LiveWell Kids
Garden and Nutrition Program

Lesson 3: Soil Health & Nutrients

FIFTH GRADE

OBJECTIVES

By the end of this lesson, students will:

- Understand how soil health supports food systems and ecosystems.
- Explain how nutrients move through soil, plants, animals, and people.
- Understand the science and benefits of composting and vermicomposting.
- Identify the components needed for successful compost and participate in building compost.
- Use the Nutrition Facts label to make informed food choices.

SUPPLIES AND SET-UP

Garden Activity – Compost Building

- Green materials (about 1 cup per student)***
- Brown materials (provided in garden)
- 2 watering cans (stream top + sprinkle top)
- 1 hand cultivator tool

***YOU PROVIDE – Green materials (the equivalent of 1 cup per student)
i.e: vegetable and fruit scraps, green leaves, green cut grass, coffee grounds.

Green materials may come from a classroom collection or be provided by the volunteer. Possible sources include cafés, coffee shops, small grocers, juice bars, or neighbors. If using a vendor, arrange pickup at least one day in advance.

Nutrition Activity – Label Fitness

- Laminate: *Nutrition Facts*
- Laminate: *Label Fitness*

PREPARATION

- Refer to the LiveWell Kids Volunteer Manual on the LiveWell Kids webpage for details about preparing for the lesson one week prior and the day of.
- Allow **30 minutes** for set-up and preparation on the day of the lesson.

INTRODUCTION & MINDFUL BREATHING *(1 Minute)*

- Introduce volunteers.
- Lead a short mindful breathing activity.
- Explain: *Today we'll explore how healthy soil supports food systems and how nutrients move from soil to our bodies.*

****Divide the class into 2 groups****

Split students into two groups. One group goes to the garden activity while the other goes to the nutrition activity. Both run **simultaneously for 18 minutes**, then groups switch.

GARDEN: DISCUSSION & ACTIVITY *(18 Minutes)*

Discussion: Soil Health

• You already know that *soil health* means soil is alive and able to do its job.
• Healthy soil supports plants, animals, people, and entire ecosystems.
 	
• Healthy soil functions by:
  ○ Managing water so plants can absorb what they need.
  ○ Providing food, air, water, and space for living things.
  ○ Filtering harmful substances.
  ○ Recycling nutrients.
  ○ Holding roots and structures in place.
 	
• Caring for soil helps it grow food season after season.
• Ask: "Can you name a way gardeners do this?"
  ○ *By returning nutrients through systems such as composting and vermiposting.*

Discussion: Humans and Soil Systems
• You already know that soil is alive and supports plants, animals, and people. • In fifth grade, we also think about how ***human impact*** affects soil systems.   ○ Human impact means the ways people change the environment through their choices and actions.

- Ask: What are some ways people use land?
  (Farming, building homes, roads, parks, gardens)
- Explain:
  - These choices can either protect soil or damage it.
  - Healthy soil does not happen by accident — it depends on how people care for it.

- Composting is one way people help restore soil systems instead of depleting them.

SOIL AS A LIVING SYSTEM

- Soil is more than just dirt — it is a living ecosystem made up of plants, animals, air, water, and nutrients.
- Explain:
  - A soil ecosystem includes living things (worms, insects, fungi, bacteria) and nonliving parts (air, water, minerals, organic matter).
  - All these parts must work together for soil to stay healthy.
- Ask: What do you think happens if soil organisms don't get air, water, or food?
- Explain:
  - When soil is compacted, polluted, or missing organic matter, soil life struggles.
  - Compost improves the conditions for the entire soil ecosystem, not just plants.

CAUSE-AND-EFFECT: Soil in Action (Review)

- Explain: Gardeners don't just grow plants — they practice soil management, which means making choices that keep soil healthy over time.

- Ask students to think about each scenario and predict what might happen:
  - A garden bed never receives compost.
  - A compost bin has only greens and no browns.
  - Soil is watered too much or not enough.
  - Food scraps are thrown away instead of composted.

- Ask for each:
  - What happens to the soil?
  - What happens to the plants?
  - How could a gardener fix the problem?

- Explain: Composting is one tool gardeners use to manage soil, restore balance, and support long-term plant growth.

Now that we understand how people affect soil systems, let's look more closely at how composting helps restore nutrients and support healthy soil.

Activity: "Compost Building"

PURPOSE

- Students will practice building compost using the correct balance of materials while reinforcing how decomposers turn waste into nutrients.

SET-UP

- Location: compost bin or tumbler in the garden.
- Place green materials and a stream-spout watering can on one side.
- Place brown materials and a hand cultivator on the opposite side.
- Confirm that only HALF of all materials will be used with the first group.

STUDENT ORGANIZATION

- Divide students into two equal lines:
  - Line 1: Green materials + watering can
  - Line 2: Brown materials + cultivator
- Explain that students will rotate through both roles.

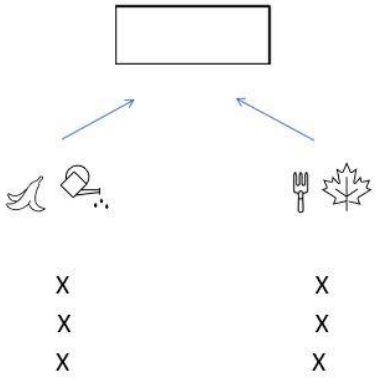
ACTIVITY INSTRUCTIONS

1. The first student in the green line steps forward and adds one scoop of green material to the compost bin.
   The first student in the brown line adds one scoop of brown material.
2. The green-line student adds a small amount of water; compost should be damp, not soaked.
   The brown-line student gently stirs the compost with the cultivator, using slow, careful movements.
3. Both students move to the back of the opposite line.
   – Green → Brown
   – Brown → Green
4. Repeat the process until **HALF** of the materials have been used (save half for the other group.)

DURING THE ACTIVITY (PROMPT AS NEEDED):

- Ask:
  - Why do we alternate greens and browns?
  - What happens if compost is too dry? Too wet?
  - How is this like balancing nutrients in our own diets?
- Reinforce vocabulary by using throughout the activity: greens, browns, decomposers, nutrients.

Compost Building Activity Diagram



When everyone in the first group has completed the composting building, stop the activity and save the rest of the materials for the other group.

NUTRITION: DISCUSSION & ACTIVITY *(18 Minutes)*

*** Occurs at the same time as Garden Activities*

Discussion: Nutrients
Just like soil needs nutrients, so do people. • Nutrients help bodies grow, repair, and produce energy. • People get nutrients from food and water. • Nutrients include carbohydrates, protein, fats, fiber, vitamins, minerals, and water.

Discussion: Nutrition Facts Label Supplies – Laminates: *Nutrition Facts*, *Label Fitness* game cards
Reading labels helps you understand what you're putting into your body. • Packaged foods must include a ***Nutrition Facts label.*** • This label shows ingredients, serving size, and nutrients. • Whole foods often have one ingredient — processed foods have many.
Activity: Label Fitness *IMPORTANT! This activity is not meant to shame or discourage students for eating certain foods. Its purpose is to help students become familiar with the Nutrition Facts label as a tool for understanding food choices.* PURPOSE • Students will learn how to use the Nutrition Facts label to identify nutrients in foods and connect nutrition information to real-world choices through movement.

SET-UP

- Choose an open, flat space (classroom, blacktop, or grass area.)
- Ask students to stand in a horizontal line, facing their game cards.
- Place one *Label Fitness* game card directly in front of each student's starting spot.
- Post the *Nutrition Facts* laminate where all students can see it.
- Make sure students are spread out enough to move safely.

ACTIVITY INSTRUCTIONS

- Explain the goal of the activity:
  - Students will use Nutrition Facts information to complete short bursts of movement.
  - Emphasize: This game is about learning, not judging foods.
- Show the **Nutrition Facts laminate** and review:
  - The label tells us what nutrients are in packaged foods.
  - It includes information like serving size, fat, sugar, fiber, protein, and sodium.
- Explain the game steps clearly before starting:
  - You will call out one nutrient or label item.
  - At the signal, students move to their card.
  - Students find the number listed next to that nutrient.
  - They perform that number of movements.
- Demonstrate one example together:
  - Call out "Fiber."
  - Model finding the fiber number.
  - Do the matching number of jumping jacks or steps or whatever movement you've chosen.

PLAYING THE GAME

(Class Management Tip: For large groups, split students into two rotations. One group plays while the other observes and checks numbers. Switch roles halfway through.)

- Call out one item at a time, such as:
  - Serving size
  - Total fat
  - Fiber
  - Added sugars
  - Protein
- Use a variety of movements, such as:
  - Jumping jacks
  - Squats
  - Marching in place
  - Toe touches
- Allow students to choose a lighter version of the movement if needed.

During the Activity (Prompt as Needed):

- Ask quick reflection questions between rounds:
  – Which nutrients had bigger numbers?
  – Which had smaller numbers?
  – Why do you think those numbers are different?
- Reinforce vocabulary: ***nutrients***, ***Nutrition Facts label***, ***serving size***

Ending the Activity

- End with a fun call-out like "Sodium!"
  – Explain that students do **not** need to do large numbers of movements.
  – Use this moment to notice how some nutrients appear in very high amounts.
- Reinforce the takeaway:
  – The Nutrition Facts label helps us understand what we're eating.
  – Knowing what's in food helps us make informed choices.

CLOSING *(1 Minute)*

Regroup students.
Ask:

- How does compost help soil systems?
- How do nutrients move from soil to our bodies?
- How can labels help us make informed food choices?
- Visit the garden bed.
- Thank volunteers and dismiss students.

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