



## Soil and Compost Introduction

### Connected Next Generation Science Standards

**K-ESS2-2** Construct an argument supported by evidence of how plants and animals can change the environment to meet their needs.

**2-ESS1-1** Use information from several sources to provide evidence that earth events can occur quickly or slowly.

**2-ESS2-1** Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.

**2-PS1-1** Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.

**4-ESS2-1** Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation

**5-ESS3-1** Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

**5-LS2-1** Develop a model to describe the movement of matter among plants, animals, decomposer, and the environment

**5-PS1-1** Develop a model to describe that matter is made of particles too small to be seen.

### Overview

Healthy soil is an essential part of a productive and sustainable garden. It is a complex but hands-on topic that students can really dig into. Soil and compost connect to many ecosystem and earth science learning expectations and can be taught in the garden's colder seasons. It only needs to be warm enough to dig into the soil and many lessons can be partially taught indoors. Extend compost learning throughout the year by setting up a compost bin system through Seed St. Louis.

\*Please refer to the page 3 left side bar for information on soil safety.

### Suggested Lesson Sequence

- Decomposing Leaf Timeline
- FBI Hunt
- Soil Recipe
- Soil Shake
- Soil Your Undies Experiment

### Connected Garden Tasks

- Composting and compost bin maintenance
- Mulching and adding compost to garden beds
- Planting cover crops
- Crop rotation
- Transplanting seedlings



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## MySci Connections

- Third Grade, Unit 13, Lesson 8
- Fifth Grade, Unit 21, Lesson 4 & 9

Submit your soil samples to MU Extension to assess soil contamination or nutrition. Learn more at <https://extension2.missouri.edu/programs/soil-and-plant-testing-laboratory>.

## Favorite Soil and Compost Books

- *Diary of a Worm* by Doreen Cronin
- *Compost Stew* by Ashley Wolff
- *Dirt by Steve "Dirtmeister" Tomecek*
- *Farmer Will Allen and the Growing Table* by Jacqueline Briggs Martin

## Garden Further Investigations

- Track and chart waste added to compost pile and the weight of finished compost.
- Plant seeds or seedlings in different types of soils and record growth. Notice how different soil has different watering needs and retention.
- Collect earthworms from different locations in the garden. Measure and chart the earthworms' length. Which soil has the most worms?
- Participate in the Danforth Centers's MO DIRT program, a community science soil health survey at <https://modirt.missouriepescor.org/>

## Indoor Further Investigations

- Start a worm composting bin with red wiggler worms so students can observe worms decomposing food scraps in the classroom.
- Bring in food scraps and put in clear bags and watch the decomposition process occur over time in the classroom. Track the decomposition rates of different types of plant matter.
- Create a lunchtime composting system. Research the benefits of composting and create information flyers for the school.
- Paint a picture using mud paint. Various types of soil have different colors when mixed with water.
- Write a soil poem.



## Ecosystem Introduction

### Soil and Digging Safety:

Below are best practices to follow when an activity requires students to dig and interact with soil.

1. When able, limit digging to soil that is in raised beds and free of contaminants.
2. If digging or planting in the ground, it is always advised to have soil tested for contaminants and heavy metals, such as lead.
3. It is a good idea for students to wear gloves when handling soil outside of the garden bed.
4. Even if gloves are worn, students should always wash hands with soap after working in the garden.
5. Never add farm manure or pet waste to compost bins or garden soil.

### Seed St. Louis Resources

Connect with us on Facebook or Eventbrite to discover upcoming Educator Workshops. Subscribe to us on YouTube to discover season-specific gardening how-to's.



Looking for Field Trip opportunities or need to ask a question about our educational services? Contact [education@seedstl.org](mailto:education@seedstl.org) or 314.588.9600 ext 106.

### Community & Cultural Connections

- Research various ways soil has been a resource in different cultures other than for growing plants (clay pottery, writing medium, housing material).
- Use the USDA's Web Soil Survey to learn more about the history and quality of the soil in your community.  
<https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm> Where do students think the soil contamination is coming from and what can they do to help restore the garden soil?
- Use soil contamination as a way to introduce environmental justice. Teaching Tolerance has a great introduction to Environmental Justice at <https://www.tolerance.org/classroom-resources/tolerance-lessons/analyzing-environmental-justice>