

Soil Health Activities for K-12

Soil health lessons with students looks like observing soil ecosystems, composting, learning about plant roots, cultivating a diversity of plants, and so much more. Many activities, such as exploring creatures in the compost or planting cover crops, can be repeated seasonally with every age group and develop in complexity every season.

Elementary School



Key Messages:

My emphasis with these age groups is to build a personal connection to soil and a sense of the importance of soil as a living thing, through hands-on practices in cultivating and valuing it.

Activities:

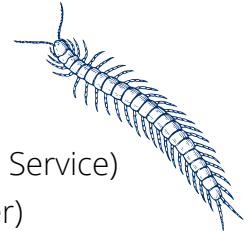
1) Tucking In the Garden: In fall or spring, to prepare for winter or summer, the students use straw or gather leaves and mulch garden beds or planting containers. Lessons from the 4 Soil Health Principles include minimizing soil disturbance and keeping soil covered as much as possible.

2) Make Your Own: In late winter, start having students gather materials and make their own potting soil, learning how to feed the soil as well as new plant starts. This nutritious soil can be added to the garden soil when the plants are transplanted later.

3) Feed with Seeds: In early spring, plant large cover crop seeds, such as fava beans and peas. Or practice the motion of sowing/broadcasting seeds by hand and then have students sow them in the garden by mixing smaller seeds with soil in a bucket.

Additional Resources:

- Soils4Teachers.org (Soil Science Society of America)
- Unlocking the Secrets of Soil Health (Natural Resources Conservation Service)
- DigIt! The Secrets of Soil (Smithsonian Environmental Research Center)



Middle School



Key Messages:

I encourage students to start thinking in systems and learning about soil health through activities that foster conversations about relationships and interdependence.

Activities:

- 1) Feed with Seeds: In fall, students plant cover crop mixes, such as grasses and vining plants (peas/vetch), that grow in a beneficial relationship by offering support, shade, and plant diversity. Ongoing observations can take place around plant growth, and insect communities interacting with these plants, as compared with garden areas without cover crops.
- 2) Share the Space: In winter, students begin thinking about the spring by designing a garden bed (real or imaginary) with plants that feed the soil and/or need different nutrients (think NPK). How can they create a space that is beneficial for humans, plants, and the soil?
- 3) Appreciate the Small Things: In late spring, with a microscope or magnifying glasses, students explore samples of garden soil or compost and identify as many living and nonliving things that they observe. What relationships do they see between these things? How can they support the soil ecosystem throughout the spring and summer?

Additional Resources:

- The Soil Story Curriculum from Kiss the Ground
- Unlocking the Secrets of Soil Health (Natural Resources Conservation Service)
- (SARE) Sustainable Agriculture and Research Education (SARE)
- Soils4Teachers.org (Soil Science Society of America)



High School



Key Messages:

At this level, students begin engaging with soil health by identifying local soil health issues and experimenting with solutions through comparative studies.

Activities:

- 1) Nutrient Investigation: In fall, students take NPK and pH tests of specific garden beds, or planting containers, and compare their results. Then they can determine the soil's nutritional needs and research cover crops that would best “feed” the soil.
- 2) Feed with Seeds: In late fall or early winter, students sow their cover crop seed varieties and compare the germination rate (or dormancy), recording this data. They can also add a light layer of mulch over these seeds.
- 3) Prepare for Planting: In early or late spring, students cut down and mulch their cover crop seeds. Then they measure the pH and NPK of their garden soil and compare the results with their measurements in the fall. How did the cover crops impact the soil's nutrient levels? What are other aspects of soil vitality that students can consider for soil health? Using compost or organic soil amendments, they can amend the soil (if needed) to provide the best growing environment for their spring plants.

Additional Resources:

- "Soil Health Fact Sheets." Unlocking the Secrets of Soil Health (Natural Resources Conservation Service)
- Sustainable Agriculture and Research Education (SARE)
- Soils4Teachers.org (Soil Science Society of America)
- Soil Health: Diversified Farming and Food Systems (Purdue University)

