally down.
- Last Read the % line for Sand up diagonally left.



Soil texture chart

Figure 8.22a
Environmental Science

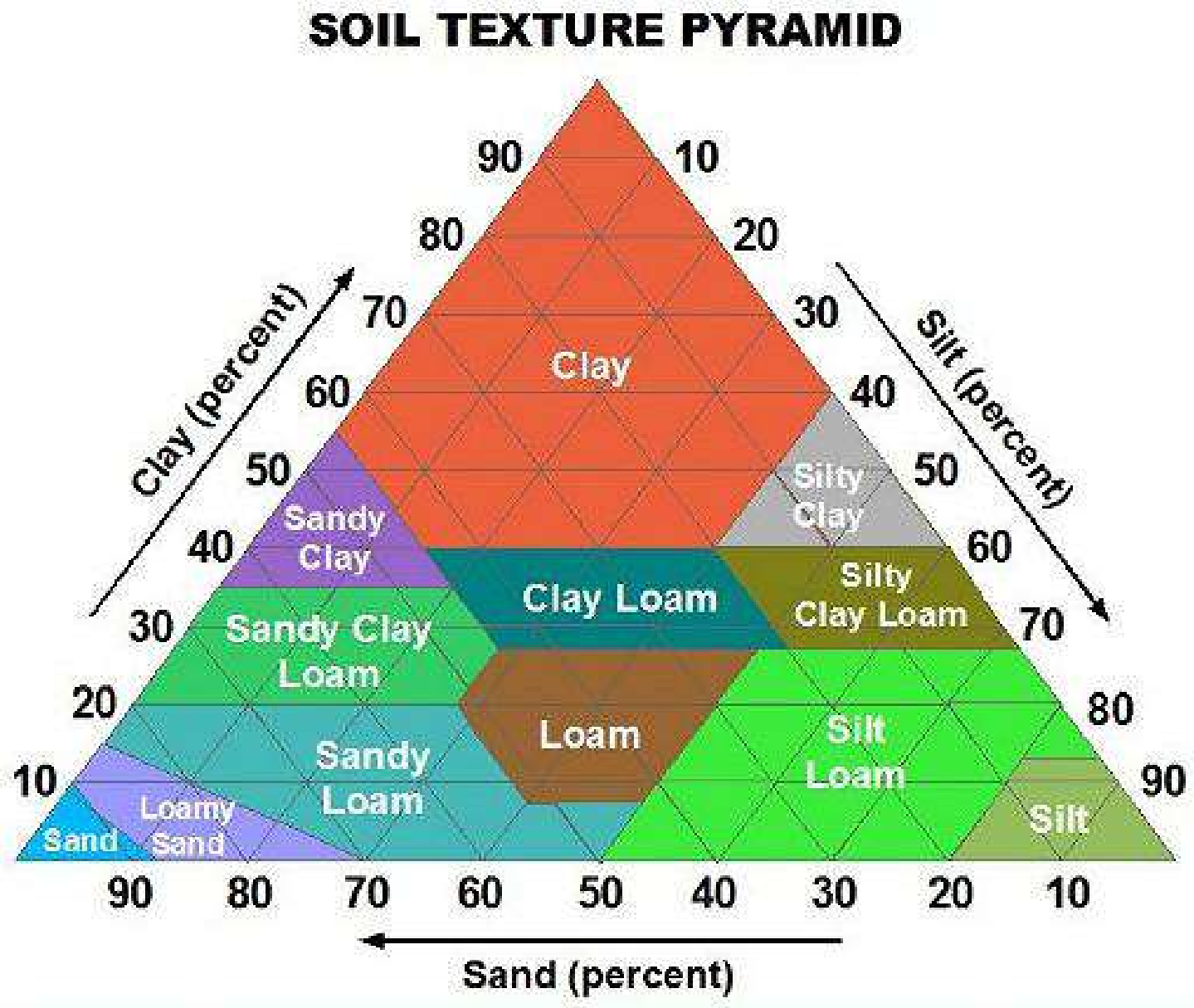
Ribbon Test

8/19 Obj. TSW identify different types of soils. P. 10 NB

- Types of soil Video

1. Name the three soil textures.
2. Name three soil types.
3. What soil is 20% Clay

30% Silt, 50% Sand?



Ag in the Classroom

- Notes from Video Ag in the Classroom- It's all about you!
- 5 min. 30 sec.

Three Textures of Soil

Obj. TSW learn about sand, silt and clay to understand how nutrients are held.

1. What are the three textures of soil?
2. How properties might the three soil textures differ in? What would sand be good for?
3. How could you determine your type of soil?

Notes from Video - Soils

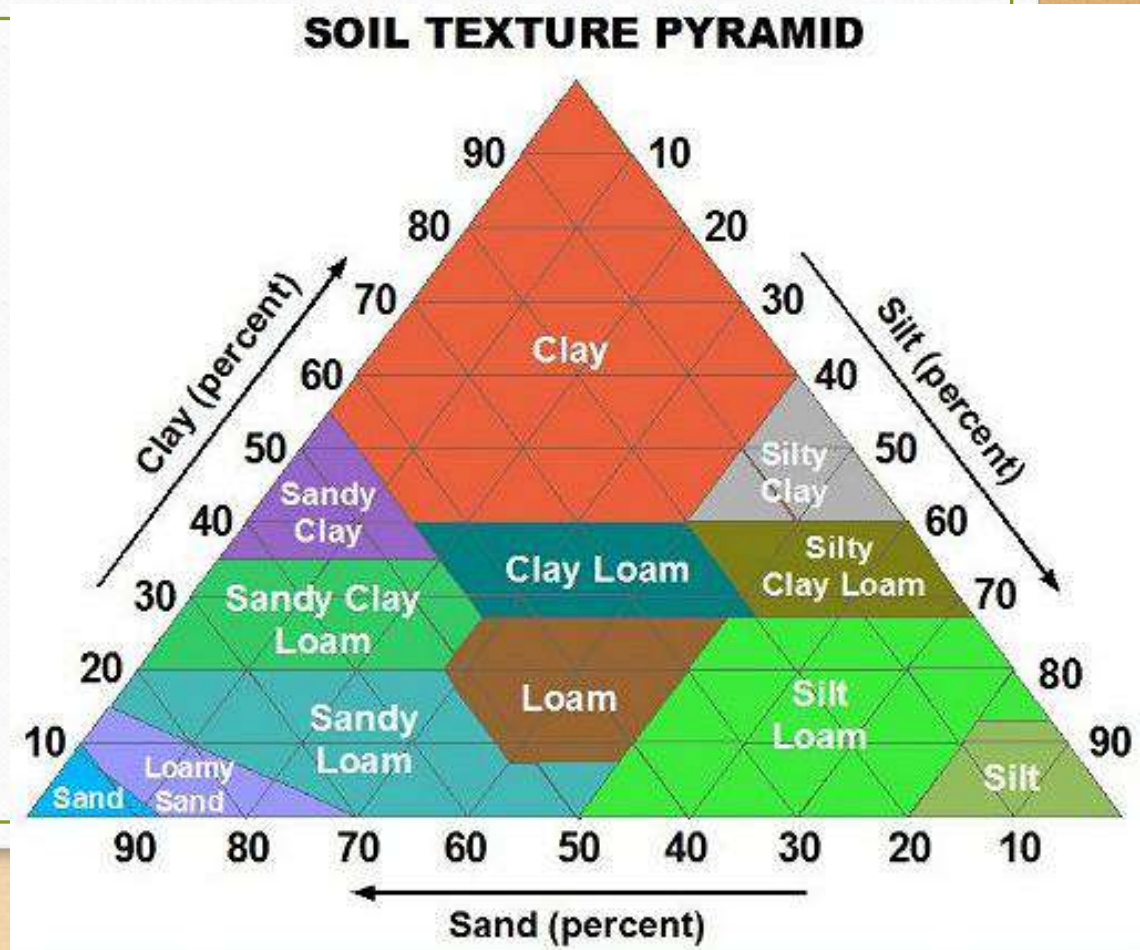
- Activity in the Garden:
  - Name your soil. How do you know what it is? Use your Flow Texture Chart to help identify your soil.
  - What type of soil do garden plants grow well in?

Name that Soil

8/22 Obj. TSW name the type of soil from the % texture & visa versa. P. 12 NB

1. What type of soil is 30% Clay, 30% Silt, And 40% Sand?
2. If you were to make a Silt Loam, What % of each of the soil textures would your need?

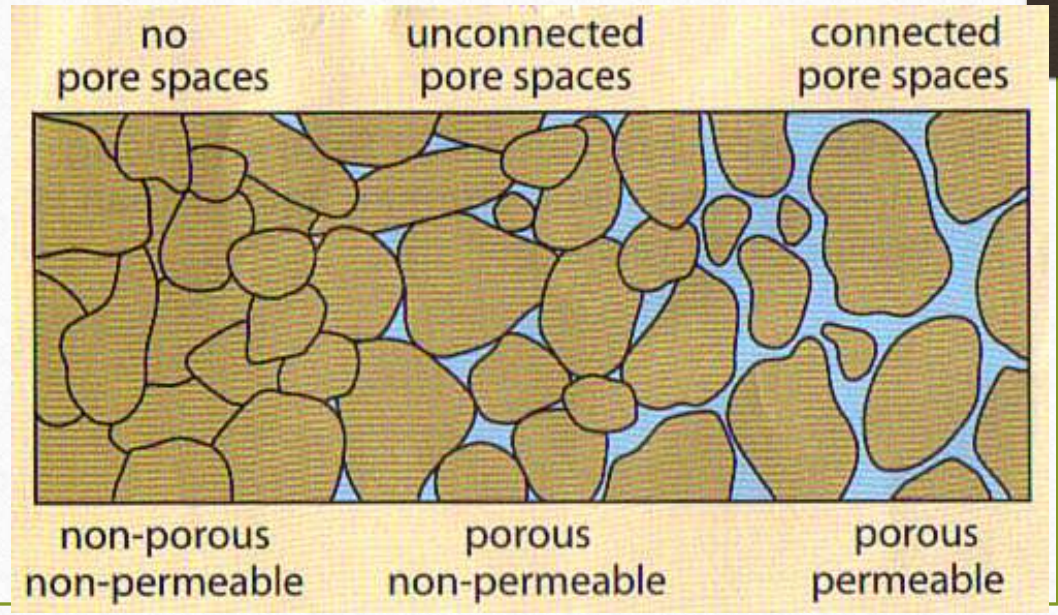
3. If you were to make a Sandy Clay Loam, What % of each soil texture would you need?



Porosity & Permeability

8/23 Obj. TSW Learn about Porosity and Permeability of soils and how to create healthier soils. P. 14 NB

1. What do you think porosity is?
2. What do you think permeability is?
3. How might they be important to soils?



6 Types of SAE's

- **Ownership/ Entrepreneurship** – caring for Chickens, Bunnies
- **Placement/ Internship** – Fiery Ginger Farms, Dave Vierra Farms, Andrew Codd
- **Research**- best fertilization methods in plants, Aquaculture project
- **Exploratory** - Exploratory – Research possible Careers in AFNR
- **School Based Enterprise** – After or before school, managing working school garden, fresh food drive, research in a greenhouse, Biodigestion, Composting, Tower Gardens, Recycling program
- **Service Learning** – Farm to Fork Festival

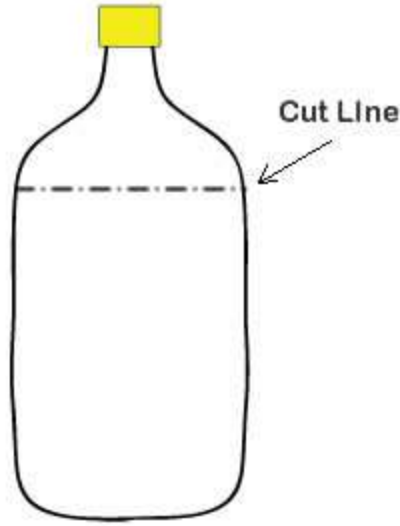
Learning about FFA Activity
Match each of the following FFA words to what they are: P. 15 NB

- ~~SALUTE~~
- Written By E. M. Tiffany
- I believe in the future of agriculture,…
- National Blue and Corn Gold
- MOTTO
- This consists of 5 symbols: cross section of Corn, the rising Sun, the Plow, the Eagle, the Owl
- ~~EMBLEM~~
- Learning to Do, Doing to Learn,

Earning to Live, Living to Serve.

- CREED
- I pledge allegiance to the Flag of the United States of America and to the Republic for which it stands, …
- COLORS

Compost Lab

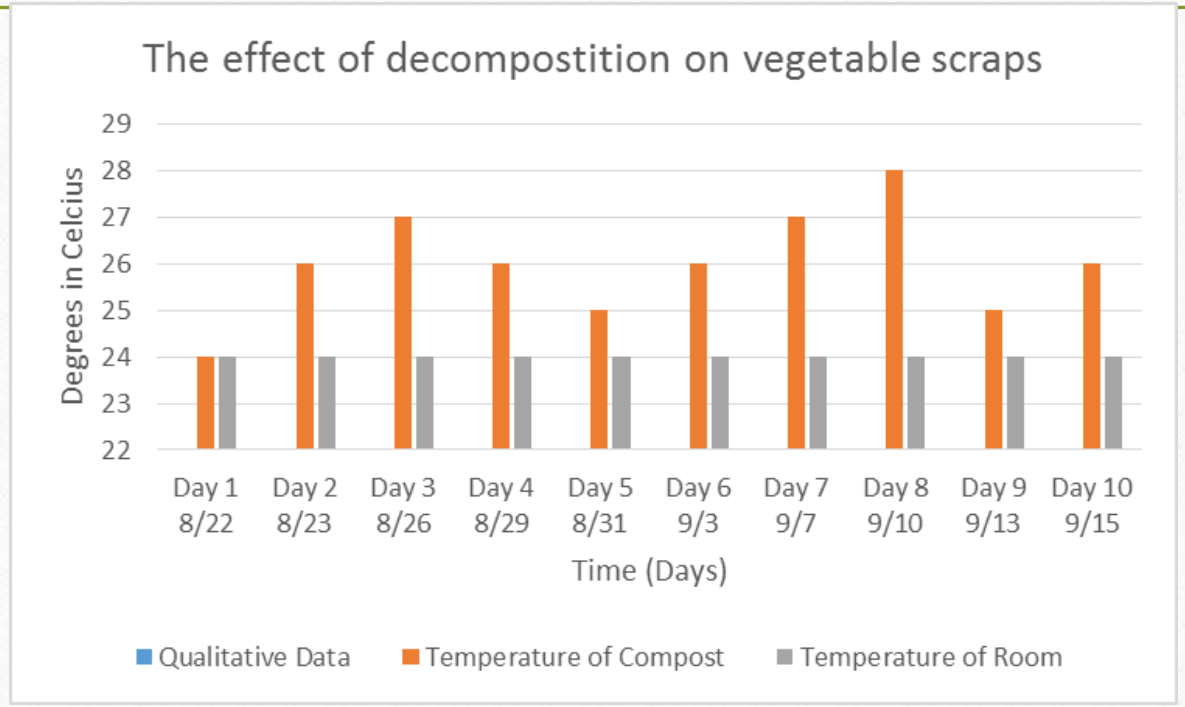


- Materials: 1 – 2 Liter empty bottle of soda with top 1/3 cut off & slits cut in sides.
  - Soil, vegetable matter, water, red wigglers. Large spoon or spatula for turning compost. Thermometer, paper, pen
  - Take pictures of your before and after compost bottle. 21 days.

Compost Lab

- Data:

Graph 1:



Over time the temperature in the 2 liter bottle is higher. (10 font)

FFA Officer Responsibility Activity

- Use FFA.org
- FFA Manual
- Page 48 in online Manual
- Write down 3 key responsibilities for each of the offices on 3x 5 cards
- We will use flashcards and travel around to say the responsibilities and see if another person can name that officer postion.

Compost Lab p. 17 NB

- Data:

Table 1: The temperature of the compost is higher than the room temperature.

Quantitative Data

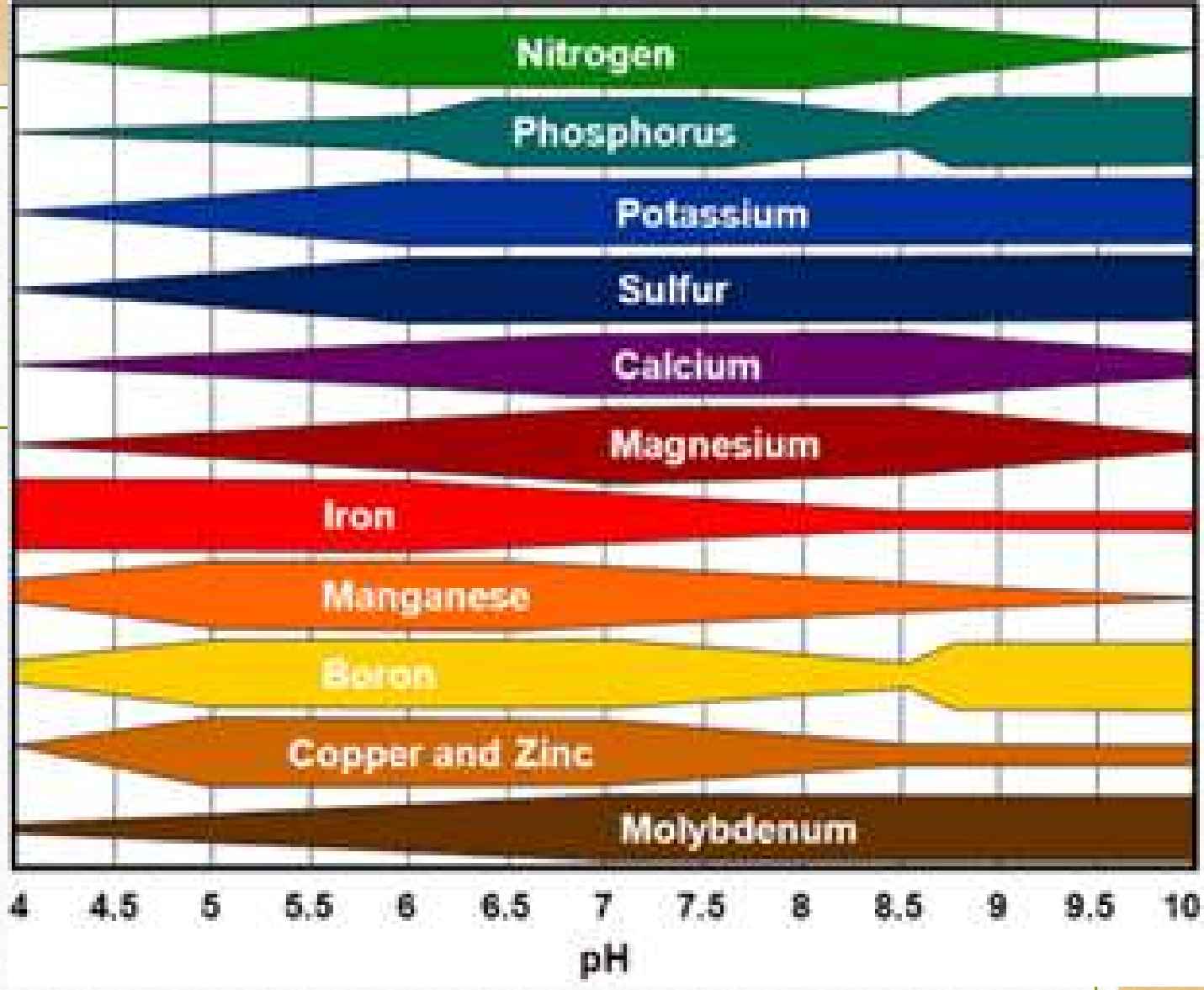
	Qualitative Data	Temperature of Compost	Temperature of Room
Day 1 8/22			
Day 2 8/23			
Day 3 8/26			
Day 4 8/29			
Day 5 8/31			
Day 6 9/3			
Day 7 9/7			
Day 8 9/10			
Day 9 9/13			
Day 10 9/15			

Characteristics of Soils
Obj. TSW learn how to create healthy productive soils.

1. What did you observe yesterday during the porosity/ permeability demonstration?
2. The 2-liter bottle that had gravel with dirt allowed the water to flow faster than our beautiful healthy compost, why?
3. What else could we add to our compost that we are improving that might improve drainage/permeability?

Nutrient Availability
8/24 Obj. TSW learn the relationship between pH and nutrient availability of soils.
P. 16 NB

1. What is pH?
2. What pH is the most beneficial nutrient availability?
3. How do you know?



Erosion

8/25 Obj. TSW learn how erosion by wind and water can carry away valuable nutrients. P. 18 NB

1. What is erosion?
2. How can erosion degrade the land?
3. What are some solutions to prevent erosion?

Soil Erosion document

Hedgerows

- Contour Farming

Purposes of Soil

- Look at this picture.
- What are the purposes of soil?

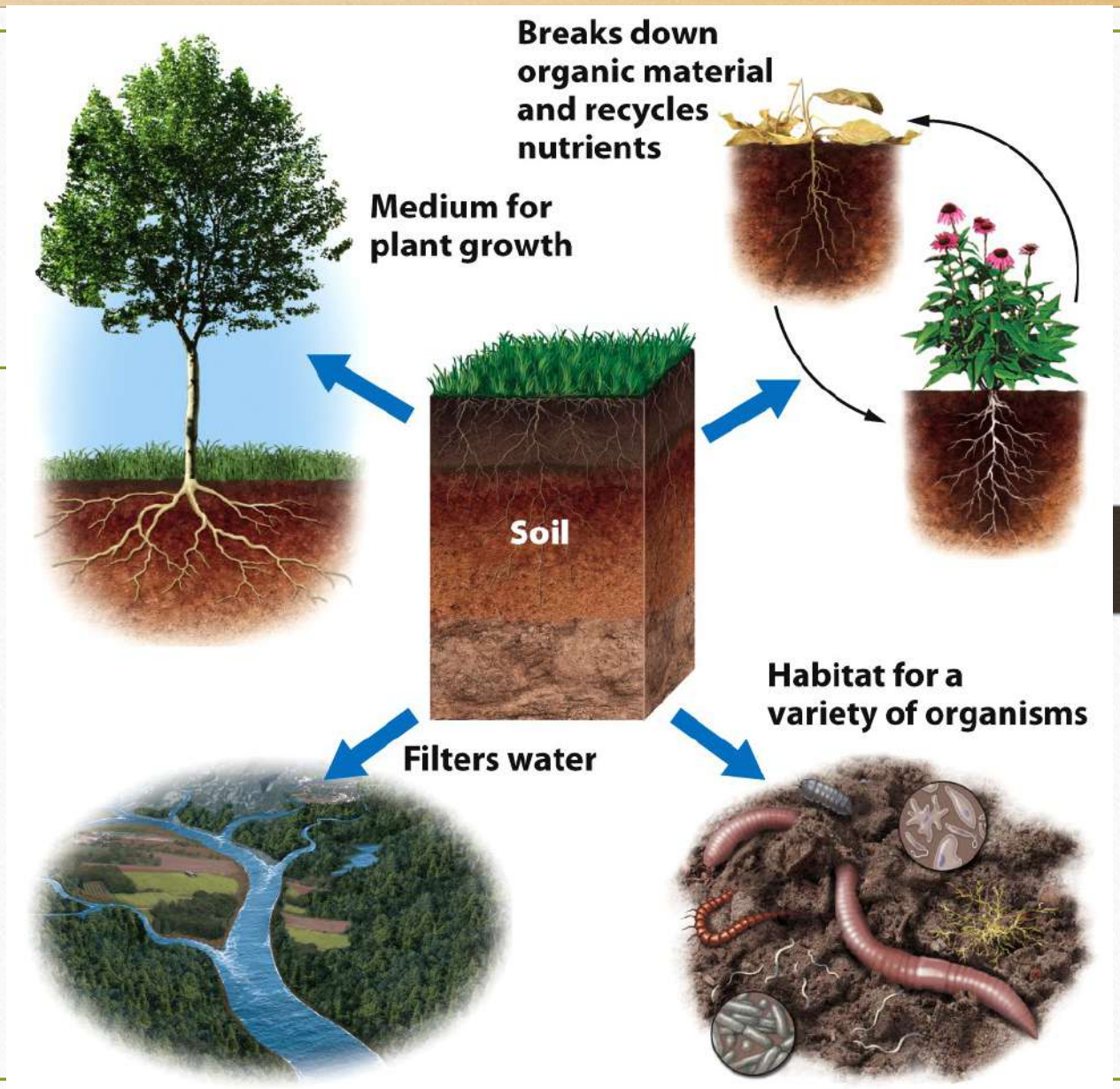


Figure 8.19
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SAE Project Contacts

- Sheep and Goats- Kathryn MacRoberts
  - http://laughing-duck-farm.blogspot.com/
- Show Rabbits
  - http://oharafamilyfarm.com/show-rabbits
- Karen Chestnut:
  - karensmc@earthlink.net
    - 4 – H Contact

How Soil is Made…

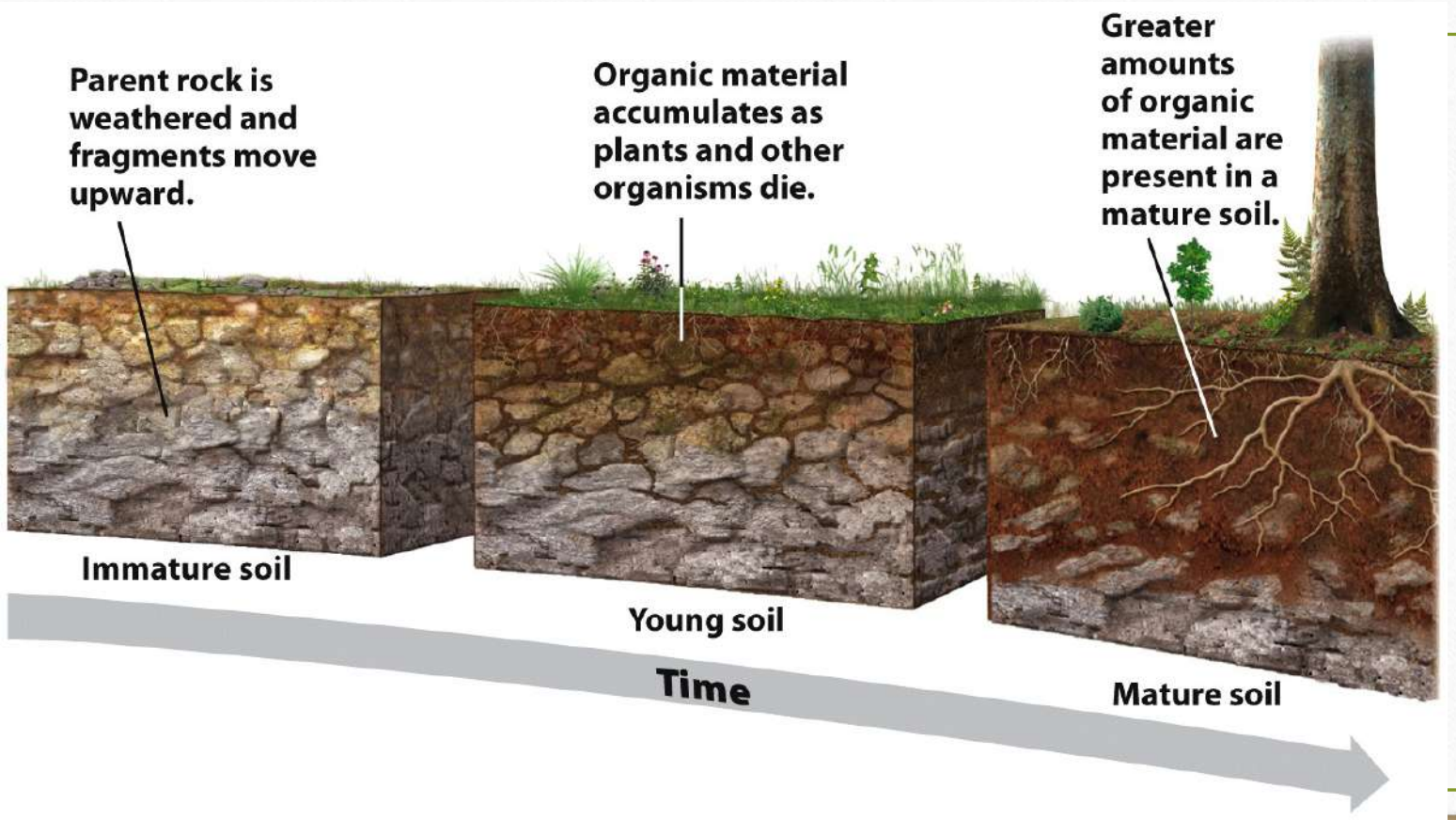

Figure 8.20
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Soil Horizons

O horizon: Organic matter in various stages of decomposition

A horizon (topsoil): Zone of overlying organic material mixed with underlying mineral material

B horizon (subsoil): Zone of accumulation of metals and nutrients

C horizon (subsoil): Least-weathered portion of the soil profile, similar to the parent material

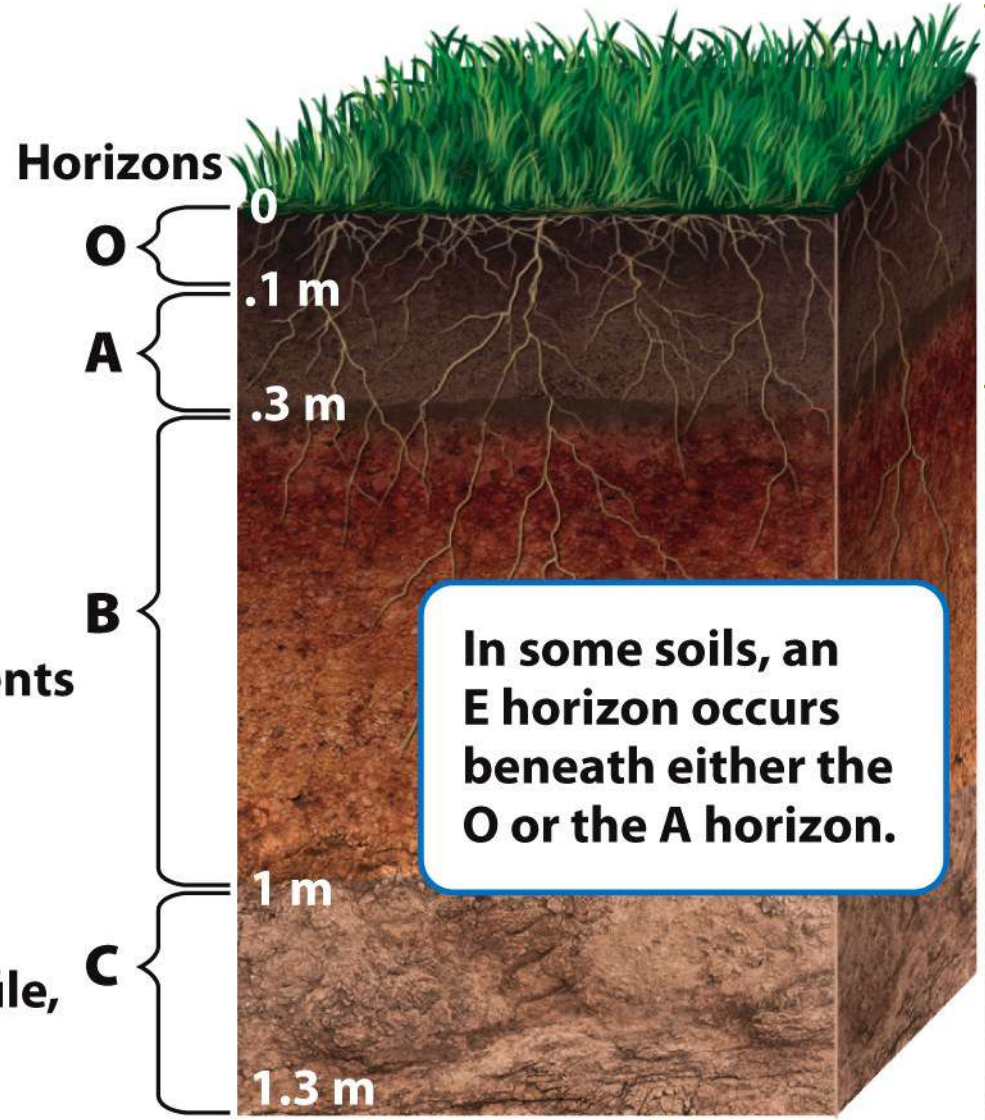

Figure 8.21
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8/31 Porosity & Permeability

Obj. TSW learn to distinguish characteristics of soil by it's porosity and permeability. P. 22 NB

1. Which soil type has the best drainage?
2. Which one holds water best?
3. Compare and Contrast with soil has the most porosity and which has the most permeability.

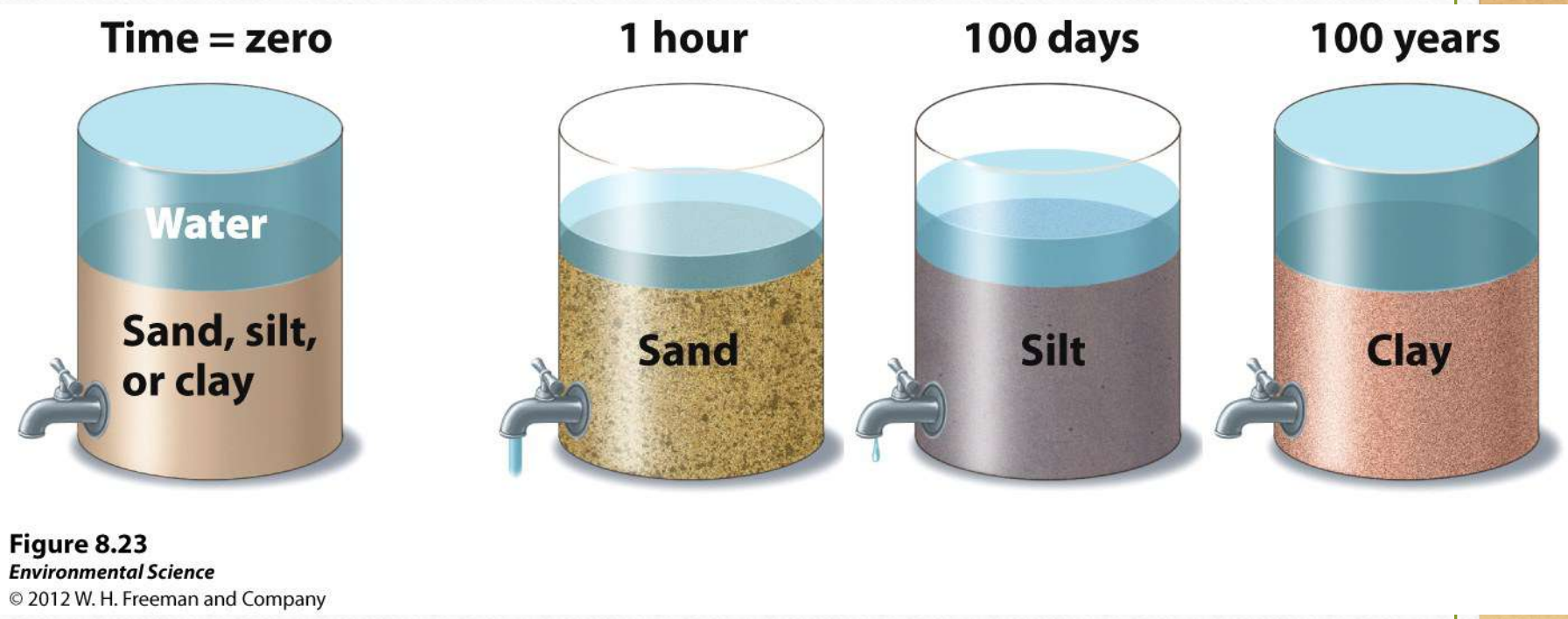
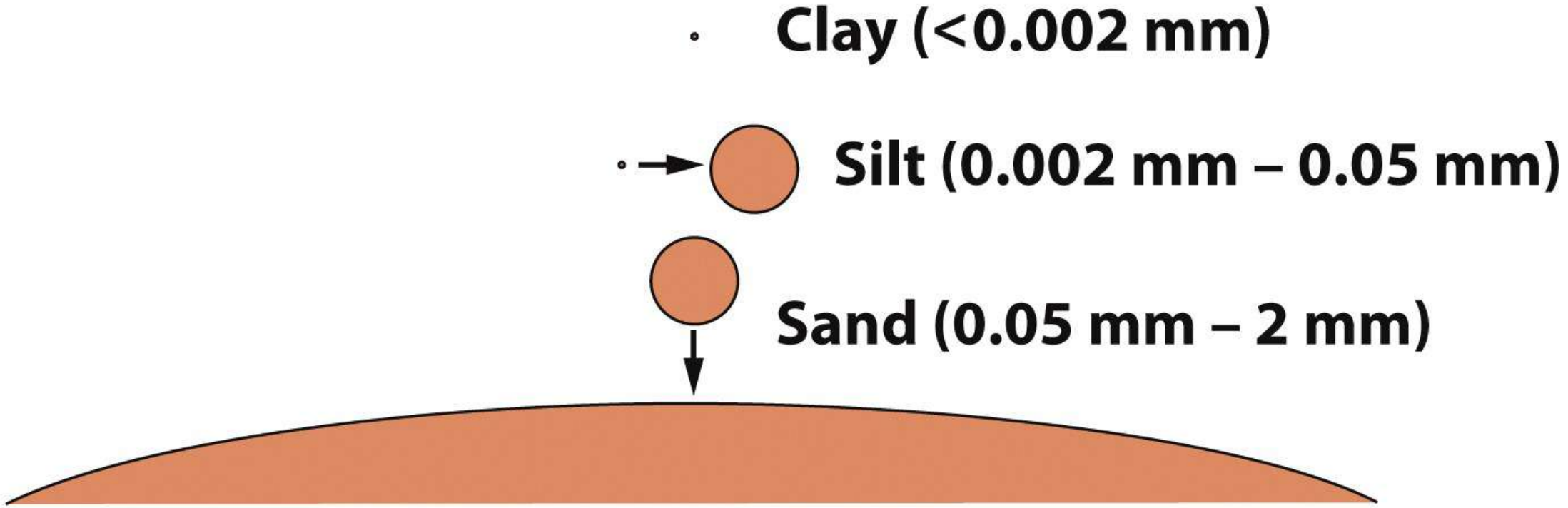


Figure 8.23
Environmental Science



Relative soil particle sizes (magnified approximately 100 times)

Figure 8.22b
Environmental Science

Porosity & Permeability Demonstration

Soil is an Ecosystem Notes P. 23 NB

- Soil is alive.
- Healthy Soil has Biodiversity,
- The more biodiversity, the more resiliency soil has in the event of a natural or man made disaster.
- Soil is a renewable resource.
- Soil is an ecosystem service, we depend on the soil to grow most of our food.

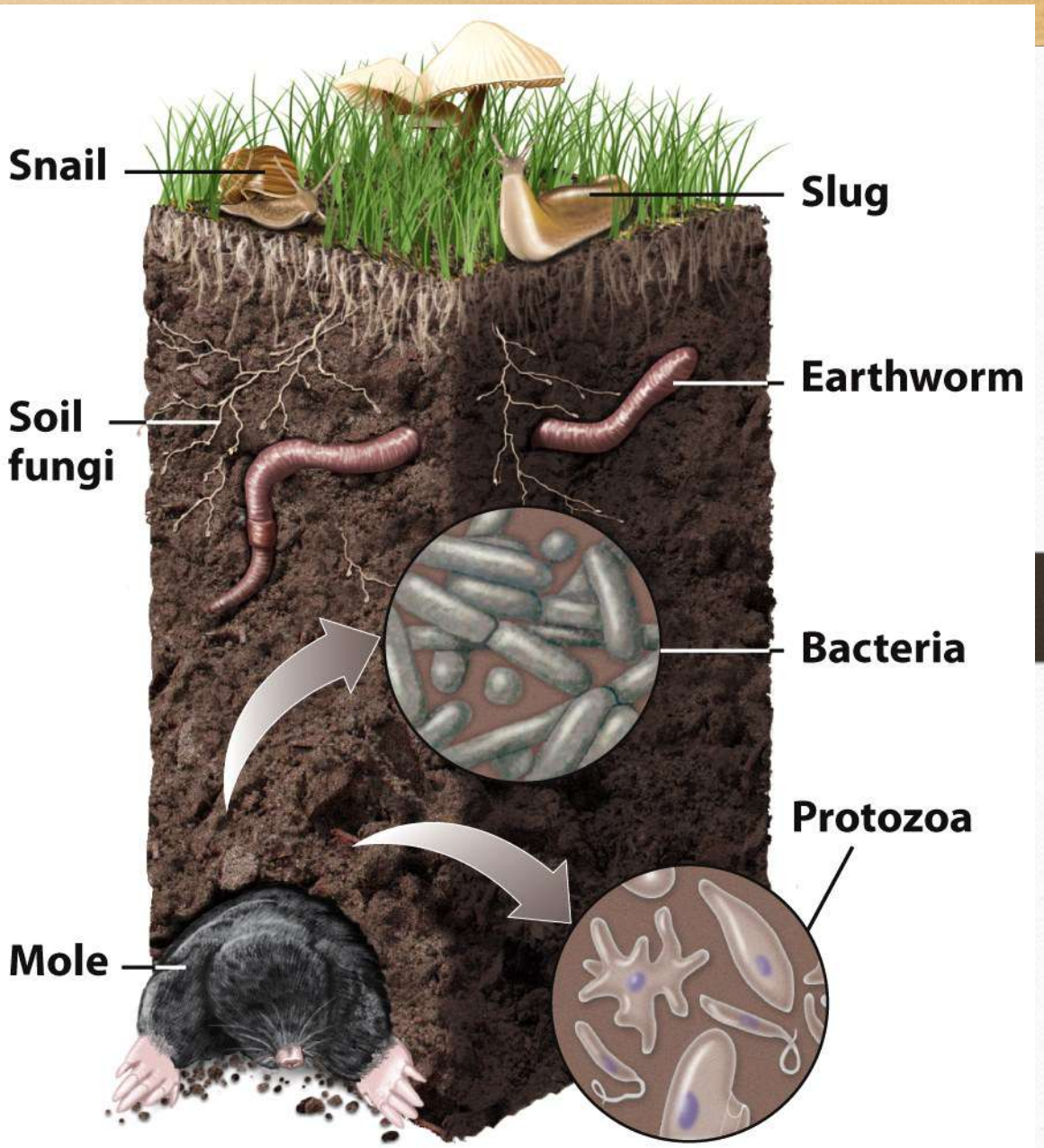


Figure 8.24
Environmental Science

The Dust Bowl

8/26 Obj. TSW understand how soil must be maintained to continue being productive. P. 20 NB

1. Humans have made mistakes in farming, especially if they don't understand how the natural world works. What was the Dust Bowl in October 1929?
2. What caused the Dust Bowl?
3. How did farming practices change?

9/1 Characteristics of Soils

Obj. TSW learn how to create healthy productive soils. P. 24NB

1. What did you observe yesterday during the porosity/ permeability demonstration? Where are my pictures? ☺
2. The 2-liter bottle that had gravel allowed the water to flow faster than our beautiful healthy garden soil, why?
3. What else could we add to our compost that might improve drainage/permeability?

Vegetable Planting Guide

- Tape to page 23 NB

Fall Season Crops

- Broccoli
- Cauliflower
- Garlic
- Onions
- Radishes
- Carrots
- Cilantro
- Sweat Peas
- Fava Beans

Warm Season Crops

- Watermelon
- Strawberries
- Peppers
- Tomatoes
- Squash
- Pumpkins
- Flowers
- Beans

Copy this list on page 11 NB
What Fall Crops do we want to plant?

Nasturtium

Farm-to-Fork Festival

- Saturday September 24th

  Counts as Service Learning

Please sign the sign up sheet, with your contact information next week.

9/2 Omnivores Dilemma

Obj. TSW develop a better perspective of where their food comes from. P. 26 NB

1. What is you impression of Omnivore's Dilemma?
2. What are the four categories of how food is raised?
3. What was one thing you learned or did not realize before reading the first 6 pages of the book?