

Harvest of the Month



Health and Learning Success Go Hand-In-Hand

Do more. Watch less. Test scores improve when students limit TV time and are more physically active. Encourage students to turn off the TV and video games and get at least 60 minutes of physical activity each day to help keep them healthy, strong, and focused. *Harvest of the Month* connects with core curricula to introduce students to fruits and vegetables and ways to be more active.

Exploring Washington Cabbages: Taste Testing

What You Will Need (per group of 4 students):

- Green, red (or purple), savoy and Chinese cabbage varieties; two heads of each variety for entire class
- Small sample cups (four cups each per group)
- Printed Nutrition Facts labels for each cabbage variety*
- White board and markers
- Cutting board and knife

Optional: Paper and pencils or other art supplies for students.

*Download labels from www.harvestofthemoth.com.



RED (PURPLE) CABBAGE

Activity:

- Wash and drain one head of each cabbage variety.
- Chop and fill sample cups, keeping varieties separate; label cups, cover, and set aside.
- Display four unwashed cabbage heads (one of each variety) in front of room.
- Compare different types of cabbages' nutrient values using the labels.
- Distribute sample cups to groups, one variety at a time.
- Observe tastes, colors, and textures; record student observations on board.
- Discuss similarities and differences between varieties; vote on class favorite.

For more ideas, reference:

Kids Cook Farm-Fresh Food, CDE, 2002.



SAVOY CABBAGE

Nutrition Facts

Serving Size: ½ cup green cabbage, shredded (35g)

Calories 9 Calories from Fat 0

% Daily Value

Total Fat 0g 0%

Saturated Fat 0g 0%

Trans Fat 0g

Cholesterol 0mg 0%

Sodium 6mg 0%

Total Carbohydrate 2g 1%

Dietary Fiber 1g 4%

Sugars 1g

Protein 1g

Vitamin A 1% Calcium 1%

Vitamin C 21% Iron 1%

Cabbage Confetti

Makes 36 tastes at ¼ cup per serving

Prep time: 5 minutes

Chill time: 30 minutes

Ingredients:

- 1 (10-ounce) package shredded raw green cabbage
- 1 (10-ounce) package shredded raw red cabbage
- 1 (20-ounce) can crushed pineapple in 100% juice, drained (reserve ¼ cup juice)
- ½ teaspoon salt
- ½ teaspoon black pepper
- Small plates and forks

1. In large bowl, mix green and red cabbage with pineapple and juice.
2. Add salt and pepper and gently toss until well coated. Refrigerate for at least 30 minutes.
3. Place ¼ cup of salad on small plates and serve.

Nutrition information per serving:

Calories 15, Carbohydrate 4 g, Dietary Fiber 1 g, Protein 0 g, Total Fat 0 g, Saturated Fat 0 g, Trans Fat 0 g, Cholesterol 0 mg, Sodium 4 mg

Adapted from: Tasting Trio Team, *Network for a Healthy California*, 2010.

Reasons to Eat Cabbage

A ½ cup of shredded cabbage provides:

- An excellent source of vitamin C and vitamin K (red, green, and savoy varieties).
- A source of vitamin A (red and savoy varieties).
- A source of folate (savoy variety).
- Phytochemicals in the form of indoles and isothiocyanates*.

*Learn about phytochemicals and cruciferous vegetables on page 2.

Phytochemical Champions*:

- Blueberries
- Citrus fruits
- Cruciferous vegetables (broccoli, cabbage)
- Soy foods
- Tomatoes

*Champion foods are rich sources of phytochemicals.

For more information, visit:

www.nal.usda.gov/fnic/foodcomp/search/

CABBAGES

What Are Cruciferous Vegetables?

- Cruciferous vegetables are plants that contain indoles and isothiocyanates, which are phytochemicals with possible anti-cancer properties.
- The Brassicaceae (also called Cruciferae) family takes its name cruciferous (meaning “cross-bearing”) from the shape of the plants’ flowers, which have four petals resembling a cross.
- Cabbage is a cruciferous vegetable. Other vegetables in this family include bok choy, broccoli, Brussels sprouts, cauliflower, collard greens, kale, Swiss chard, turnips, and turnip greens.
- Phytochemicals appear to work together with nutrients and fiber to provide health benefits.
- Isothiocyanates (in form of sulphoraphane and indoles) act as an antioxidant, neutralizing free radicals that may damage cells.
- Phytochemicals may aid in detoxification of undesirable compounds and strengthen antioxidant defenses in cells.
- They are rich sources of glucosinolates, sulfur-containing compounds that give them their pungent aromas and spicy (some say bitter) taste.
- Like other dark green vegetables, many cruciferous vegetables are rich in folate and chlorophyll.

For more information, reference:

Complete Food and Nutrition Guide (3rd Edition), American Dietetic Association, 2006.

How Does Cabbage Grow?

Cabbage is the most easily grown vegetable of the Mustard family. It is a cool-season crop that matures prior to extreme heat. Cool-season crops are grown for vegetative parts, including the roots (carrots), leaves (cabbages), stems (celery), and immature flowers (broccoli). Due to smaller plant size and shallow roots, cabbages are often started from seeds indoors.

Growing Cabbage Heads

Temperature	Grows best at 50 to 75 F
Soil	Sandy loam or raised clay soil beds; requires added compost and moisture
Exposure	Full sun or partial shade
Planting	Seedlings spaced 1 to 2 feet apart; rows spaced 2 to 3 feet apart
Days to maturity	50 to 90 days
Harvest period	Average two crops per year (winter and spring)
Harvesting	Hand-harvested and field packed

For more information, reference:

Green Power: Leaf and Flower Vegetables, Meredith Sayles Hughes, 2001.
www.urbanext.uiuc.edu/veggies/cabbage1.html

Botanical Facts

Pronunciation: kăb'ij

Spanish name: cole

Family: Brassicaceae

Genus: *Brassica*

Species: *Brassica oleracea*

Group: Capitata



Cabbage is a cole crop of the Mustard family (Brassicaceae) and its varietal name, *B. oleracea Capitata*, distinguishes this cruciferous vegetable as being “in the form of a head.” (The Brassicaceae family was formerly called Cruciferae.) The word *cabbage* derives from the French word *caboche* meaning “head.”

The species *B. oleracea*, or wild cabbage, is grouped into seven major cultivars based on development. (See chart below for cultivars.) Within the Capitata Group, there are more than 400 cabbage varieties but most common are the green, red, purple, and savoy varieties. Most Asian cabbage varieties belong to another species, *B. rapa*. This includes Chinese cabbage, which is also known as Napa or celery cabbage.

<i>B. oleracea</i> Cultivar Group	Includes:
Acephala	Kale, collard greens
Alboglabra	Kai-lan (Chinese broccoli)
Botrytis	Cauliflower
Capitata	Cabbage
Gemmifera	Brussels sprouts
Gongylodes	Kohlrabi
Italica	Broccoli

For more information, visit:

<http://plants.usda.gov>

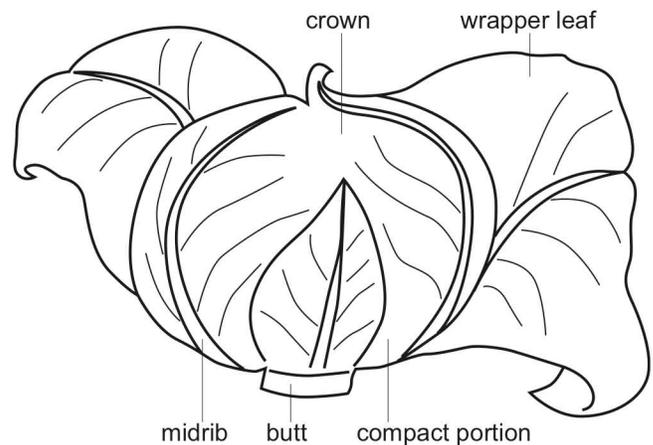


Image adapted from:

www.inspection.gc.ca

To download reproducible botanical images, visit
www.harvestofthemoonth.com.

How Much Do I Need?

A ½ cup of shredded cabbage is about one cupped handful. The amount of fruits and vegetables that each person needs depends on age, gender, and physical activity level. Children need at least 60 minutes of moderate to vigorous activity every day. Remind students that eating a variety of colorful fruits and vegetables throughout the day – in all forms (fresh, frozen, canned, dried) – will help them reach their recommended amount. Have students track their goals daily by recording their fruit and vegetable consumption in the MyPyramid worksheet.*

*Download worksheet from http://teammnutrition.usda.gov/resources/mpk_worksheet.pdf.

Recommended Daily Amount of Fruits and Vegetables*

	Kids, Ages 5-12	Teens and Adults, Ages 13 and up
Males	2½ - 5 cups per day	4½ - 6½ cups per day
Females	2½ - 5 cups per day	3½ - 5 cups per day

*If you are active, eat the higher number of cups per day. Visit www.mypyramid.gov to learn more.

A Head of Cabbage History

- Nearly 3,000 years ago, wild cabbage indigenous to Asia and the Mediterranean slowly spread into Northern Europe by the Celts and later the Romans.
- Able to store for long periods, cabbage was a staple item of Europeans in the Middle Ages. Its juice was commonly used to heal wounds and as a cough remedy.
- In 1541, French explorer Jacques Cartier introduced cabbage to North America.
- Since cabbage contains lots of vitamin C, other explorers, including Captain Cook, traveled with it in order to prevent scurvy. Cabbage rapidly spread across the continent.

For more information, reference: <http://aggie-horticulture.tamu.edu>

Home Grown Facts

- In Washington, cabbage being a cool weather crop is best planted late July and harvested through December.
- Washington state supplies about 75% of the U.S. production and 25% of the world production of cabbage seed.
- Every year, Washington devotes 400-500 acres of land to cabbage seed production

For more information, visit: www.nass.usda.gov/About_NASS/index.asp
mtvernon.wsu.edu/path_team/WA-cabbage-seed-Crop-Profile-Dec-2007.pdf



Student Sleuths

- 1 Make a list of cruciferous vegetables that you eat and those you would like to try. What phytochemicals do they contain? What health benefits do these provide to your body? Develop a list of snack suggestions that include cruciferous vegetables and share with your classmates.
- 2 Fruits and vegetables provide different nutrients and phytochemicals based on what color they are. Research nutrients in different cruciferous vegetables. How do the nutrients differ based on what color the produce is? Look for recipes you can prepare at home that include these fruits and vegetables.
- 3 Purple and red cabbages contain anthocyanins. What are anthocyanins and what do they appear to do for the mind and body? Identify other fruits and vegetables that contain anthocyanins and develop a plan to try at least one in the next week.
- 4 What effect does cooking have on phytochemicals in cruciferous vegetables? What is the best way to consume cabbage to get the most phytochemicals?

For information, visit: www.ers.usda.gov
www.leafy-greens.org/cabbage_family.html

Cafeteria Connections

Promote students' health by incorporating more cabbage into school meals. Gradually replace items that typically use shredded lettuce or lettuce pieces with shredded cabbage. Start with one-quarter of the cabbage mixture and work up to one-half.

Source: Team Nutrition, "Food Works," 1995.



Student Champions

Washington's nutrient dense soils and temperate climates make the state one of the most productive growing regions in the world. Farmers produce about 300 different crops each year. Encourage students to participate in community activities and show their appreciation for Washington's farmers.

For example:

- Interview a local farmer. Ask details about daily schedule, work duties, and why he/she likes it. Submit article for school newsletter.
- Send letter of appreciation to a farmer.
- Contact a local farmer and ask him/her to be a guest visitor at your school for the day.
- Write a children's book (with illustrations) about the life of a farmer. Imagine what life would be like without farms.
- Participate in National Future Farmers of America Week (in February).

For more information, visit: <http://www.ffa.org>

Physical Activity Corner

Pairing students with “workout buddies” can promote cooperation and increased participation. Teach students how to do Chinese jump rope, an activity that can improve kinesthetic movement and endurance. Set aside time each week for students to practice in a group.

Materials:

- Chinese jump rope (extra long, thick elastic band).

Activity:

- Two students place elastic band around ankles and stand a few feet apart.
- Third student completes a series of jumps/tricks between rope without touching the rope.
- Each time student completes jump series, the rope moves up (ankles, calves, knees, etc.); students should not stop between jump series (to promote endurance).
- If student misses jump or touches rope, move to next student.

For more information, visit:
www.kidnetic.com

School Garden: Heads of Cabbage

If your school has a garden, here is an activity you may want to implement. Look for donations to cover the cost of seeds, tools, irrigation systems, electric pumps, and any salary incurred by garden educators or others.

Cabbage needs cool weather to grow. Whether cabbage is grown in the garden or purchased from the store, it is an important vegetable that can be eaten raw or cooked.

The cabbage family tends to be high in vitamins C and K and has many other ingredients that help the body fight disease. The outer leaves of the green and red cabbages tend to be a darker color than the newer, inside leaves where the light does not reach them.

Fresh cabbage heads from the garden have many open leaves that can be eaten. These are the first leaves that appear as the cabbage head develops. When cabbage is purchased at the store; the darker outer leaves that are not tight against the head have generally been removed so just the compact head is seen.

Activity: Investigating Cabbage

- Rinse and slice a cabbage lengthwise so the “tree” inside can be seen. (Hint: This is easier to see in red varieties.)
- Have each group look at their half and take turns peeling the layers off.
- Compare the textures and colors of inner and outer leaves.
- Taste the different layers and compare intensity of taste.
- Compare Nutrition Facts labels.



RED (PURPLE) CABBAGE

Adventurous Activities

Science Investigation:

Use cabbage juice to determine whether a substance is an acid or base.

Materials:

Can opener, 1 can red cabbage (not sauerkraut), colander, small bowl, measuring spoons, 3 glass jars, 1 tablespoon vinegar, 1 tablespoon baking soda, 1 tablespoon distilled water

Procedure:

- Open can of cabbage.
- Use colander to drain cabbage juice into bowl*.
- Put two tablespoons (30ml) of juice into each glass jar.
- Add vinegar to first jar. Record color of juice.
- Add baking soda to second jar. Record juice color.
- Add distilled water to third jar. Record juice color.
- Discuss results.

*Allow kids to taste the canned cabbage.

For sample discussion, visit www.harvestofthemoth.com

Source: *The Science Chef Travels Around the World*, Joan D'Amico and Karen Drummond, 1996.

Just the Facts

- Many vegetables evolved from the original wild cabbage including broccoli, Brussels sprouts, cauliflower, collard greens, kale, and kohlrabi.
- All cole crops can be cross-bred, making it easy and economical to develop new cabbage varieties*.
- Primary uses of cabbages include processed coleslaw (40-45%), fresh head (35%), sauerkraut (12%), various fresh-cut products (5-10%), and dried (less than 5%).
- Technological advancements in packaging have increased the number of cabbage heads for market about 30% since 1996.

*For more information about cole crops, refer to Broccoli newsletter. Download from www.harvestofthemoth.com.

Sources:

www.fruitsandveggiesmatter.gov/month/cabbage.html
www.ers.usda.gov/Briefing/Vegetables/readings.htm

Literature Links

- **Elementary:** *Tiny Green Thumbs* by C.Z. Guest and *What is a Plant?* by Bobby Kalman.
- **Secondary:** *Green Power: Leaf and Flower Vegetables* by Meredith Sayles Hughes and *100 Vegetables and Where They Came From* by William Woys Weaver.

For more ideas, visit:
www.cfaitc.org/books



CHINESE CABBAGE



This material was produced by the California Department of Public Health's Nutrition Education and Obesity Prevention Branch with funding from USDA SNAP-Ed, known in California as CalFresh. These institutions are equal opportunity providers and employers. CalFresh provides assistance to low-income households and can help buy nutritious food for better health. For CalFresh information, call 1-877-847-3663. For important nutrition information, visit www.CaChampionsForChange.net.

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