



Seeding Spinach

Suggested Grade Level: Pre-K

Time: 30 Minutes

Subject: Science

Overview: Introduce students to spinach with a planting activity that will teach them the basic needs of plants and how to take care of them. Students will also be introduced to an alternate way of growing plants through hydroponics. Then, a salad-building activity will encourage them to taste different leafy greens.

Objectives:


1. Students will be able to identify three different types of leafy greens (spinach and other leafy greens).
2. Students will be able to describe the basic characteristics of leafy greens, such as color, texture, and shape.
3. Students will be able to discuss how leafy greens can be grown in Kansas as part of a healthy diet.
4. Students will explore the life cycle of leafy greens, from seed to plant, through hands-on activities.

Background Information:

Leafy greens are exactly what they sound like. These plants have edible green leaves that are packed with nutrients. Kale, spinach, lettuce, arugula, bok choy, and collard greens are some of the most popular. Many of these are often grown at home. We've been growing leafy greens for a long time—spinach was grown over 2,000 years ago in Persia (Leafy). Leafy greens are known for their health benefits. They're rich in nutrients like vitamins A, C, E, and K and fiber, iron, magnesium, potassium, and calcium. They are also a great source of carotenoids and antioxidants that protect the body from some types of cancer. Additionally, dark leafy greens like kale or spinach are high in folate, a type of B vitamin that helps prevent heart disease and some birth defects. Leafy greens are a naturally low-calorie and low-sugar food choice (Yan). Dark leafy greens like spinach contain more nutrients than light leafy greens like iceberg lettuce. MyPlate recommends at least one cup of vegetables in every meal. However, you can double the amount of leafy greens. Two cups of fresh arugula, dark green leafy lettuce, endive, escarole, mixed greens, mesclun, or romaine lettuce count for one cup of your daily MyPlate vegetable portion (Vegetables).

Lettuce is the most popular type of leafy green. In 2022, 85% of the lettuce available for consumption in the United States was produced domestically. That means we were growing a little more than 4/5th of all of the lettuce that you could buy in stores. The U.S. state growing the most lettuce varies depending on the time of year. However, small farms can supplement lettuce production and sell their crop locally (Weber).

Kansas Connections:

Spinach and other leafy greens in Kansas are referred to as specialty crops. Leafy greens grow best when temperatures are between 50-70 degrees Fahrenheit. Oftentimes, seeds are planted in early spring and harvested not long after. Other times, they can be planted in the summer for fall harvest (Leafy). Because Kansas can have very hot and dry summers, achieving optimal growing conditions can be tricky, so some Kansas growers get creative. One farm in Pittsburg, Kansas, <https://leafygreenfarms.org/>, grows leafy greens without soil. Instead, they use nutrient-dense liquid to feed their plants. This process is called hydroponics, a popular way to grow leafy greens in our state. Farmers that use this technique are called hydroponic farmers. Cold-hardy leafy greens are also an ideal choice for small home gardens. They can even be grown on balconies, on windowsills, or inside. In fact, keeping leafy greens inside helps prevent pests and bolting or making shoots that grow seeds and reduce the quality and production of the greens we eat. If you're growing these cold-hardy plants inside, use quality potting soil, avoid excessive heat, and water regularly (Landers). Check out another Kansas grower using raised garden beds on surfaces that don't grow anything.  [Rooftop Garden in Wichita, Kansas](#)

Materials:

- Book "Sylvia's Spinach" by Katherine Pryor
- Small pots or cups (one for each child)
- Potting soil
- Spinach seeds (a few per child)
- Watering can or spray bottle
- Markers (for labeling)
- Old T-shirts or aprons
- Leafy greens, like spinach, lettuce, kale, arugula, etc
- Salad dressings, like ranch or vinaigrettes
- Salad toppings, like croutons, shredded carrots, cucumbers, cherry tomatoes, chopped walnuts, bacon pieces, etc.
- Large spoons, ladles, or tongs
- Plates and forks for each student

Instructional Format:

1. Review background and Kansas connections information.
2. Conduct engagement exercises.
3. Review vocabulary
4. Follow the procedures to complete the activities.

5. Upon completing the lesson, students will discuss the activity and observe their spinach for growth for 14 days.

Engagement:

Introduction: Ask students: “Have you ever eaten green food? What are leaves? Are leaves green? Have you ever eaten leaves? Explain that leafy green vegetables have green leaves packed with nutrients. Spinach, kale, arugula, lettuce, bok choy, and collard greens are all different types of leafy greens.

1. Lay out leafy greens for students to see and compare. Ask students questions about what they see and help compare the items.
2. Read “Sylvia’s Spinach” by Katherine Pryor.
▶ Cozy Corner Read Aloud: Sylvia’s Spinach
3. Sing along: ▶ Ed Said | "Gotta Love Those Leafy Greens" | MPB

Vocabulary:

Leafy greens: edible leaves of vegetables (like spinach, lettuce, kale, and more).

Leaf: green part of the plant that produces food.

Seeds: seeds can grow into new spinach plants.

Soil: dirt that has minerals to help plants grow.

Water: clear, tasteless liquid that falls from the sky as rain and fills lakes and rivers, all living things (people, animals, and plants) need water to live.

Nutrients: elements of food that help living things grow.

Procedures:

Activity 1 - Seeding (Planting) Spinach

1. Set out small pots or cups, potting soil, spinach seeds, a watering can or spray bottle, and markers.
2. Explain to students that they will plant spinach and that the seeds need water and soil to grow.
3. Reinforce vocabulary words throughout the lesson.
4. Fill each child’s pot or cup with potting soil (or ask them to do it as you show them). Then, using their fingers, show them how to make a shallow hole (about half an inch deep) for the seeds.
5. After students make a shallow hole in the soil, help them drop about 2-3 seeds into the hole. Have them cover the seeds gently with the soil.
6. Demonstrate how to water the seeds lightly with a watering can or spray bottle, then allow your students to water their seeds.
7. Ask the class what they think will happen next (e.g., “What will we see in a few days? Weeks?”).
8. Place the pots in a classroom where they can get sunlight, and students can check on them. Follow these tips: [10 Tips for Growing Spinach Indoors Any Time of Year](#). Alternatively, encourage students to take care of their pots at home and follow the same instructions.

Activity 2 - Making Salad

1. Ensure your students are wearing old t-shirts or aprons and have all washed their hands.
2. Show the students the different types of leafy greens, salad dressings, and toppings. Ask, “How does the spinach look compared to the lettuce?” Make sure to note the physical differences between each type of leafy green.
3. Have students take turns rinsing the leaves (supervised) in the sink or a large bowl.
4. Demonstrate to your students how to tear the lettuce leaves into bite-sized pieces. Then, let them try—tearing is a crucial fine motor skill. Students may also use kid-safe cutting utensils to chop some of the greens.
5. Combine the greens into a large salad bowl. Have students put a serving on an individual plate or bowl.
6. Provide salad dressings and toppings, such as shredded carrots, cucumber slices, cherry tomatoes, croutons, or chopped walnuts.
7. Based on their skill level and confidence, encourage your students to use large spoons or ladles to add toppings and dressing to their salads.
8. While your students are eating, discuss the salad in class. Ask, “How does the salad taste? What do you like or dislike?” “Can you describe the texture or how it feels?” “What colors are in your salad?”

Career Information: A hydroponic farmer uses nutrient-dense liquid to grow plants without soil. Introduce the class to Leafy Green Farms in Pittsburg, Kansas. Explain that this farm uses liquid packed with nutrients to grow leafy greens. Youtube– Leafy Green Farms: [Leafy Green Farms, Pittsburg Kansas](#) (video is 2:46 min)

Kansas Standards:

Kansas Pre-Kindergarten Guide

Approaches to Learning (pg. 28)

-Remembering and following one- or two-step directions.

Communication and Literacy Skill Development (pg. 30)

-Participates in conversations in increasing group sizes.

Science (pg. 31)

-Understanding and explaining why plants and animals need air, food and water.

-Demonstrating an understanding of living things that exist in different habitats (e.g., fish can live in the ocean because they can breathe underwater).

National Agricultural Literacy Outcomes:

Agriculture and the Environment

T1 K2 b. Describe the importance of soil and water in raising crops and livestock

Plants and Animals for Food, Fiber, and Energy

T2 K2 c. Identify examples of feed/food products eaten by animals and people

T2 K2 e. Identify the importance of natural resources (e.g., sun, soil, water, minerals) in



farming

Food, Health, and Lifestyle

T3 K2 a. Identify healthy food options

Supporting Resources:

[Spinach - Healthy Kids Coalition](#)

A Taste of Leafy Greens. National Agriculture in the Classroom.

<https://agclassroom.org/matrix/lesson/856/>

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