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 California 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.

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.

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)
- ⅛ teaspoon salt
- ⅛ 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/
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 suphoraphane 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:

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

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

For more information, reference:
www.urbanext.uiuc.edu/veggies/cabbage1.html
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.*


Recommended Daily Amount of Fruits and Vegetables*

<table>
<thead>
<tr>
<th></th>
<th>Kids, Ages 5-12</th>
<th>Teens and Adults, Ages 13 and up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>2½ - 5 cups per day</td>
<td>4½ - 6½ cups per day</td>
</tr>
<tr>
<td>Females</td>
<td>2½ - 5 cups per day</td>
<td>3½ - 5 cups per day</td>
</tr>
</tbody>
</table>

*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
- With over 13,000 acres harvested for cabbages, California leads the nation in commercial cabbage production.
- Monterey, Ventura, Santa Barbara, Imperial, and San Luis Obispo are the leading cabbage-producing counties.
- Cabbage is shipped year-round in California reaching its peak in March for traditional St. Patrick’s Day fare of corned beef and cabbage.

For more information, visit:
www.nass.usda.gov/About_NASS/index.asp
www.cdfa.ca.gov

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.


Student Champions
California is the nation’s top food and agricultural producer. More than half of the nation’s fruits, vegetables, and nuts come from California. Encourage students to participate in community activities and show their appreciation for California’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

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.harvestofthemonth.com


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.


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