

Spinach Lesson



Goals

Students will...

- Increase their familiarity with spinach.
- Eat spinach when it is offered to them.
- Increase their awareness of the environmental benefits of composting.
- Increase their understanding of nutrition.

Objectives

Students will be able to...

- a. Locate the origin of spinach on a world map
- b. Identify the growing season of spinach in Maine
- c. Identify what part of the plant spinach is
- d. Write a persuasive letter using the appropriate format
- e. Explain how spinach nutrients help the body
- f. Plan a healthy lunch menu that includes spinach in some way
- g. Participate in composting activities.

Lesson Activities

- Review points about safety, sanitation, and cooperation
- Introduce spinach
- Background information on spinach
- Lessons from the Farm
- Prepare spinach wrap-ups
- (Form groups of 4 to 6 students)
- Do compost activity
- (See compost lesson for mini-lessons)
- Eat
- Wrap-up
- Distribute copies of recipe and challenge sheets to students
- Clean-up

Other Spinach Activities

Nutrition science lesson

Why eat spinach?

Global and regional mapping

Spinach fact sheet

Writing ideas

Word search

Background Information on Spinach



Did you know that...?

Spinach is an herb

Scientists call spinach *Spinacia oleracea*. It is part of the goosefoot family. Spinach is annual plant, and can be harvested during the spring or fall, depending on when the spinach was planted and fertilized.

Spinach is easy to grow in well-drained soil that has been treated with lime. It is a cool season crop and grows best at temperatures of 54° to 68°F. The plant can grow to two feet in height. The part of the plant that we eat is the leaf. The leaves grow in a cluster from the root and can be picked after five leaves are big and strong. California and Texas produce most of the spinach in the United States.

Spinach can be eaten raw or cooked

As a raw vegetable, spinach is used as a salad green. It can be used alone or with other young tender leafy greens to make a salad full of colors and textures. Spinach is also eaten after it has been cooked. We can buy cooked spinach in a can or frozen. Spinach is an excellent source of iron, vitamins A and C, and some calcium.

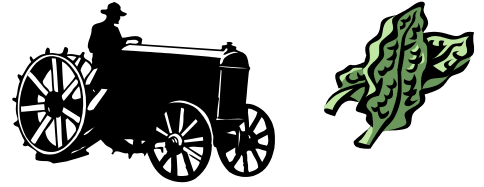
Spinach can be used as a dye

Spinach juice is used to color pasta noodles green.

People in the Middle Ages ate spinach

Scientists believe that spinach was first grown in southwestern Asia. It was brought to Europe during the Middle Ages. Now it is grown all over the world. The United States, Netherlands, and Scandinavia are the major producers of spinach, due to the cool climates of these regions which are optimal for spinach growth.

Lessons from the Farm – Spinach



Spinach is a “great” vegetable! Fresh spinach from the garden tastes very different than spinach you may have eaten from a can. Spinach is delicious either cooked or raw in a salad.

The planting preparation starts in late April--plowing, harrowing, and fertilizing the ground using large tractors and equipment. Machines are used that make a “bed” of soil, and smooth out the ground for planting the spinach plant or spinach seed. Because spinach seed is small (about the size of a pencil lead), a special planter, that is pushed by hand, is used to plant 4 rows on a bed and space the seeds about 3 inches apart. The beds of spinach are kept weeded and irrigated and, in about 45 days, the spinach is ready to be harvested.

A knife is used to cut the spinach plant about 1/2 inch below the ground so that we can harvest the entire plant and not just the leaves. The spinach plants are then washed and bunched together with rubber bands and are ready to sell at farm stands.

Most varieties of spinach like to grow in cool weather either in spring or fall, so farmers must grow special varieties like “Tye” (pronounced Ti’ee) that will grow well in the hot summer months. Because spinach takes only about 45 days to grow, farmers must make several plantings to keep their stands supplied with delicious fresh spinach all season long.

Materials and Preparation

Food needed for spinach wrap-ups (for 4 groups)

2 lbs. fresh spinach
2 8 oz. packages of low-fat or light cream cheese
1 jar (1 lb.) shelled, roasted, salted peanuts (See **Note**)
4 6 oz. cans black olives (optional)
Water for students



Note: Omit peanuts if there's a child with a peanut allergy.

Materials needed (for 4 groups)

Plastic cups
Small box toothpicks
Compost bucket
4 large bowls
Small bowls (1 per student)
4 mixing spoons
4 vegetable spinners
4 can openers
4 knives
4 choppers
4 mallets
4 cutting boards
Paper plates
Wax paper
Plastic silverware
Cleaning towels, napkins
Ziploc bags
Copy of recipe for each student
Copy of challenge sheet for each student
Copy of spinach fact sheet for each student
Copy of writing ideas sheet for each student

Materials and Preparation continued



Each station should have the following:

Food

8 oz. spinach

4 oz. cream cheese

4 oz. peanuts and/or 6 oz. can black olives

Materials

1 large bowl for ingredients

1 small bowl per student

1 mixing spoon

1 vegetable spinner

1 can opener

1 knife

1 chopper

1 mallet

1 cutting board

Toothpicks

Cleaning towel

Copy of recipe

Use fresh Maine spinach if available

Classroom Recipe for Spinach Wrap-Ups

Ingredients:

8 oz. fresh spinach
4 oz. cream cheese
4 oz. shelled, roasted, salted peanuts (**See Note**)
and/or 6 oz. can olives



Note: Omit peanuts if there's a child with a peanut allergy.

Use fresh Maine spinach if available.

Student Cooking Activities

Note: This recipe requires the use of knives and mallets.

Wash spinach leaves under cold water.

Dry spinach leaves with a salad spinner.

Open, drain and slice can of olives. Place in bowl.

Cut cream cheese into blocks (1 per spinach wrap-up). Place in bowl.

Measure 1 Tbs. peanuts and place in plastic bag.

Smash peanuts with mallet.

Add peanuts to cream cheese and mix.

Choose 4 spinach leaves and pinch off stems.

Spread cream cheese mixture on leaves.

Add olives if desired.

Roll up spinach leaves.

Poke a toothpick through the leaves to hold it together.

Yield: 8 wrap-ups

Nutrition Science Lesson - Spinach



Why eat spinach?

Why should we eat spinach?

Spinach is a rich source of vitamins and minerals. We know this because of its dark coloring. The dark green color comes from the green pigments of chlorophyll combined with the orange pigments of beta-carotene. Vitamins and minerals are essential to maintain good health, but are needed only in small amounts.

What are some of the essential vitamins in spinach?

Vitamin A is very important. It helps to protect our eyesight, provides immune defenses and maintains skin and bone. Vitamin A also helps in bone growth and cell development. *Beta-carotene*, which was mentioned earlier, is a building block of vitamin A.

There are many different *B vitamins*. The two main B vitamins found in spinach are riboflavin and folate. *Riboflavin* is needed to release energy into the body. *Folate* is essential in making all new cells.

Vitamin C helps boost the immune system. We need vitamin C to help protect our bones, teeth and skin. Vitamin C is an important component of collagen. Collagen is a protein substance used to make connective tissue, which is in bones, teeth, skin, and tendons.

What are some of the essential minerals in spinach?

Calcium is the most prevalent mineral found in the body. Almost all of our calcium is stored in bones. Calcium helps build bones and teeth and assists in blood clotting and muscle contraction. We also need calcium to transmit nerve impulses.

Nutrition Science Lesson continued



Magnesium helps to make protein and to release energy. It works with calcium in muscle contraction and relaxation. While calcium helps contract the muscle, magnesium is needed to relax the muscle.

Potassium is important in maintaining a regular heartbeat. If the body does not get enough potassium it can lead to heart failure.

Iron exists in all plants and animals. We need iron to carry oxygen throughout the body. Iron also has other important roles, such as to make amino acids, hormones, and new cells.

Vitamins and minerals are essential to life. The body does not make them, so we must get them from our food. A lack of vitamins and minerals can lead to diseases. Dark colored vegetables are a good source of vitamins and minerals. Fruits are another good source of vitamins and minerals.

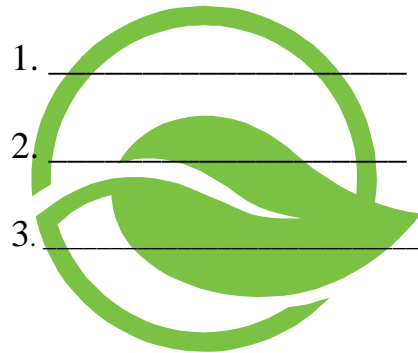
Spinach Student Activity Sheet

Name _____



Spinach is an amazing food! It is packed full of nutrients that your body needs to be healthy. The nutrients that spinach contains can help o in many ways

VITAMINS



1. _____

2. _____

3. _____

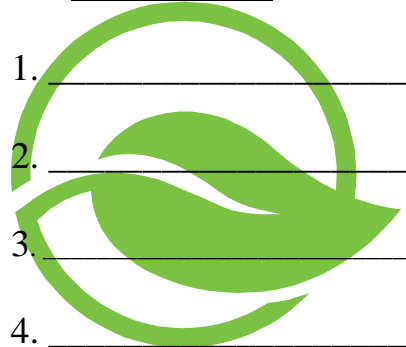
HOW THEY HELP THE BODY

A. _____

B. _____

C. _____

MINERALS



1. _____

2. _____

3. _____

4. _____

A. _____

B. _____

C. _____

D. _____

Since spinach is such a nutritious food, plan a healthy lunch that includes spinach. When you write your food service director, include your menu.

☞ LUNCH MENU ☛

Global and Regional Mapping

Spinach



World Map

Discuss with students the origin of spinach. Have them find it on the map.

Spinach ----- South Western Asia (80°, 20°)

Local Harvest Calendar

Have students determine when spinach is available in our area from the harvest calendar (Spinach is harvested in 2 seasons: April through May and September through October).

Discuss methods of storing spinach through the winter months (canning, freezing).

Discuss with students where in Maine spinach is generally grown (southern parts of the state).

Date _____

Name _____

Spinach Fact Sheet



1. What part of a plant is spinach?
2. Where did spinach originally come from?
3. In what season does spinach grow best?
4. Where is spinach grown in Maine?

Writing Ideas - Spinach



1. What did you like or dislike about this lesson?
2. Write a one paragraph radio advertisement for spinach that includes at least three nutrition facts.
3. Write a persuasive letter to your school's food service director about making a spinach recipe to be included in the school lunch. Include 4 important spinach facts.
4. Prepare the spinach recipe for your family or friends. What did they think? Did they like it? Were they surprised?
5. Come up with your own ideas...

Spinach Challenge Sheet



I agree to try spinach the next time it is served to me in the cafeteria or at home.

I agree to eat spinach	I did it! I ate spinach!

Spinach Word Search Key



J H P O T A S S I U M K L
Z N G V I T A M I N A Q M
X T A E O R S Z G J G X U
B E T A C A R O T E N E I
G O U S W P C I N D E Z C
R J O P I N S K R F S H L
E S N I V A L F O B I R A
E H O N B Z X L W N U Z C
N W O A T Y A R O B M P V
L R T C W T E P Q C S J L
I E L H E I Z O R A N G E
H V I T A M I N C R E U P

Find the words hidden above that are about spinach.

BETACAROTENE
POTASSIUM
GREEN
VITAMIN A

ORANGE
FOLATE
SPINACH
MAGNESIUM

CALCIUM
RIBOFLAVIN
IRON
VITAMIN C

(Answer Key on page 234)