

What is compost and how does it help the soil?

MY OWN FOOD CHAIN PROGRAM (K-2)

Nutrient Management

(ILS 12B, 12E)

Overview

This curriculum explores the relationship between people and the food they eat. It aims to give children in grades K-2 a basic understanding of the flow of energy through the food chain, and the place of people in the food chain. If teachers complete the entire curriculum, their classes will explore food chains in nature, focusing on its individual links and looking at the flow of energy as a whole. Students will then look at the place of people in the food chain, and discover how people have appropriated nature's systems in agricultural practices – making the food chain our own. Classes will compare traditional and sustainable agricultural practices.

Sustainable Agriculture, for the purpose of this curriculum, shall be defined as "a system of food production, supported by consumers, where farming operations, practices and technologies work in harmony with the natural systems that sustain life on earth."

Suggested Grade Level

This curriculum is designed for kindergarten through second grade levels. The topics covered can be built upon in complexity throughout that age range.

Approximate Time

Approximately 45 minutes for session one, 30 minutes for each subsequent session.

Objectives

1. The students will discover that dead plant material breaks down and turns into soil over time.
2. The students will learn that composting plants helps the soil to be healthy and good for new plants.

Activity Abstract

In this lesson, students will bury compostable material and track its progress as it breaks down and becomes soil. They will note changes and speed of decomposition and link this to agricultural practice.

Background Information

Good soils are essential for successful crop production. To be profitable, growers must manage soils to provide adequate and properly balanced nutrients. This must be done with minimum loss of soil through erosion and minimum movement of nutrients into ground or surface water. A healthy population of bacteria, fungi and other soil organisms



is also important in producing healthy crops. To optimize yield and quality of farmed crops requires a basic understanding of soil and nutrient management.

Compost is made up of decaying organic material, such as leaves, vegetable scraps, or manure. This material is broken down by decomposers, including worms, insects, fungi, protozoa, and bacteria. They eat the organic material and the waste products of this process make nutrient-rich soil. The nutrients that compost releases into the soil help plants grow and photosynthesize, (Urban Ecology Waste Reduction Project). This process takes place in nature as things die; in gardens and farms, people often have to add compost to the soil to increase the nutrient content.

Creating a compost pile or compost bin isn't hard. There are many products available to help you, or you can create your own from scratch. This slide show shows you the step by step procedure for creating a compost pile: <http://aggie-horticulture.tamu.edu/sustainable/slidesets/kidscompost/cover.html>

This website has more general information about composting and other reasons – besides gardening – why it is beneficial to compost in schools. <http://web.archive.org/web/20030618043016/http://www.cfe.cornell.edu/compost/why.html>

Materials

- Apples, one per student.
- Bucket.
- Spades, one per student or one per pair of students.
- Clip boards, one per student.
- Crayons/pencils for each student.
- Paper.
- Stake or other marker so you remember where the class dug.

Procedure (Session 1)

1. **Tap Prior Knowledge.** Pull out an apple. Ask the students what you're holding. Remind them about the plant parts party and ask what part of the plant the apple is. (A fruit.) What is its purpose? (To put out seeds, or be food!) Ask students if they eat the whole apple? Which parts don't they eat?
2. Give each student an apple to eat as a snack. Collect the uneaten stuff – cores, etc. -- in a bucket. Ask the students, what happens to all of this? (They'll probably answer, you throw it away...) So where is "away", and what happens there?
3. **Hands-on experience.** We're going to find out what happens when an apple core goes to "away." Take the class and all the materials outside. Choose a spot that is out of the way of kids at recess, such as in a grove of trees or near the edge of the school yard.
4. Have students help you dig a hole (no deeper than a foot, but a foot in diameter at least).
5. Pour the apple remains in the hole.
6. Have each student draw the cores in the hole and label it "Day 1."
7. Have students re-cover the hole with the dirt they dug up.



8. Place stake in the ground to mark the area so you can find it when you return.
9. Return to the classroom. Have students make predictions about what will happen to the cores in the hole.

Procedure (Session 2 through ??)

1. After two days, remind students about their apple cores. Ask them to guess what they look like now.
2. Return to the hole with spades, clipboards, etc.
3. Dig up the dirt and observe the apples. Look for decomposers such as worms and other bugs by the apples.
4. Have students draw and label “Day 3”
5. Cover the hole again.

Continue to return to the area every two days or so, predicting changes, observing and drawing the apples as they break down. After many weeks, the apples will look like soil. Conclude the experience at this time:

6. **Introduce Scientific Concept.** Discuss what happened over time. (The apples turned into soil. They didn’t disappear – they got turned into something else.) What was the role of the worms and any other insects you found? (They helped decompose things.) Explain that when things turn into soil it’s called decomposing. Compost – or stuff that’s going to decompose – is very important to soil. It gives nutrients to plants that need them to grow – including the ones in the garden!
7. Have each student create a book with all their pictures showing the decay of the apples over time. If they are old enough, they can write descriptions of what’s happening using the word “decompose.”
8. **Conclusion/Wrap-up.** Discuss ways that the class can make sure their garden has enough decomposing materials returning nutrients to the soil. Some suggestions include starting a classroom compost pile and using it for the garden, or collecting dead leaves and stirring them into the soil in the garden.

Final Session

1. Enact your suggestions! Add compost to your garden plot!.

Extensions

Go out into the woods or other natural area. Look for fallen trees and other rotting plants. See if you can find a fallen tree with baby plants growing out of it. Discuss how this helps the forest.

Make “compost pockets” in the garden. Bury vegetable material and dead leaves about a foot down in one or several places in your garden. Mark the places. See if plants grow better right by the pockets than in non-composted areas over time.

References

Urban Ecology Waste Reduction Project.

<http://cpmcnet.columbia.edu/dept/physio/schools/318/complp.html>



Composting for Kids Slide Show. <http://aggie-horticulture.tamu.edu/sustainable/slidesets/kidscompost/cover.html>

Cornell Composting: Composting in Schools.
<http://web.archive.org/web/20030618043016/http://www.cfe.cornell.edu/compost/why.html>

