

Workshop #4.1 Compost

Age Groups

- 5-8
- 9-13
- 14+

Learning Objectives

- Students will understand what is biodegradable and what ends up in the landfill, and what can be used for compost
- Students will understand the importance of reducing waste
- Students will learn what the uses of compost as fertilizer

Materials/Resources Needed

- Poster-sized piece of paper (i.e. 24x36 inches)
- List of kinds of garbage
- Markers, crayons, or any drawing material
- Paper to draw on
- Tape

Estimated Time	Activity
10 minutes	<p>Introduction:</p> <ul style="list-style-type: none">● Begin with asking the question: where does our garbage go when we throw it “away”?<ul style="list-style-type: none">○ Have a discussion based on those answers and what happens when our garbage sits in landfills.○ Explain how some pieces of garbage, like food scraps, will decompose while others will stay in the landfill for a very long time, like plastic.● Why is it bad when our food and other organic material sits in the landfill?<ul style="list-style-type: none">○ When organic waste decomposes, but is so covered and tightly packed that it doesn’t receive oxygen, it will release methane.○ Methane is a greenhouse gas<ul style="list-style-type: none">■ Ask kids if anyone knows what a greenhouse gas is.■ Explain the connection between greenhouse gases and climate change.● What is composting?<ul style="list-style-type: none">○ Recycling decomposed organic material and accelerating the natural processes when organic material, or anything that was once living, breaks down.○ Composting allows organic material to break down with enough exposure to oxygen that it produces

	<p>carbon dioxide instead of methane.</p> <ul style="list-style-type: none"> ○ Humus--the product--is a natural component of soils that is formed by the decomposition of plant material.
15 minutes	<p>Age Group: 5-8, 9-13</p> <p>Preparation for workshop:</p> <ul style="list-style-type: none"> ● On the poster paper, or large sheet, create three columns that take on the entire paper. ● Label one column “Compost”, one as “Landfill” and one as “Recycle”. ● Cut up the list of types of garbage so each item is on an individual strip of paper. <p>During workshop:</p> <ul style="list-style-type: none"> ● Have the kids pick a strip of paper randomly so each student has their own garbage item. ● After distributing the drawing materials, have each student draw their item. ● Once every student has created their item, give each person a piece of tape. ● When everyone is ready, have each student attempt to place their item in the correct column.
5 minutes	<p>Conclusion</p> <ul style="list-style-type: none"> ● Have a discussion about where everyone placed their items ● Have each student write down one thing they learned from today’s workshop

Age Group: 9-13, 14+

Why compost?

1. Benefits to the physical properties of soils
 - a. Organic matter in the compost loosens heavy soils, which improves the soil structure and allows for greater **root penetration**.
 - b. Compost is a dark-brown humus material, which provides greater **aggregate stability**. Aggregate stability refers to the resilience of soil aggregates, or small groups of soil grouped together, when faced with disruptive forces such as wind or water erosion, or tillage.
 - c. **Water retention** is improved because water is able to bind to organic material, and the changes in structure of the soil because of compost allows for greater movement and absorption in the soil.
 - d. The soil structure allows for greater **soil aeration**, and more oxygen is available to the roots.
2. Benefits to the chemical properties of soils
 - a. Compost in soil increases the soils **cation exchange capacity (CEC) and anion exchange capacity (AEC)**, which improves the soil’s ability to utilize nutrients.

- b. Compost itself supplements the soil with **nutrients** such as nitrogen, potassium, calcium, magnesium, and sulfur. In addition compost provides **micronutrients** such as copper, zinc, iron, manganese, boron, and molybdenum.
 - c. The humus and organic matter can **regenerate poor soils**.
 - d. Can act as a **buffer** between soil and exposure to acidity, alkalinity, salinity, pesticides, and toxic metals.
3. Benefits to the environment
- a. **Diverts** food scraps and organic materials from landfills, which release methane through anaerobic decomposition.
 - b. Can bind heavy metals and other pollutants, preventing them from entering water resources.
4. Economic benefits
- a. Can extend landfill longevity which could potentially delay construction of replacement landfills or waste management strategy (i.e. incineration)
 - b. Could create new jobs for citizens
 - c. If used as an alternative to other topsoils in areas of new construction, landscape renovations or container gardens, it would not be a cheaper option initially, but by using compost instead of other topsoils, the quality of the plants would increase which would require less management or replacement.

Chen, J. H., & Wu, J. T. (2005). Benefits and drawbacks of composting. *Compost Production: A manual for Asian farmers*. Food & Fertilizer Technology Center. Taipei, 106.