Health and Learning Success Go Hand-In-Hand
Family wellness impacts children at school and home. Research shows that children of families who eat together several times a week do better in school. Encourage students and parents to cook and eat healthy meals and snacks, and be physically active together. Harvest of the Month focuses on helping students and their families develop healthy habits.

Exploring Washington Berries: Taste Testing

Getting Started:
- Partner with school nutrition staff and suggest adding berries to the menu or doing lunchtime taste tests.

What You Will Need (per group):
- ¼ cup each of blueberries, blackberries, and raspberries
- Napkins and paper plates
- Printed Nutrition Facts labels for blueberries, blackberries, and raspberries*


Activity:
- Explore differences in colors, textures, shapes, smells, and tastes for each berry. Record observations in a sensory chart.
- Compare calories, vitamin C, and fiber content using the Nutrition Facts labels. Record observations.
- Report observations to class and discuss similarities and differences.
- Survey class to determine which is the favorite. Have students create a graph to show the results, then share with school nutrition staff.
- For more in-depth exploration, add frozen varieties. Discuss differences and similarities in taste and texture; research the nutrient content of frozen berries and share findings.

For more ideas, visit:

Nutrition Facts
Serving Size: ¼ cup raspberries (74g)
Calories 42
Calories from Fat 0
% Daily Value
Total Fat 0g 0%
Saturated Fat 0g 0%
Trans Fat 0g
Cholesterol 0mg 0%
Sodium 1mg 0%
Total Carbohydrate 11g 4%
Dietary Fiber 2g 7%
Sugars 7g
Protein 1g

Vitamin A 1% Calcium 0%
Vitamin C 12% Iron 1%

Reasons to Eat Berries
A ¼ cup of most berries is:
- A good source of vitamin C, fiber, and manganese.
- Rich in phytochemicals.

For information, visit:
www.nal.usda.gov/fnic/foodcomp/search

Phytochemical Champions*:
- Berries
- Grapefruit, limes, kiwifruit
- Onions, garlic, cauliflower
- Carrots, sweet potatoes, pumpkin
- Broccoli, collard greens
- Whole grains, nuts

*BHampion foods are rich in phytochemicals.

Source: www.cafoodguide.ca.gov

Cooking in Class: Banana Berry Smoothie

Makes 20 servings at ¼ cup each.

Ingredients:
- 1 large banana, peeled
- 1 cup 1% lowfat or nonfat milk
- 1 cup 100% orange juice
- 2 cups unsweetened frozen raspberries
- 20 small cups

1. Place first three ingredients in a blender container. Put lid on tightly and blend until smooth.
2. Add frozen berries and blend again.
3. Pour immediately into cups and serve.

Adapted from: Kids...Get Cookin’, Network for a Healthy California—Children’s Power Play! Campaign, 2009.

For nutrition information, visit:
www.harvestofthemonth.com
What are Phytochemicals?

- Phytochemicals (also known as phytonutrients) are naturally occurring compounds found in plants. Plants develop these chemicals to protect themselves but now research has found that these chemicals also have protective factors for humans.
- Foods that contain phytochemicals are also described as "functional" because they provide more than just nutrients.
- Phytochemicals function as antioxidants, promote immunity, increase communication with cells in the body, and help repair damage to DNA.
- Phytochemicals are grouped by their possible protective function and biochemical characteristics. They are classified as: carotenoids, phenolics, alkaloids, nitrogen-containing compounds, and organosulfur compounds.
- More than 2,000 phytochemicals are plant pigments and contribute to the variety of colorful fruits and vegetables. These include lycopene (red), anthocyanins (red, blue/purple), phenolics (blue/purple), lutein (green), indoles (green or white and from the crucifer family), beta carotene (orange), bioflavonoids (orange/yellow), and allacin/allium (mostly white members of the onion family).

For more information, visit:
- www.pbhfoundation.org

How Much Do I Need?

A ½ cup of berries is about one cupped handful. The amount of fruits and vegetables you need depends on your age, gender, and physical activity level. All forms of fruits and vegetables count toward your daily amounts – fresh, frozen, canned, dried, and 100% juice! Remind students to eat a variety of colorful fruits and vegetables throughout the day. Encourage them to set goals to help them reach their recommended daily needs.

How Do Raspberries Grow?

Raspberries and blackberries are perennial fruit-bearing brambles with biennial canes. The plants produce canes ("suckers") from buds on the crown and on underground lateral stems. These canes grow during the first season and produce fruit during the summer of the second year, while new canes emerge to provide a crop for the next year. Second-year canes die shortly after fruiting. First-year canes have green stems, while second-year canes have a thin, brown bark covering them.

For a chart with growing information for blueberries, blackberries, and raspberries, refer to Berries Botanical Images on www.harvestofthemonth.com.

For more information, visit:
- www.uga.edu/fruit/rubus.html

<table>
<thead>
<tr>
<th>Name</th>
<th>Blackberry</th>
<th>Raspberry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pronunciation</td>
<td>'blak-ber-é'</td>
<td>'raz-ber-é'</td>
</tr>
<tr>
<td>Spanish name</td>
<td>zarzamora</td>
<td>frambuesa</td>
</tr>
<tr>
<td>Family</td>
<td>Rosaceae</td>
<td>Rosaceae</td>
</tr>
<tr>
<td>Genus</td>
<td>Rubus</td>
<td>Rubus</td>
</tr>
<tr>
<td>Species</td>
<td>Rubus fruticosus</td>
<td>Rubus idaeus</td>
</tr>
</tbody>
</table>

Blackberries and raspberries are members of the rose family. They are called aggregate fruits because each berry is a cluster of tiny fruits called drupelets. Each drupelet has a seed. Raspberries have a hollow center when picked since the receptacle remains on the cane. Blackberry drupelets remain centered around the core even after the berry is picked. When we eat a blackberry fruit, we consume the receptacle of the inflorescence (or cluster) called a torus.

For more information, visit:
- www.uga.edu/fruit/rubus.html
- http://edis.ifas.ufl.edu/HS104

Source: Landcare Notes: Biological control of blackberry with blackberry leaf rust fungus, Keith Turnbull Research Institute, State of Victoria, 1999.
**School Garden: Weed Control**

Weeds are unwanted in gardens because they compete with crops for light, moisture, nutrients, and space.

**Activity:**
1. Research weeds found in gardens. What do they look like? How can they be managed?
2. Form teams and select a garden area.
3. Spend 10 minutes looking for and gathering weeds.
4. Discuss findings as a class:
   - Identify weeds found in garden.
   - Create and implement an environmentally friendly weed control strategy.
   - Observe results. Determine if plan was successful. If not, develop a new approach and test it out.

Adapted from: www.kidsgardening.com/Dig/DigDetail.taf?ID=1906&Type=Art

For more ideas, visit: www.garden.org

**The Seeds of Berry History**

- Believed to be native to Asia, wild raspberries have been eaten since prehistoric times.
- Cultivation of raspberries began in England and France during the 1600s.
- The Evergreen blackberry is native to England and appeared in Oregon around the mid-1800s.

For more information, reference:

**Student Advocates**

Biking is a great way to be active and healthy. It also helps the environment by reducing carbon emissions and traffic congestion. Encourage students to get involved in National Bike Month in May.

**Activity:**
- Research bike lanes and trails in your area. Prepare bike maps for other students and faculty. Include flyers with bike safety rules and benefits of bike riding.
- Write a letter to your Mayor or City Council about the benefits of riding bikes and the importance of having safe sidewalks and accessible bike routes in your city.
- Develop a proposal for your school to become involved in National Bike Month. Include ways to involve parents and community members.

Adapted from: www.bikeleague.org

For more information, visit:
www.bikesbelong.org

**Student Sleuths**

1. Raspberries are an excellent source of manganese. What is manganese and what does it do for the body?
2. Berries are a leading source of antioxidants, which neutralize free radicals in our bodies. What are free radicals and why is it important to neutralize them?
3. Blackberries and raspberries are called **aggregate fruits** with drupelets. What is an aggregate fruit? What are drupelets?
4. Berries are used to make jellies, jams, and sauces (e.g., strawberry jam, cranberry sauce). What is the main ingredient added to the berries to make jam or sauce? How does it change the food’s nutrient profile?

For information, visit:
www.eatright.org/cps/rde/xchg/ada/hs.xsl/home_4079_ENU.HTML.htm
www.ific.org/publications/factsheets/antioxidantfs.cfm
www.uga.edu/fruit/rubus.html

**Home Grown Facts**

- Washington is ranked first in the nation for raspberry production.
- Washington grows about 60% of the country’s berries and 10% of the raspberries grown worldwide.
- 90% of the berries grown in Washington are processed as frozen berries, concentrates, purees and other products.
- Whatcom County produces 77% of the state’s total raspberries, followed by Skagit County and Clark and Cowlitz counties combined.
- Harvest season for raspberries is from June through August

**Student Activity:**

- Research berry varieties grown in Washington. Find the location of berry farms. Why do you think different berries are grown in one area versus another?
- Research berry varieties grown outside of Washington. Compare the distance the produce travels from outside Washington versus from local farms. How does this affect the environment?

For more information, visit:
www.ers.usda.gov
www.cdfa.ca.gov
www.agmrc.org

**Literature Links**

- Talk to your school librarian about leading an activity from the **Student Sleuths** sections.
- Ask librarian to feature a book about the **Harvest of the Month** produce items every month.

For a list of book ideas, visit:
www.harvestofthemonth.com
Just the Facts
- The tayberry, loganberry, and boysenberry are hybrids of blackberries and raspberries.
- The boysenberry, a type of trailing blackberry, was cultivated in California by horticulturist Rudolph Boysen. Walter Knott began selling it at his roadside fruit stand in the mid-1930s.
- There are four colors of raspberries: gold, black, purple, and red.

For more information, visit: www.healthylausd.net

Physical Activity Corner
Children need at least 60 minutes of physical activity daily, even 10 minutes at a time throughout the day. Do this two-minute exercise break with students to keep their minds sharp and increase cardiorespiratory endurance.

Equipment:
- 4 cones
- Stopwatch (or wristwatch with a second hand)

Activity:
- Set up four “stations” in a square shape, placing cones in the corners. Make signs to post at each station:
  1. Run in place
  2. Squat up and down
  3. Regular/modified pushups (modified = on knees)
  4. Jump up and down
- Divide students into four groups:
  - Send each group to a different cone.
  - Give them 30 seconds to complete each activity as fast as they can.
  - After 30 seconds, move clockwise to next cone by skipping, tiptoeing, taking giant steps, or running.

Helpful Hint:
Complement with Student Advocates activity (page 3).

For more ideas, visit: www.sparkepe.org

Cafeteria Connections
Team up with your school nutrition staff to develop a lunch recipe that features Harvest of the Month produce items. Ask students to design ads that market the new recipe to students and teachers.

Activity:
- Research the health benefits of eating the featured produce.
- Conduct market research and determine:
  - Who is your audience?
  - What do you need to know about your audience to help pitch your product to them?
  - How can you get this information?
- Develop a poster or magazine ad(s) that includes nutrition information.
- Display ads in the cafeteria.

Adapted from:
www.kidsgardening.com/Dig/DigDetail.taf?ID=2115&Type=Art

For more ideas, reference:
www.cdph.ca.gov/programs/cpns/Pages/PowerPlayResources.aspx

Adventurous Activities
Blueberries get their blue pigment from a phytochemical called anthocyanin. The color of anthocyanins are affected by the level of acidity, or pH level, in a particular substance or food. Anthocyanins are red at low pH (indicating greater acidity) and are blue to purple at higher pH (more basic).

Materials:
- 1 pint of fresh or frozen blueberries
- % cup water
- % cup lemon juice
- % cup vinegar
- 1 small box of baking soda
- 3 glass jars

Activity:
1. Simmer blueberries in water over medium heat until water is deep blue.
2. Strain blueberry skins with a tea strainer.
3. Let solution cool. Pour into three jars.
4. Add lemon juice to first jar. Record color.
5. Add vinegar to second jar. Record color.
6. Add baking soda to third jar. Record color.
7. Discuss results. Based on what you know about anthocyanins, which substances added to the jars were acids? Which were bases?

Adapted from: www.umaine.edu/nsfgk-12/images/POFs/natdye.pdf

For more ideas, visit: www.harvestofthemonth.com

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