

# Broccoli Lesson



## Goals

Students will...

- Increase their familiarity with broccoli.
- Eat broccoli 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. Explain what part of a plant broccoli is
- b. Explain the origin of broccoli and find it on a world map
- c. Identify the season for optimal growth
- d. Identify where broccoli is grown in Maine
- e. Explain the nutritional benefits of broccoli
- f. Predict and observe changes due to cooking
- g. Record changes in table
- h. Participate in composting activities

## Lesson Activities

- Review points about safety, sanitation, and cooperation
- Introduce broccoli
- Background information on broccoli
- Lessons from the Farm
- Cook broccoli-cheese soup
- (Form groups of 4 to 6 students)
- Do compost activity (see compost lesson for mini-lessons)
- Eat
- Wrap-up
- Distribute copies of recipes and challenge sheets to students
- Clean-up

## Other Broccoli Activities

Nutrition science lesson: What happens to broccoli when we cook it?

Global and regional mapping

Broccoli fact sheet

Crossword puzzle

Writing ideas

Additional recipes

Broccoli Student Activity Sheet

## Background Information on Broccoli



### Did you know that...?

#### **Broccoli is a flower**

Broccoli is a flower from the cabbage family. There are many varieties of cabbage and cabbage-like plants that look very different from each other. For example, cabbage, Brussels sprouts, collards, kale, and kohlrabi are just a few of the members of this family. The family resemblance is easy to see when plants are still growing in the field. They have large silver-green leaves that tend to form a head. Broccoli is a fast growing, upright, branched annual plant. It grows to three feet tall and bears dense green clusters of flower buds at the ends of the central axis and branches. It tastes like cabbage, but it is somewhat milder.

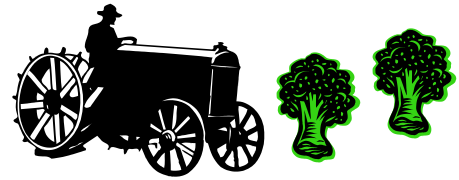
#### **Broccoli is thought to have originated in the Mediterranean**

The word "broccoli" comes from the Italian word "brocco," meaning a sprout or shoot. By the 16th century, people in many parts of Europe grew broccoli. The Romans loved broccoli so much that they often served it boiled and spiced two to three times per week. Tiberius's son, Drusus, lived on nothing but broccoli for a whole month until his urine turned green and his father warned him that he was "living precariously"! Broccoli came to France with Catherine de Medici, who left her native Tuscany to marry Henry II. Soon it moved north to England and Scandinavia.

#### **Broccoli is an excellent source of vitamins and fiber**

Indeed, on a per calorie basis, broccoli is a better source of vitamin C than orange juice, grapefruit juice, or strawberries. Some of the other members of the cabbage family, such as cabbage, cauliflower, and Brussels sprouts, are also good sources of vitamin C. Broccoli is a good source of fiber as well. Raw broccoli has about 3 grams of fiber per cup (1 cup of corn flakes has about 1 gram of fiber). Broccoli also contains beta-carotene, which is the plant form of vitamin A. These substances help protect us from cancer.

## Lessons from the Farm - Broccoli



Broccoli is a very popular vegetable and, like many vegetables, can be served cooked, eaten raw in salads, or served with dips.

Many farms plant two crops of broccoli each year. In March, some farmers plant broccoli seeds in their greenhouse in small pots and grow them until late April when the plants are about 4 to 6 inches high. They then plant them by hand in the field and cover the plants with a white cloth over wire hoops. This will keep the plants warm and let light and moisture through to help the plants grow faster. This looks like a small long greenhouse in the field.

The farmers remove the cloth in about 3 weeks and around the first of June start to harvest the broccoli crop. They plant the second crop in mid to late summer and harvest them in the fall. Broccoli likes to grow best in cool weather.

Farmers harvest the broccoli by cutting the broccoli heads from the plant with a knife. The plant will continue to grow small heads of broccoli called side shoots. They cut and put the side shoots together with rubber bands to make a larger bunch.

If you do not cut the broccoli when it is ready to eat, it will grow into a beautiful bunch of yellow flowers!

## Materials and Preparation

### Food needed for broccoli-cheese soup (for 4 groups)

2 2/3 lbs. fresh broccoli  
2 qts. skim milk  
4 cups cheddar cheese (10 oz.=3 1/2 cups)  
2 tsp. salt  
1 tsp. pepper  
1 stick butter  
1 cup flour  
Drinks for students



### Materials needed (for 4 groups)

8 potholders  
4 wooden spoons  
4 mixing bowls  
4 large pots with lids  
4 steamers with lids  
2 hot plates  
4 sets dry measuring cups  
4 sets measuring spoons  
4 liquid measuring cups  
4 cheese graters  
4 ladles  
8 knives  
4 cutting boards  
Cleaning towels, napkins  
Plastic spoons and cups  
Wax paper  
Serving bowls (1 per student)  
Drinks for students  
Compost bucket  
Copies of recipes for each student  
Copy of challenge sheet for each student  
Copy of broccoli fact sheet for each student  
Copy of writing ideas sheet for each student  
Copy of broccoli crossword puzzle for each student

## Materials and Preparation continued



Each station should have the following:

### Food

2/3 lb. fresh broccoli  
2 cups skim milk  
1 cup cheddar cheese  
1/2 tsp. salt  
1/4 tsp. pepper  
3/4 cup hot water  
2 Tbs. butter  
4 Tbs. flour

### Materials

2 potholders  
1 wooden spoon  
1 ladle  
1 large pot with lid  
1 steamer with lid  
1 hot plate  
1 cheese grater  
1 cutting board  
2 knives  
1 set dry measuring cups  
1 set measuring spoons  
1 liquid measuring cup  
1 mixing bowl  
Plastic spoons  
Serving bowls  
Cleaning towel  
Copy of recipes

**Use Maine ingredients whenever possible.**

## Classroom Recipe for Broccoli-Cheese Soup

### Ingredients

2/3 lb. fresh broccoli  
2 cups skim milk  
2 cups water  
1 cup grated white cheddar cheese  
1/2 tsp. salt  
1/4 tsp. pepper  
4 Tbs. flour  
2 Tbs. butter



**Use Maine broccoli and other products from Maine if available.**

### Student Cooking Activities

**Note:** This recipe requires the use of knives and hot plates.

Chop broccoli into bite sized pieces.

Add just enough water to the pot to cover the bottom.

Put broccoli into steamer and place in pot.

Steam (using hot plate) until tender.

Grate cheese.

Melt butter in another pot.

After the butter is melted, add flour, salt and pepper. Stir 2 to 3 minutes or until golden brown.

Whisk skim milk and water into flour mixture. Stir constantly and bring just to a boil. Simmer, stirring regularly to prevent sticking.

Add grated cheese to soup mixture and continue stirring until soup is thick.

Add steamed broccoli and continue to stir until soup is thoroughly heated.

Serve and enjoy!

Yield: 5 cups

## Nutrition Science Lesson – Broccoli

### What happens to broccoli when we cook it?

(Broccoli will become softer and change color the longer you cook it.)

### Materials

Several broccoli florets

Vegetable steamer

Fork

Water

Pot with lid

Hot plate

**Note:** This recipe requires the use of a stove.

### Student Cooking Activities

Add enough water to the pot to cover bottom.

Put broccoli into steamer and place in pot.

Steam broccoli florets for one minute.

Observe color of broccoli.

Allow students to stick fork in broccoli to observe its texture.

Continue to steam broccoli for 3 more minutes.

Observe color of broccoli.

Allow students to stick fork in broccoli to observe its texture.

Continue to steam broccoli until 10 minutes is reached.

Observe color of broccoli.

Allow students to stick fork in broccoli to observe its texture.

How does broccoli feel after we steam it for one minute? (hard)

4 minutes? (tender)

10 minutes (mushy)

What color is broccoli after 1 minute? (bright green)

4 minutes (dark green)

10 minutes (dull, olive green)

# Broccoli Student Activity Sheet

Name \_\_\_\_\_



## Predictions

Predict what you think will happen to the color and texture of the broccoli after it has been cooked for 1 minute.

Color \_\_\_\_\_

Texture \_\_\_\_\_

Predict what you think will happen to the color and texture of the broccoli after it has been cooked for 10 minutes.

Color \_\_\_\_\_

Texture \_\_\_\_\_

Record your observations in the table below.

Minutes	Color	Texture
1		
4		
10		

How did your observations match your predictions?

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If you were going to the cooked broccoli, how long would you like to have yours cooked? Please explain why you chose that amount of cooking time.

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## Global and Regional Mapping

### Broccoli



### World Map

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

Broccoli ----- Italy (15°, 45°)

### Local Harvest Calendar

Have students determine where they think broccoli is grown in Maine (generally Aroostook County).

Discuss when broccoli is harvested here in Maine (June for first crop, early fall for second crop).

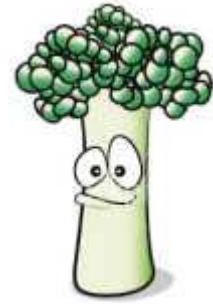
Discuss with students methods of storing broccoli through the winter months (it must be canned or frozen).

Discuss the optimal climate for growing broccoli (cool climate).

Date \_\_\_\_\_ Name \_\_\_\_\_

## Broccoli Fact Sheet

1. What part of the plant is broccoli?



2. Where did broccoli originally come from?

3. In what season does broccoli grow best?

4. Where is broccoli grown in Maine?

## Writing Ideas – Broccoli



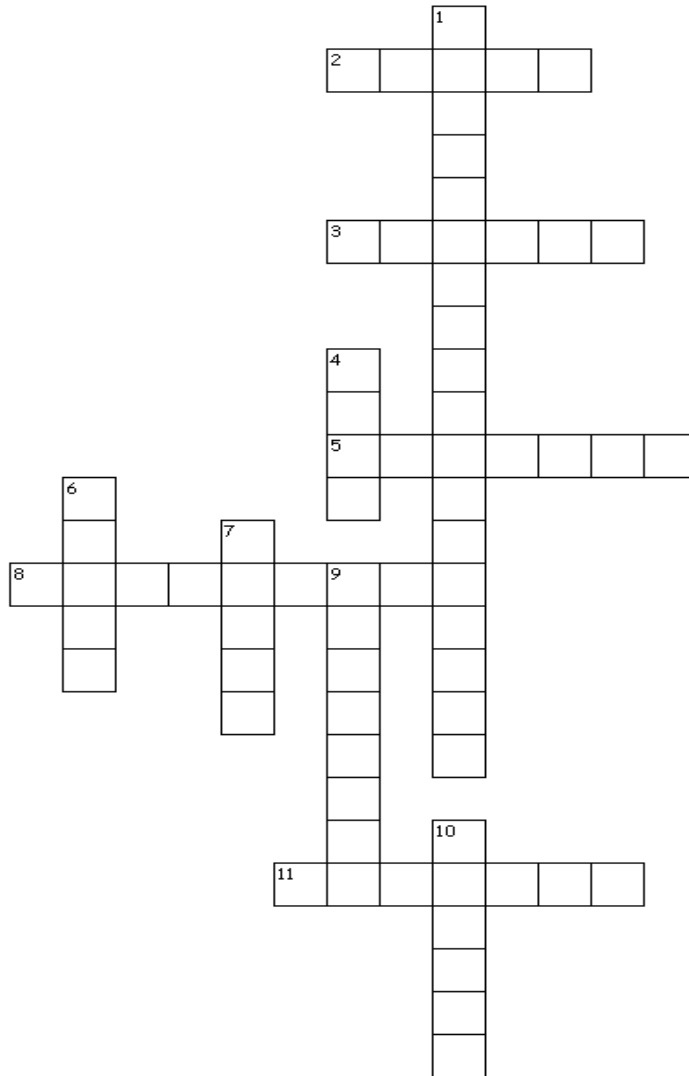
1. What did you like or dislike about this lesson?
2. Write a paragraph about the nutritional benefits of broccoli.
3. Cook the broccoli recipe for your family or friends. What did they think? Did they like it? Were they surprised?
4. Come up with your own ideas...

## Broccoli Challenge Sheet

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

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

## Broccoli Crossword Puzzle



### Across

2. The minimum number of servings of vegetables we need each day is?
3. What part of the plant is broccoli?
5. What method are we cooking broccoli with today?
8. What food group is broccoli in?
11. Broccoli is a good source of what nutrient?

### Down

1. What recipe are we making today?
4. What do we always have to remember before cooking, \_\_\_\_ your hands.
6. What color is broccoli?
7. What country did broccoli originate from?
9. What vegetable are we making today?
10. Broccoli contains substances that protect us from \_\_\_\_?

**(Answer Key on page 235)**

## Additional Broccoli Recipes



### Broccoli Salad

#### Ingredients:

- 1 head fresh broccoli (about 1 lb.)
- 1/3 cup low fat mayonnaise
- 3 Tbs. sugar
- 1 1/2 tsp. vinegar
- 1 1/2 tsp. low fat milk
- 1/2 cup raisins
- 1/4 cup walnuts (optional)
- 1/4 cup chopped red onion (optional)

#### Student Cooking Activities

- Wash broccoli. Cut heads into florets and dice stems.
- Combine low fat mayonnaise, sugar, vinegar and milk. Mix well. Add to diced broccoli.
- Add raisins, walnuts and onion to mixture. Stir to coat all pieces.
- Chill before serving (at least 2 hours).
- Yield: 4 cups (8 servings)

### Broccoli Pasta Salad

#### Ingredients:

- 1 cup fresh broccoli
- 1 cup fresh cauliflower
- 1/2 cup raw carrots
- 2 cups uncooked tri-color pasta
- 1/4 cup balsamic vinegar
- 2 Tbs. oil

**Use Maine broccoli and other ingredients from Maine if possible.**

**Note:** This recipe requires the use of a stove.

#### Student Cooking Activities

- Bring 2 cups pasta to boil. Cook until tender but firm.
- Drain water off from pasta.
- Steam vegetables until firm and slightly undercooked.
- Add steamed vegetables to pasta.
- Prepare dressing for pasta: mix vinegar and oil in separate bowl.
- Pour dressing over pasta, mix and serve!
- Yield: 6 – 8 servings