South Dakota State University Extension

Level: PreK-K

GROW GETTERS

STUPENDOUS SOILS

Overview: In this lesson, youth will answer the questions: “What is soil?” and “How can you make compost?”

Contributors: Activities written by Jessica Endres and Mary Jo Parker under the direction and review of Anna Tvedt.

The lesson was reviewed by Audrey Rider, Kristine Lang, Ph.D., Rhoda Burrows, Ph.D., and Prairey Walkling.

The Grow Getters Program originated as a Master Gardener project in 2020 and is now a multi-departmental effort among SDSU Extension staff and volunteers.

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GROW GETTERS

PreK-Kindergarten

Activities in this Lesson:

- **Science Activity:** Build Your Own Compost
- **Nutrition Activity:** Nature's Energy Source
- **Physical Activity:** Tiny Treasures

SD Early Learning Guidelines and Kindergarten Content Standards

- **Science:**
  - **Goal CD-8:** As a result of their explorations and participation in simple investigations through play, children observe, describe characteristics of, and demonstrate respect for living things, the environment, and the physical world.
- **Health:**
  - **Goal HPD-1:** Children develop healthy eating habits.
- **Physical Education:**
  - **Goal HPD-5:** Children engage in play and experiences to develop muscle control and hand-eye coordination to manipulate objects and work with tools.

Book:

Books may be available at school or community libraries

Compost Stew: An A to Z Recipe for the Earth by Mary McKenna Siddals

Composting is becoming popular to help protect the Earth, but how do you start one or what is safe to include? Siddals provides the best ingredients for the perfect recipe to create your own compost.

- Purchase the book: Compost Stew: An A to Z Recipe for the Earth by Mary McKenna Siddals
- Watch: "Compost Stew: An A to Z Recipe for the Earth" read aloud link by Missouri Botanical Garden

BUILD YOUR OWN COMPOST

Science Activity
PreK-Kindergarten

In this activity, students will learn about what items can and cannot be composted and how to build their own compost.

Time: 30-45 minutes
Prep: 5 minutes

Materials

- My Compost Jar activity sheet
- Nitrogen-Rich (Green) Materials picture dictionary
- Nitrogen-Rich (Brown) Materials picture dictionary
- Leaves
- Sticks
- Grass
- Shredded paper
- Wood chips
- Bucket of soil
- Garden hand shovel
- Glue or glue sticks
- Crayons, markers or colored pencils

Steps:

Ahead of time:

- Print enough picture dictionaries and Compost Jar activity sheets for each student. Have a bucket of soil, along with various carbon-rich materials from outside placed in a couple bowls to pick from.

Instructions:

1. Pass out the activity sheet and picture dictionary to each student. Have students write their names at the top of the “My Compost Jar” activity sheet.
2. Pass out real soil to each student (~ 1 TBSP or enough for them to glue and cover about ½ of their compost jar) have the students glue soil in their jar wherever they would like. Reminding students that they need to save room to add their “Greens” and “Browns” items to their jar.
3. While the glue and soil are drying. Ask the students to look at the Nitrogen-Rich Materials (“Greens”) picture dictionary sheet and circle three items that they would like to include in their compost jar. Have the student cut out their three items that they picked and glue the items on their compost jar.
4. After, have students pick out two items from the bowls of carbon-rich materials and have them glue their two items onto their compost jar. (Refer to the “Browns” picture dictionary for examples)

Guiding Questions:

Immediately after setup:

- Ask: Why is composting important?
  - Answer: improves soil fertility, reduces garbage in landfills
- Ask: When composting what are considered the “green” items?
  - Answer: Fruit and vegetable scraps, coffee grounds, eggshells, grass clippings
- Ask: When composting what are considered the “brown” items?
  - Answer: dry leaves, plant stalks, twigs, shredded paper, shredded cardboard, wood chips

During the Activity:

- Ask: What are some items that we would want to avoid adding to our compost?
  - Answer: meat, oils, dairy products, produce stickers, painted wood, herbicide treated plants

After the experiment:

- Ask: Does any of our compost jars all look the same?
  - Answer: No
- Discuss with students: Although all of our compost jars look different, the soil will still get the nutrients it needs to provide energy to grow plants. Just like a compost needs three things to provide nutrients for the soil (“Greens”, “Browns”, and soil) we also need three nutrients for our bodies for energy and to grow (carbohydrates, proteins, and fats). We might not all eat the same foods, but as long as we are providing our bodies with the energy needed, we can all grow, just like plants grow in the nutrient-rich soil.

Modification notes:

- **Simplification:** For modification, remove the gluing of soil and carbon-rich materials and just have the students draw in and color in the soil and carbon-rich materials on the compost jar.
- **Extension:** Have the students go outside and pick the carbon-rich materials that they would like to include in their compost jar.

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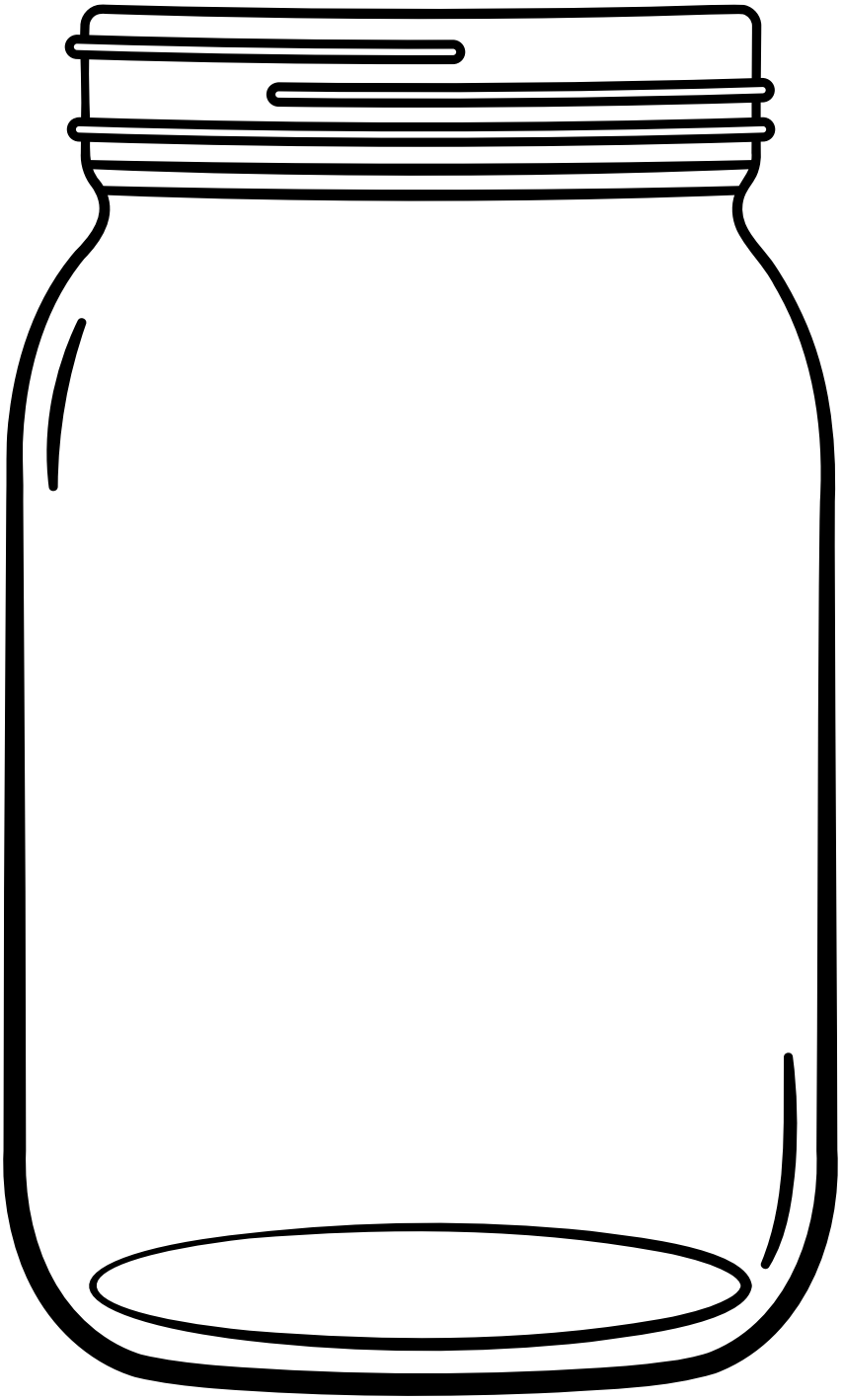
MY COMPOST JAR

Name(s): _____ Date: _____



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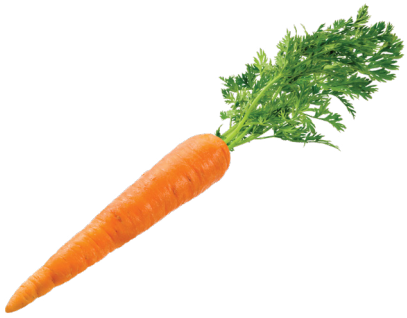
Nitrogen-rich “Green” Materials

Fruit and Vegetable Scraps





Egg shells, tea bag and coffee grounds



Weeds, leaves and grass clippings



Carbon-rich "Brown" Materials

Shredded paper

Twigs

Wood chips

Shredded cardboard

Dry leaves

Hay

NATURE'S ENERGY SOURCE

Nutrition Activity
PreK-3rd Grades

In this activity, students will make a trail mix with food items representing what could be included in compost.

Time:

Prep: 10-20 minutes – including shopping
Activity: 10-15 minutes

Materials

- Plastic cup (one per student)
- Pumpkin seeds
- Chex cereal (or similar)
- Pretzel sticks
- Dried fruit (such as apples, banana chips, cranberries)
- Raisins
- Gummy worms

Steps:

Combine trail mix items in a large bowl. Once mixed together divide into individual cups.

Notes:

Food item representing compost	Compost item
Pumpkin seeds	Dried leaves
Whole wheat Chex cereal	Cardboard box
Pretzel sticks	Tree branches
Dried fruit	Fruit scraps
Raisins	Critters
Gummy worms	Worms

Instructions:

1. Hand out a cup to each student and tell them to imagine that the food items are items that can be composted.
2. Have students pull out the first food item starting with the pumpkin seeds and follow the guiding questions.
3. After each food item ask the students to raise their hands if that would be an item they would include in their own compost at home. Repeat with each food item.

Guiding Questions:

During the experiment:

- Ask: Can you think of what the pumpkin seed represents that would go in compost?
  - Answer: Dried leaves

- Ask: Can you think of what the Chex cereal represents that would go in compost?
  - Answer: Cardboard box
  - After answer, prompt with: “cardboard boxes can be added to a compost, but they need to be shredded or broken down, when you put the cereal in your mouth think of crushing or breaking down the cardboard to be utilized in the compost.”
- Ask: Can you think of what the pretzel sticks represents that would go in compost?
  - Answer: Tree branches, twigs
- Ask: Can you think of what the dried fruit represents that would go in compost?
  - Answer: Fruit scraps
  - Question to follow: Are fruit the only food item that can be added to the compost?
    - » Answer: No, vegetable scraps can also be added
- Ask: Can you think of what the raisins represent that would go in compost?
  - Answer: Critters
- Ask: What does the gummy worms represent?
  - Answer: Worms

After the experiment:

- Ask: What are the food items providing for our bodies, and how does that relate to what composting does for the soil?
  - Answer: Provide energy, fuel and nutrients just like giving nutrients to the soil so that the plants have energy to grow
- Ask: Once your composting is all done, what do you do with your compost?
  - Answer: Take it to your garden and plant some flowers or produce

Modification Notes

- **Simplification:** Brainstorm with the students different food items that could be used in the trail mix to replicate composting.

TINY TREASURES

Physical Activity
PreK-Kindergarten

In this activity, students become nature detectives and embark on a thrilling exploration using magnifying glasses to discover and observe the fascinating elements hidden within the soil.

Time: 20-30 Minutes

Materials

- Magnifying glasses (one per student)
- Safe, open, natural area providing different soil types that students can walk/move around as a class or in smaller groups
  - Such as a sandbox, playground, gravel, and rocks
- Hand-held shovel

Steps:

1. Before going outside, remind the students of the different types of soil (sand, clay, loam). Explain to the students that today they are nature's detectives discovering and observing different elements hidden within the soil.
2. As a group start together with the rocky areas, having students use their magnifying glasses to examine the dirt, different rocks, insects, different plants (if any). Give students enough time to discover different elements of this area, and once done have students discuss some of the treasures they found.
3. Next go to a sandbox, letting the students examine the elements of the sand, feeling the texture of the sand, looking at the particle size, looking for any insects or plants in the area. Once down have students discuss some of the treasures they found.
4. Last head to area with loam, discovering the different elements of this area. While students are examining the area, you could dig a small hole for the students to examine the underground soil. Once done have students discuss some of the treasures they found.
5. When all the areas have been examined and discovered, sit down and activate prior knowledge of the previous Grow Getters Lesson (Getting the Garden Growing) and include that "not only is location important for a garden, but also the soil type when planting."

Guiding Questions:

Before the experiment:

- Ask: What happens underneath the soil?
  - Answer: plants can grow, insect's live there, water is stored

After the experiment:

- Ask: What was found different in each of the soil types?
  - Answer: different textures, different particle sizes, plants, rocks, etc.

Modifications

- **Extension:** Have students find soil that they think would be the best location for a garden or to plant into and discuss why.

Additional Resources

If you liked this lesson, you may also like these other educational materials from SDSU Extension.

Nutrition and Physical Activity

- Pick it! Try it! Like it! Preserve it! materials are filled with tips for selecting, preparing, and preserving a wide variety of fruits and vegetables. Colorful fact sheets, recipe cards, and educational videos provide educators and families with fun, engaging tools to enhance any dietary curriculum!
- Growing Active Readers is a series of book-based lessons to help young children understand the benefits of making healthy decisions involving nutrition and physical activity.
- South Dakota Farm to School Resource Guide walks through the basics of starting farm to school programs in South Dakota, including local food selling/purchasing, school gardens, and in-class education.
- Preservation this page provides a suite of educational materials and programs offered by SDSU Extension related to food preservation.
- Physical Activity View all SDSU Extension physical activity content.

Horticulture

- Garden and Yard this page provides easy access to all the educational materials and programs related to garden and yard by SDSU Extension. This frequently updated landing page includes sections for fruits, vegetables, problems and solutions, master gardener volunteer program, garden hour, and more.
- Vegetable Gardening in South Dakota this booklet will help you with basic vegetable gardening information and tips to get started.
- Fertilizing Gardens in South Dakota this booklet by SDSU Extension provides information on soil testing, types of fertilizers, and methods of application.
- An Identification Guide to Native Pollinator Plants of South Dakota for Managed Landscapes In this guide, learn about the perennial plants native to South Dakota that attract pollinators and can be incorporated in to gardens.
- Tree Pest Alert stay updated and informed with this weekly resource for selecting, planting, and caring for trees and shrubs all year round.