### Lesson Three: Fall Vegetables

What do you do with fall harvest crops such as apples and pumpkins?

For November

“Apples” and “Winter Squash” from HARVEST OF THE MONTH: Network for a Healthy California and “Cucurbits Science Page” from GARDEN MOSAICS, American Community Gardening Association and Cornell University Garden-based Learning.

Students learn facts about apples and pumpkin (winter squash) – how they grow, the nutrient content and history.

<table>
<thead>
<tr>
<th>Content objectives:</th>
<th>Identify key nutrients in apples and pumpkins/winter squash; Recognize reasons to eat apples and pumpkins; Describe how apples and pumpkins grow; Understand how fruits and vegetables ripen; Describe a cucurbit.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life Skill objectives:</td>
<td>Healthy living, Critical thinking, Communication, Cooperation, Decision making, Problem solving, Keeping record</td>
</tr>
</tbody>
</table>

**Core and STEM concepts and skills:**

- **Science**: Science as inquiry, Earth and space, Life science
- **Math**: Measurement and observation, Data
- **Language Arts**: Speaking, Listening, Writing, Viewing
- **Social Studies**: Geography, History

**Healthy snack:**

Apple tasting, Apple Oatmeal, Pumpkin Delight

**Additional and supporting resources:**

Additional resources are listed in each Harvest of the Month section.
LESSON PLANS FOR 2012-13 SCHOOL YEAR, GRADE 3

November: What do you do with fall harvest crops such as apples and pumpkins?

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Recipe and Taste Testing Options *(found in the lessons)*
BEFORE THE LESSON
What fall harvest crops grow where you live? Most states have access to locally grown apples and pumpkins. Thanks to the Network for a Healthy California Harvest of the Month www.harvestofthemonth.cdph.ca.gov website, we are sharing educator newsletters that included information, recipes, and activities about these two popular fall crops.

1. Grade 3, October/November: Apples and Pumpkins
This document contains all the curriculum items and resources you need for this lesson. All lesson downloads are located on the www.peoplesgarden.wsu.edu Educational Toolkit.

2. FIGHT BAC: Six Steps to Safer Fruits and Vegetables is a brochure from Partnership for the Food Safety Education that focuses on tips to keep fruits and vegetable safe to eat and to prevent foodborne illness.
FIGHT BAC: Four Simple Steps to Food Safety is a brochure from North Dakota State University Extension Service that lists tips to clean, separate, cook, and chill food, including fruits and vegetables, to prevent foodborne illness.

You might want to make a simple poster to display in the classroom to remind everyone that about these simple steps. Go over the relevant steps before starting the cooking portion of the lesson.

3. Garden Records or Garden Journals
If you are working with a Garden Journal, you may want to have the students prepare two KWL pages about Apples and Pumpkins. Fold or divide the paper into thirds and write Know, Want to Know, and Learned at the top of the columns. Finish the first two columns before the lesson and the third column after the lesson. Have them keep the page in their Garden Journal.

4. Apples and Winter Squash/Pumpkins are two lessons that should be done on two different days. Please read each of the lessons in plenty of time to think through the activities and gather the supplies.

5. Recipes for Apple Oatmeal and Pumpkin Delight are found in their respective lessons which are done on different days. Be sure to have the ingredients and equipment ready to go before class. Think about how to organize the students and assign tasks to make and serve the recipes. Use locally grown apples, if possible. Be prepared to talk about if pumpkins grow in your area and why it is easier to use canned pumpkin for the recipe.

Both parts of this lesson include these books or similar ones about growing and eating apples and pumpkins. You can find these books at the library or purchase them online.
THE LESSONS

Special note: We recommend doing the Apples and Pumpkins lessons on separate days or over multiple days to fit your schedule.

1. Remember to review the appropriate steps to Fight BAC before you do the cooking activities.

2. Lesson Part One: Apples includes the book Apples by Gail Gibbons and the Network for Healthy California’s Harvest of the Month: Apples activities for educators. A possible lesson outline for the third graders is provided before the Harvest of the Month resource.

2. Lesson Part Two: Pumpkins includes the book Pumpkins by Gail Gibbons and the Network for Healthy California’s Harvest of the Month: Pumpkins activities for educators. The Garden Mosaics Cucurbits Science Page is provided for additional information. A possible lesson outline for the third graders is provided before the Harvest of the Month resource.

3. You may want to expand the lesson by choosing other activities from Harvest of the Month: Apples or Winter Squash.

AFTER THE LESSON

You may want to check out the apple and winter squash harvest in your area by taking a field trip to an apple orchard or pumpkin patch, visiting a farmer’s market, or inviting a local grower to talk about the apples or squash he or she grows. You can also visit the local grocery store and identify all the different members of the Cucurbit family in the produce aisle and then different ways they are sold in different parts of the grocery store.
Check
- Check to be sure that the fresh fruits and vegetables you buy are not bruised or damaged.
- Check that fresh cut fruits and vegetables like packaged salads and precut melons are refrigerated at the store before buying. Do not buy fresh cut items that are not refrigerated.

Clean
- Wash hands with warm water and soap for at least 20 seconds before and after handling fresh fruits and vegetables.
- Clean all surfaces and utensils with hot water and soap, including cutting boards, counter tops, peelers and knives that will touch fresh fruits or vegetables before and after food preparation.
- Rinse fresh fruits and vegetables under running tap water, including those with skins and rinds that are not eaten. Packaged fruits and vegetables labeled “ready-to-eat”, “washed” or “triple washed” need not be washed.
- Rub firm-skin fruits and vegetables under running tap water or scrub with a clean vegetable brush while rinsing with running tap water.
- Dry fruits and vegetables with a clean cloth towel or paper towel.
- Never use detergent or bleach to wash fresh fruits or vegetables. These products are not intended for consumption.

Separate
- When shopping, be sure fresh fruits and vegetables are separated from household chemicals and raw foods such as meat, poultry and seafood in your cart and in bags at checkout.
- Keep fresh fruits and vegetables separate from raw meat, poultry or seafood in your refrigerator.

Separate fresh fruits and vegetables from raw meat, poultry and seafood. Do not use the same cutting board without cleaning with hot water and soap before and after preparing fresh fruits and vegetables.

Cook
- Cook or throw away fruits or vegetables that have touched raw meat, poultry, seafood or their juices.

Chill
- Refrigerate all cut, peeled or cooked fresh fruits and vegetables within two hours.

Throw Away
- Throw away fresh fruits and vegetables that have not been refrigerated within two hours of cutting, peeling or cooking.
- Remove and throw away bruised or damaged portions of fruits and vegetables when preparing to cook them or before eating them raw.
- Throw away any fruit or vegetable that will not be cooked if it has touched raw meat, poultry or seafood.
- If in doubt, throw it out!
MAKE FOOD SAFETY A PRIORITY

The US food supply is among the safest in the world, but organisms that you can’t see, smell or taste – bacteria, viruses and tiny parasites – are everywhere in the environment. These microorganisms – called pathogens – can invade food and cause illness, sometimes severe and even life-threatening, especially in young children, older adults, persons with weakened immune systems and pregnant women.

Fresh fruits and vegetables are important to the health and well-being of Americans and we enjoy one of the safest supplies of fresh produce in the world. However, although low, the proportion of food-borne illness associated with fresh fruits and vegetables has increased over the last several years. As health and nutrition experts continue to recommend we add more fruits and vegetables to a healthy daily diet, it becomes increasingly important that consumers know how to handle them properly.

Handling fruits and vegetables safely is easy. Although an invisible enemy may be in your kitchen, by practicing the following recommendations you can Fight BAC!

These messages were developed by the Partnership for Food Safety Education. The Partnership for Food Safety Education unites industry associations, consumer and public health groups and the United States Department of Agriculture, the Environmental Protection Agency and from the Department of Health and Human Services, the Centers for Disease Control and Prevention and the Food and Drug Administration, to educate the public about safe food handling and preparation. The Partnership, a non-profit organization, is the creator and steward of the Fight BAC! campaign, a food safety education program developed using scientifically based recommendations and resulting from an extensive consumer research process. Fight BAC! materials are fully accessible online at www.fightbac.org and utilized by consumers, teachers, dietitians, public health officials and extension agents across the United States. Fight BAC! and BAC! images, © 2004, Partnership for Food Safety Education.

This material made available with support from the Produce Marketing Association. For produce education information and tools, general food safety information and to register to be a BAC! fighter, visit www.fightbac.org today! For additional food safety information, visit www.foodsafety.gov.
Be a BAC Fighter

Make the meals and snacks from your kitchen as safe as possible. **CLEAN:** wash hands and surfaces often; **SEPARATE:** don’t cross-contaminate; **COOK:** to proper temperatures, and **CHILL:** refrigerate promptly. Be a BAC Fighter and Fight BAC!®

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**SAFE COOKING TEMPERATURES**

as measured with a food thermometer

<table>
<thead>
<tr>
<th>Ground Meat and Meat Mixtures</th>
<th>Internal temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beef, Veal, Lamb, Pork</td>
<td>160°F</td>
</tr>
<tr>
<td>Chicken, Turkey</td>
<td>165°F</td>
</tr>
<tr>
<td>Fresh Beef, Veal, Lamb</td>
<td></td>
</tr>
<tr>
<td>Medium-rare</td>
<td>145°F*</td>
</tr>
<tr>
<td>Medium</td>
<td>160°F</td>
</tr>
<tr>
<td>Well-done</td>
<td>170°F</td>
</tr>
<tr>
<td>Poultry</td>
<td></td>
</tr>
<tr>
<td>Chicken and Turkey, whole</td>
<td>165°F</td>
</tr>
<tr>
<td>Poultry Parts</td>
<td>165°F</td>
</tr>
<tr>
<td>Duck and Goose</td>
<td>165°F</td>
</tr>
<tr>
<td>Stuffing (cooked alone or in bird)</td>
<td>165°F</td>
</tr>
<tr>
<td>Fresh Pork</td>
<td></td>
</tr>
<tr>
<td>Medium-rare</td>
<td>145°F*</td>
</tr>
<tr>
<td>Medium</td>
<td>160°F</td>
</tr>
<tr>
<td>Well-done</td>
<td>170°F</td>
</tr>
<tr>
<td>Ham</td>
<td></td>
</tr>
<tr>
<td>Fresh (raw)</td>
<td>160°F</td>
</tr>
<tr>
<td>Precooked (to reheat)</td>
<td>140°F</td>
</tr>
<tr>
<td>Eggs and Egg Dishes</td>
<td></td>
</tr>
<tr>
<td>Eggs</td>
<td>Cook until yolk and white are firm</td>
</tr>
<tr>
<td>Egg Dishes</td>
<td>160°F</td>
</tr>
<tr>
<td>Seafood</td>
<td></td>
</tr>
<tr>
<td>Fin fish</td>
<td>145°F or flesh is opaque and separates easily with fork</td>
</tr>
<tr>
<td>Shrimp, lobster, crab</td>
<td>flesh pearly and opaque</td>
</tr>
<tr>
<td>Clams, oysters, mussels</td>
<td>shells open during cooking</td>
</tr>
<tr>
<td>Scallops</td>
<td>milky white or opaque and firm</td>
</tr>
<tr>
<td>Leftovers and Casseroles</td>
<td>165°F</td>
</tr>
</tbody>
</table>

*Allow three-minute rest time

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For More Information about Safe Food Handling and Preparation

USDA's Meat and Poultry Hotline
1-888-MPHotline (1-888-674-6854);
TTY 1-800-256-7072

www.foodsafety.gov

FD&A's Food Information and Seafood Hotline
1-800-332-4010

Partnership for Food Safety Education Web Site
www.fightbac.org

NDSU Extension Service
www.ag.ndsu.edu/food

Or contact your local cooperative extension office.

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**SEPARATE:** Don’t cross-contaminate
Cross-contamination is how bacteria can be spread. When handling raw meat, poultry, seafood and eggs, keep these foods and their juices away from ready-to-eat foods. Always start with a clean scene—wash hands with warm water and soap. Wash cutting boards, dishes, countertops and utensils with hot soapy water.

- Separate raw meat, poultry, seafood and eggs from other foods in your grocery shopping cart, grocery bags and in your refrigerator.
- Use one cutting board for fresh produce and a separate one for raw meat, poultry and seafood.
- Never place cooked food on a plate that previously held raw meat, poultry, seafood or eggs.

**COOK:** Cook to proper temperatures
Food is safely cooked when it reaches a high enough internal temperature to kill the harmful bacteria that cause illness. Refer to the chart on the back of this brochure for the proper internal temperatures.

- Use a food thermometer to measure the internal temperature of cooked foods. Make sure that meat, poultry, egg dishes, casseroles and other foods are cooked to the internal temperature shown in the chart on the back of this brochure.
- Cook ground meat or ground poultry until it reaches a safe internal temperature. Color is not a reliable indicator of doneness.
- Cook eggs until the yolk and white are firm. Only use recipes in which eggs are cooked or heated thoroughly.
- When cooking in a microwave oven, cover food, stir and rotate for even cooking. Food is done when it reaches the internal temperature shown on the back of this brochure.
- Bring sauces, soups and gravy to a boil when reheating.

**CHILL:** Refrigerate promptly
Refrigerate foods quickly because cold temperatures slow the growth of harmful bacteria. Do not over-stuff the refrigerator. Cold air must circulate to help keep food safe. Keeping a constant refrigerator temperature of 40°F or below is one of the most effective ways to reduce the risk of foodborne illness. Use an appliance thermometer to be sure the temperature is consistently 40°F or below. The freezer temperature should be 0°F or below.

- Refrigerate or freeze meat, poultry, eggs and other perishables as soon as you get them home from the store.
- Never let raw meat, poultry, eggs, cooked food or cut fresh fruits or vegetables sit at room temperature more than two hours before putting them in the refrigerator or freezer (one hour when the temperature is above 90°F).
- Never defrost food at room temperature. Food must be kept at a safe temperature during thawing. There are three safe ways to defrost food: in the refrigerator, in cold water, and in the microwave. Food thawed in cold water or in the microwave should be cooked immediately.
- Always marinate food in the refrigerator.
- Divide large amounts of leftovers into shallow containers for quicker cooling in the refrigerator.
- Use or discard refrigerated food on a regular basis. Check USDA cold storage information at www.fightbac.org for optimum storage times.
Lesson Part One: Apples
This lesson includes the book Apples by Gail Gibbons and the Network for Healthy California’s Harvest of the Month: Apples activities for educators. Here is the sequence and activities that we recommend for the third graders.

A. Read aloud and show the pictures of Apples by Gail Gibbons. The rest of the activities will tie back to the book.

The following activities are from Harvest of the Month: Apples.
B. Page 3, “Just the Facts”: Reveal the three facts after asking the following questions.
   1a.) Red and Golden Delicious, Gala, Granny Smith are examples of varieties of apples. What is your guess on how many varieties of apples are grown in the United States?
   1b.) What state is, by far, the largest apple-growing state? Washington is the largest. New York is a distant second. Most of the apples come to Iowa from Washington state. However, during the four-month growing season, Iowa growers supply about one third of the apples consumed in Iowa. Although apples are not a large crop for Arkansas, they have a large number of orchards to supply communities with apples.

   2.) A medium size apple with the skin is a slim 80 calories, provides vitamins and minerals but is best known as a good source of fiber. All those nutritional characteristics of apples make them a healthy choice for us to eat. What part of the apple provides us with the healthiest benefits?

   3a.) How many of the apples consumed are made into other apple products – one-third, one half, or three-fourths? (Stop reading the answer after the words “fresh form.”)
   3b.) What are some things you like to eat that are made from apples?

C. Page 2, “How Do Apples Grow?”: Skip the first paragraph. Ask the students to describe how an apple tree grows and produces apples. Then read the second paragraph. You may want to cut into an apple to find the carpels and the seeds and count the number of seeds as you read the third paragraph. Ask the students how many seeds it takes to grow one apple tree and have them think about the millions of seeds that one seed produces in a tree’s lifetime.

D. Page 1: Ask the students to list why it is good to eat apples and read the “Reasons to Eat Apples.” Make the “Apple Oatmeal” and enjoy eating it!

E. Page 3: Do the “Physical Activity Corner”, Grab the Apple! activity. As a review, have the pairs of students chose what variety or kind of apple they would like their bean bags or balls to represent. The student that grabbed the apple first can tell the other person how he or she would like to eat the apple, for example, as a fresh apple, applesauce, apple pie, etc.
**Health and Learning Success Go Hand-In-Hand**

Increasing fruit and vegetable consumption tends to increase academic performance in undernourished children. *Harvest of the Month* connects with core curricula to give students the chance to explore, taste, and learn about the importance of eating fruits and vegetables. It links the classroom, cafeteria, home, and community to help students make healthy food choices and be physically active every day.

**Exploring California Apples: Taste Testing**

**What You Will Need (per group of 6-8 students):**
- 3-5 apples (each in a different variety*), sliced**
- Graph paper and colored pencils
*Refer to *Home Grown Facts* on page 3 for varieties.
**To prevent browning, keep sliced apples in 100% apple juice until start of activity.

**Activity:**
- Observe, touch, smell, and taste each apple variety.
- Develop a color graph using appearance, texture, smell, flavor, and sound.
- Compare and contrast the varieties.

**For more ideas, reference:**
*S*chool Foodservice Guide – Successful Implementation Models for Increased Fruit and Vegetable Consumption, Produce for Better Health Foundation, 2005, pp. 39-42.

**Cooking in Class: Apple Oatmeal**

**Makes 36 tastes at ¼ cup each.**

**Ingredients:**
- 3 large apples, cored
- 3 cups quick cooking oats
- ½ tablespoon ground cinnamon
- ⅛ teaspoon salt
- 5¼ cups 100% apple juice
- Small cups and spoons

1. Chop apples into bite-sized chunks.
2. Combine apple chunks, oats, cinnamon, salt, and apple juice in a large microwave-safe bowl. Cover bowl with lid or plastic wrap. Leave a little opening for steam to get out.
3. Microwave on high for 3-4 minutes, stirring once after 2 minutes.
4. Stir and let cool 1 minute before serving.

**Nutrition information per serving:** Calories: 52, Carbohydrate 11 g, Dietary Fiber 1 g, Protein 1 g, Total Fat 0 g, Saturated Fat 0 g, Cholesterol 0 mg, Sodium 26 mg

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

**Reasons to Eat Apples**
- A ½ cup of sliced apples is a source of fiber. Dietary fiber is a complex carbohydrate. There are three main types of carbohydrates: starch, fiber, and sugar.*
- Eating a variety of colorful fruits and vegetables throughout the day will help you meet the recommended daily values of nutrients that your body needs to be healthy.
- Apples can be eaten in a variety of forms — as whole (fresh), unsweetened applesauce, dried apples, or 100% apple juice.
*Learn about sugar on page 2.

**Champion Sources of Fiber*:**
- Beans
- Blackberries
- Dates
- Peas
- Pumpkin
- Raspberries
- Whole wheat cereal
- Whole wheat bread

*Champion foods provide a good or excellent source of fiber.

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**Nutrition Facts**

<table>
<thead>
<tr>
<th>Serving Size: ½ cup apples, sliced (55g)</th>
<th>Calories 28</th>
<th>Calories from Fat 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Daily Value</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Fat 0g</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Saturated Fat 0g</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Trans Fat 0g</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cholesterol 0mg</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Sodium 1mg</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Total Carbohydrate 8g</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td>Dietary Fiber 1g</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Sugars 6g</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protein 0g</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vitamin A 1%</td>
<td>Calcium 0%</td>
<td></td>
</tr>
<tr>
<td>Vitamin C 4%</td>
<td>Iron 0%</td>
<td></td>
</tr>
</tbody>
</table>

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**Apples**

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**Grade 3 November Lessons**

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What is Sugar?
- Carbohydrates are the body's main source of energy. There are three kinds of carbohydrates: starch, fiber, and sugar.
- Sugar is found only in foods of plant origin. In food, sugar is classified as either naturally occurring or added.
- Naturally occurring sugars include lactose in milk and fructose in fruit, honey, and vegetables.
- Added sugars (white, brown, powdered, and corn syrup) are originally made from sugar beets, sugar cane, corn, and grapes.
- Naturally occurring sugars (except honey) are usually found in foods along with vitamins and minerals, while added sugars provide calories and very few vitamins and minerals. Therefore, added sugars are often called empty calories.

For more information, visit: http://food.oregonstate.edu/learn/sugar.html

Botanical Facts
Pronunciation: āpel
Spanish name: manzana
Family: Rosaceae
Genus: Malus
Species: M. domestica
Apples are the fruit of plants of the genus Malus in the family Rosaceae (rose family). Domestic or table apples are of the species M. domestica and are one of the most widely cultivated tree fruits.

Malus sieversii is the wild ancestor of M. domestica, and its trees can still be found in the mountains of Central Asia. In fact, the former capital of Kazakhstan, Almaty, means “father of the apple.” Wild apples (common name for M. sieversii) resist many diseases and pests that affect domestic apples, and they are often researched and used in the development of new disease-resistant apples.

For more information, visit: www.urbanext.uiuc.edu/apples/

How Much Do I Need?
A ½ cup of sliced apples is about one cupped handful. This is about the size of half of a small apple. The amount of fruits and vegetables each person needs depends on age, gender, and physical activity level.

Activity:
Visit www.choosemyplate.gov and have students determine how many cups of fruits and vegetables they need to eat every day. Have students write down their goals and make a daily log for tracking how many fruits and vegetables they eat each day.

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.choosemyplate.gov to learn more.

How Do Apples Grow?
Apple trees grow in the temperate regions of the world. Apple trees are best adapted to places where the average winter temperature is near freezing for at least two months, though many varieties can withstand winter temperatures as low as -40 F.

Apple trees are deciduous. In late spring, white blossoms appear from the tiny buds on apple tree branches for about nine days and produce pollen and nectar. Bees help to cross-pollinate the blossoms, the first step in forming an apple.

The seeds are distributed among an apple's five seed chambers, called carpels, found near the core. Seed development stimulates the apple tissue development. Apples continue to grow until late summer when they are ready to harvest and eat.
Physical Activity Corner
Healthy nutrition is only one part of the equation to achieving optimal learning in the classroom; physical activity is another important part. Children need at least 60 minutes of physical activity every day to stay fit both mentally and physically. Commit to playing a different game or activity, like Grab the Apple!, each week in or out of the classroom.

Grab the Apple!
Objective: Develops listening and fine motor skills (reflexes)
Equipment:
- One “apple” (foam ball or bean bag) for each pair of students
- Whistle or music
Preparation:
- Pairs sit cross-legged on floor facing each other, hands on knees
- Place box, with apple on top, between pairs
- Use START (whistle/music) cue to lead activity
Activity:
- On START cue, grab the apple before partner
- Variations:
  - Call out a specific hand to grab the apple
  - Start with hands on shoulders
  - Start in sit-up position (on back, knees bent)
  - Start in push-up position (on stomach, face down)
Go Farther:
Ask students to think of different starting positions to try.

Bring It Home:
Encourage students to play Grab the Apple! with family members.
For more ideas, visit:
www.sparkpe.org

Cafeteria Connections
- Have students investigate what types of apples are used in the cafeteria. Talk with the school nutrition staff to find out why these varieties are selected. Then, write letters to the school nutrition staff promoting the benefits of locally grown apples (cost, flavor, etc.).
For more ideas, reference:
www.nal.usda.gov/kids
www.agclassroom.org

School Garden: Savvy Seeds
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.

As fall weather spells an end to some school gardens, encourage students to become seed detectives by identifying, collecting, and saving their own seeds from the garden or in the wild. Some fruits and vegetables to consider: melons, tomatoes, beans, peas, peppers, pumpkins, squash, and corn.

Class Discussion
- How do plants grow from seeds?
- What nutrients do plants need for optimal growth?
- Compare plant nutrients with the nutrients humans need. Explain why it is so important for us to eat plenty of plant foods, especially fruits and vegetables.
For more ideas, visit:
www.kidsgardening.com

Home Grown Facts
- The apple industry in California dates back to the 1800s, when two early orchards were cultivated in Watsonville and Sebastopol along the Central and Northern coastal regions. Today there are more than 450 growers.
- California ranks fifth in commercial apple production in the United States — an impressive accomplishment achieved in about 25 years of serious production.
- California is known for its variety of apples and continual production of new varieties. Examples include the Red Delicious, Golden Delicious, Gala, Fuji, Granny Smith, McIntosh, Rome, Jonathon, and Pink Lady.
- California apples are harvested throughout the year and many varieties are available year-round.
For more information, visit:
www.calapples.org

Just the Facts
- About 2,500 apple varieties are grown in the United States and more than 7,500 are grown worldwide.
- Apples are best when eaten with the peel, as that is where most of the fiber and antioxidants are found.
- Almost one-half of all apples consumed are not in their fresh form, but rather as applesauce, apple juice, and jellies or jams. Apples can even be used to replace fat and butter in baked goods. (Replace shortening or oils in baking with an equal volume of applesauce plus one-third of the oil called for in the recipe.)

Student Sleuths
1. Why is fiber important?
2. Apples contain natural fructose. What is natural fructose and what are its benefits?
3. Why do apples float in water?
4. What does the color of an apple’s skin tell you about the environment where it was grown?
5. Map the origin of the apple and various geographical regions in California where apples are grown.
6. List the top five varieties of apples commercially produced in California and the counties that grow them.
7. Determine how much of the apples harvested in California go into processed foods/juices and how much is sold whole/fresh.
For information, visit:
www.calapples.org
www.usapple.org
www.fruitsandveggiesmatter.gov/month/apple.html
The FITNESSGRAM, a state-required Physical Fitness Test, is administered in spring for students in grades five, seven, and nine. The FITNESSGRAM is a set of tests designed to evaluate health-related fitness, with the goal of helping students establish lifetime habits of regular physical activity. Remind students that the FITNESSGRAM is not pass or fail, but the launching pad to a lifetime of health.

The FITNESSGRAM is designed to assess the three basic components of fitness:
1. Aerobic capacity
2. Body composition
3. Muscle strength

Muscle strength is divided into four areas: abdominal strength and endurance; trunk extensor strength and flexibility; upper body strength and endurance; and overall flexibility.

Discuss with your class the importance of physical activity and encourage students to get more physical activity. Identify two activities you can do as a class regularly.

Examples include:
1. Jogging outside around the track or school
2. Doing jumping jacks in class for one minute
3. Taking stretch breaks after quizzes or exams

For more information, visit:
www.cde.ca.gov/ta/tg/pf
www.cde.ca.gov/re/pn/fd/documents/pefrwk.pdf
www.cdc.gov/nccdphp/dnpa/physical/index.htm

Literature Links
The Legend of Johnny Appleseed
Born September 26, 1774 in Massachusetts on the eve of the American Revolution, John Chapman became the legendary “Johnny Appleseed.” He spent almost 50 years of his life in the American wilderness planting apple orchards in Illinois, Kentucky, Pennsylvania, and Ohio.

Johnny Appleseed was known as a kind and generous man. Alone, he pioneered the frontier on foot, planting apple trees, and selling them to the settlers on the plains for a few pennies each, or even clothing. Some had no cash, and from those he accepted a simple promise: to pay at a later date. Few failed to keep their word.

Chapman died in 1845, but even after 200 years, some of his trees still bear apples.

Elementary literature on the life of Johnny Appleseed:
- Folks Call Me Appleseed John by Andrew Glass (Doubleday, 1995).

For book lists, visit:
www.harvestofthefmonth.com
www.cfaitc.org

Adventurous Activities
Field Trip:
Take students on an apple-picking field trip or even bring the field trip to the school. For more information on Farm to School programs, visit www.cafarmtoschool.org.

Problem Solving:
Use apples in math equations to demonstrate addition and subtraction of fractions.

Creative Writing:
Have students interview and document their parents’ favorite apple stories, memories, and recipes.

Science Investigation:
Oxidation is the browning reaction that occurs when the atoms in an apple come in contact with air and lose electrons.
- Cut two apples in half. Pour one tablespoon of lemon juice over the first half. Pour one tablespoon of water over the second half. Pour one tablespoon of apple juice over the third half. Do not pour anything over the fourth half. Leave all four halves in a visible spot in the classroom. Have students note the differences in the browning after one hour to see which method works best and why.

Student Champions
- Have students gather their favorite nutritious apple recipes.* Brainstorm ideas on how to incorporate apples into school breakfast and lunch menus. Have them meet with school nutrition staff to share their ideas.
- Ask students to note during their next trip to the grocery store where the apple displays are located. Are they in the front, back, or on the side? How many varieties do they have available?

*Visit www.cachampionsforchange.net for a variety of nutritious recipes.

For more ideas, visit:
www.usapple.org/educators/applestore/index.cfm

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Apples

Primary

- *Apple Fractions* by Jerry Pallotta (Cartwheel, 2003)
- *Autumn is for Apples* by Michelle Knudsen (Random House Books, 2001)
- *Folks Call Me Appleseed John* by Andrew Glass (Doubleday, 1995)
- *Johnny Appleseed: My Story* by David Harrison (Random House, 2001)
- *The Life and Times of the Apple* by Charles Micucci (Scholastic, 1995)
- *The Story of Johnny Appleseed* by Aliki (Aladdin, 1987)
- *Up, Up, Up! It’s Apple-Picking Time* by Jody Fickes-Shapiro (Holiday House, 2008)

Secondary

- *Agricultural History*, University of California Press, Journals Division
- *Fruits and Vegetables for Health* by Brenda Byers and Priscilla Naworski (California Foundation for Agriculture in the Classroom, 2003)

Please note that *Harvest of the Month* book lists are a compilation of books recommended by our partners, including the California Department of Education, California Foundation for Agriculture in the Classroom, and local agencies. These books are neither endorsed nor reviewed by the *Network for a Healthy California*.

Updated: September 2011
Apples

Source: www.usapple.org/EduMaterials.html
## Apples

### Nutrition Facts

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<td></td>
</tr>
<tr>
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<tr>
<td>Vitamin C 4%</td>
<td></td>
<td>Iron 0%</td>
</tr>
</tbody>
</table>

Source: [www.nal.usda.gov/fnic/foodcomp/search/](www.nal.usda.gov/fnic/foodcomp/search/)
NDB No: 09003

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This material was funded by USDA’s Food Stamp Program through the California Department of Public Health’s Network for a Healthy California. These institutions are equal opportunity providers and employers. The Food Stamp Program provides nutrition assistance to people with low income. It can help buy nutritious foods for a better diet. For information on the Food Stamp Program, call 1-888-328-3483.

© California Department of Public Health 2008.
Apple
Rosaceae *Malus domestica*
(analysis based on *unpeeled* raw apple)
Pictured from left: Fuji, Yellow Delicious, Red Delicious, Granny Smith apples
Physical Activity Promotion
Grab the Apple

Equipment Needed:
- Boxes (any size)
- Apples, plastic or real, (one apple and box per two students)
- Whistle or music

Step-By-Step:
Pre-Explanation:
- This game is suitable to be played either in the classroom or in a multi-purpose room.
- Have students choose a partner, or choose one for them.
- Have the pairs of students sit cross-legged on the floor, facing each other, hands on knees.
- Place box upside down, place apple on top, between pairs.
- Explain to the students that the object of the game is to grab the apple before their partner does.
- Use a whistle or music as a START to cue to lead activity.

Implementation:
- On START cue both students will reach to grab the apple.
- The student that grabs the apple first is the winner.
- Repeat activity for desired length of time.

Follow Up:
Class discussion:
(to be used to integrate Harvest of the Month along with the physical activity)
- How apples help keep our bodies growing and staying strong and healthy.
- Which nutrients apples provide our bodies.
- What is significant about the different colors of apples.
- Which muscle group(s) were used during this activity.

Expansion Ideas:
Use different variations depending on level of difficulty:
- Call out a specific hand to grab the apple.
- Start out with hands on their shoulders, instead of on their knees.
- Start in sit-up position (on back, knees bent).
- Start in push-up position (on stomach, face down).
- Ask students if they have any starting positions to try.

Adapted from the Network for a Healthy California Harvest of the Month Educator Newsletter (Apples)
www.harvestofthemonth.com

This material was produced by the California Department of Public Health’s Network for a Healthy California, with funding from the USDA Supplemental Nutrition Assistance Program (formerly the Food Stamp Program). These institutions are equal opportunity providers and employers. In California, food stamps provide assistance to low-income households, and can help buy nutritious foods for better health. For food stamp information, call 877-847-3663. For important nutrition information visit www.cachampionsforchange.net.
Lesson Part Two: Pumpkins and Winter Squash
This lesson includes the book *Pumpkins* by Gail Gibbons and the Network for Healthy California’s *Harvest of the Month: Winter Squash* activities for educators. The Garen Mosaics Cucurbits Science Page is provided for additional information. Here is the sequence and activities that we recommend for the third graders.

A. Read aloud and show the pictures of *Pumpkins* by Gail Gibbons. The rest of the activities will tie back to the book.

The following activities are from *Harvest of the Month: Winter Squash*.
B. Pages 1 and 3: Combine and shorten two activities. Read the first three facts under the “A Taste of Squash History” on page 3 and do the “Exploring California Winter Squash: Taste Testing” with the following changes.
   1.) Show three or four members of the Cucurbit family such as a fresh pumpkin, another kind of squash such as zucchini or acorn, and a cucumber.
   2.) Talk about similar and different characteristics of the samples.
   3.) If possible, you may want to try bite-size samples of each.

C. Page 4: Read “Just the Facts” and have the students identify their favorite ways to eat pumpkins such as pumpkin pie, bread, muffins, pancakes, roasted seeds, etc. Ask if anyone has eaten the shoots, leaves, tendrils or blossoms.

D. Page 1: Read the “Reasons to Eat Winter Squash” section and ask them if they think eating pumpkins is healthy. Make the “Pumpkin Delight” and enjoy eating it!

E. Page 4: Do the Physical Activity Corner activity.
Health and Learning Success Go Hand-In-Hand
School breakfast programs increase learning and academic achievement, improve student attention to academic tasks, reduce visits to the school nurse, and decrease behavioral problems. Help promote the school breakfast and meals program to your students. Use Harvest of the Month to encourage students to eat healthfully and be active.

Exploring California Winter Squash: Taste Testing
What You Will Need:
- Three to five different winter squash varieties, whole and sliced*
- One of each variety per every four students
- Nutrition labels for each variety**
- Dry erase board, markers

*See Botanical Facts on page 2 for varieties.

Activity:
- Examine squash noting color (skin and flesh), texture, sound, and smell.*
- Chart observations on board.
- Analyze nutrition information.
- Chart three highest nutrient levels.
- Compare and contrast varieties.
- Discuss differences in nutrient levels and how they may be related to characteristics like flesh color.

*Note: Tasting raw winter squash is not recommended.

For more ideas, reference:

Cooking in Class: Pumpkin Delight
Makes 36 tastes at 2 tablespoons each

Ingredients:
- 2 (15-ounce) cans 100% pure pumpkin
- 2 tablespoons of pumpkin pie spice
- 1 sleeve of lowfat graham crackers
- 1 tablespoon of honey*
- Small paper plates
- Small plates and forks

1. Place the pumpkin in a large bowl.
2. Stir pumpkin spice and honey thoroughly into the pumpkin.
3. Crumble all graham crackers into the pumpkin mixture and stir until well blended. Mixture will be chunky.

*Do not give honey to children under the age of one. Lowfat vanilla yogurt may be used in place of honey.

Nutrition information per serving:
Calories 40, Carbohydrate 8 g, Dietary Fiber 0 g, Protein 0 g, Total Fat 0 g, Saturated Fat 0 g, Trans Fat 0 g, Cholesterol 0 mg, Sodium 53 mg

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

For more information, visit:
www.cachampionsforchange.net

Reasons to Eat Winter Squash
A ½ cup of cooked winter squash provides:
- An excellent source of vitamin A (butternut, hubbard, and pumpkin).
- A good source of vitamin C (acorn, butternut, hubbard, and pumpkin).
- A good source of fiber (acorn, butternut, and hubbard).
- A good source of potassium (acorn and hubbard).
- A good source of magnesium, thiamin, and vitamin B₆ (acorn).
- A source of iron* (acorn).

*Learn about iron on page 2.

Champion Sources of Iron*:
- Beans
- Fortified cereal
- 100% prune juice
- Pumpkin seeds
- Soybeans and soybean nuts

*Champion sources provide a good or excellent source of iron.

For more information, visit:
www.eatright.org/Public/content.aspx?id=3608&terms=winter+squash
www.nal.usda.gov/fnic/foodcomp/search/(NDB No: 11483)
What is Iron?
- Iron is a mineral that helps move oxygen from the lungs to the rest of the body. It also helps keep red blood cells healthy and helps the body fight infections.
- Even though iron is found in many foods, low iron levels are a common nutrition problem.
- Iron carries oxygen throughout your body so cells can produce energy. When iron levels are low, you may feel fatigued, weak, and have difficulty tolerating extreme temperatures.
- Iron in food exists as two types, heme and non-heme. Animal foods such as meat, fish, and poultry provide heme. Your body uses this type of iron most effectively. Non-heme is found in plant foods like spinach and beans and isn’t as well absorbed by the body.
- You can add to your iron intake by choosing a variety of animal and plant foods and by eating foods rich in vitamin C, which helps your body absorb the iron in plant foods (especially important for vegetarians). Eat a variety of foods to be sure you get enough iron.

Source: www.eatright.org
For more information, visit:
http://lpi.oregonstate.edu/infocenter/minerals/iron/

Student Sleuths
1 What are some nutritional benefits of winter squash? How do the nutrients vary between different varieties?
2 What is iron? What does it do for the body? How much iron do you need? Make a list of foods that are good and excellent sources of iron.* Then, develop a daily meal plan that will meet your daily iron needs.
3 How is the iron provided by plants different than iron provided by animal sources?
4 Search for recipes with winter squash. List the various ways squash can be prepared.
5 Go to the grocery store and identify all of the different varieties of winter squash. Do a price cost comparison. What are the most and least expensive varieties?
6 What are the top three squash-producing countries in the world? Hypothesize why these countries lead squash crop production.

*Good sources provide 10-19% of the recommended Daily Value (DV). Excellent sources provide 20% or more of DV.

For information, visit:
www.eatright.org
www.ers.usda.gov
www.nal.usda.gov/fnic/foodcomp/search
www.choosemyplate.gov/MenuPlanner/downloads/
RateWhatYouAte.pdf

Botanical Facts
Pronunciation: win-tar - skwôsh
Spanish name: calabaza
Family: Cucurbitaceae
Genus: Cucurbita
Species: C. maxima Duchesne

Squash are gourds belonging to the Cucurbita genus. Gourds, along with cucumbers and melons, are vine crops of the Cucurbitaceae family. The word “squash” is derived from the Native American askutasquash meaning “food eaten raw.”

There are two main squash varieties: winter and summer. Winter squash are not grown or harvested in winter, but picked when fully ripe and feature a hard shell (rind) with thick, inedible skin and hollow seed cavity with fully developed seeds. The thick shell allows it to be stored for several months. (Summer squash are picked immature and have a soft shell.)

The most common varieties of winter squash grown in the United States include:
- Acorn, a smaller, acorn-shaped squash with dark green skin, deep furrows, and yellow-orange flesh.
- Butternut, a long, pear-shaped squash with tan skin and orange, sweet flesh; the most popular variety.
- Buttercup or Turban, named for its “wrapped” layers, usually a dark green shell with orange, mealy flesh.
- Hubbard, a golden or green squash notable for its bumpy, thick skin.
- Pumpkin, the largest squash variety with bright orange, ribbed skin, and orange flesh.
- Spaghetti, a yellow-skinned squash whose flesh forms translucent spaghetti-like strands when cooked.

For more information, visit:
www.urbanext.uiuc.edu/veggies/wsquash1.html

How Much Do I Need?
A ⅛ cup of cooked winter squash is about one cupped handful. The amount of fruits and vegetables that each person needs depends on age, gender, and physical activity level. Fruits and vegetables are an important part of an overall healthy diet.

Have students visit http://teamnutrition.usda.gov/resources/mypyramidclassroom.html to learn about the recommended daily amounts for all food groups. Use the student worksheets to help students write down and track their food group goals.

For more ideas, visit:
www.choosemyplate.gov/MenuPlanner/downloads/
RateWhatYouAte.pdf

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>
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<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.choosemyplate.gov to learn more.
How Does Winter Squash Grow?

Winter squash are warm-weather plants requiring pollination for fruit development. Until recently, squash plants were grown exclusively on vines. Today, more growers are using a hybridized, compact “bush” variety that allows for more plants per acre.

<table>
<thead>
<tr>
<th>Vine and Bush Squash</th>
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<tr>
<td>Temperature</td>
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<tr>
<td>Flowers</td>
</tr>
<tr>
<td>Pollination</td>
</tr>
<tr>
<td>Harvesting</td>
</tr>
</tbody>
</table>

For more information, reference:
www.kidsgardening.com
(Also available on www.californiahealthykids.org.)

A Taste of Squash History

- Gourds, cucumbers, and melons are all part of the Cucurbit family, but all have different origins. Squash and pumpkins are native to the Americas, while cucumbers originated in eastern Asia, and melons in Africa or Persia.
- Squash are one of the oldest cultivated crops in the Western Hemisphere. Seeds found in Mexico have been dated as 10,000 years old.
- Squash were originally cultivated for their seeds, as early varieties did not contain much flesh and were very bitter.
- Squash were one of the “Three Sisters” planted by the Iroquois. The Iroquois myth describes three sisters that were inseparable. These plants — squash, maize (corn), and beans — were staples of nearly every Native American tribe.
- Winter squash first migrated to Europe from Peru by Spanish Explorer Francisco Pizarro in the early 16th century. Many Europeans referred to squash as “melons.”
- Winter squash became a staple food of early colonists and eventually traveled West with Americans, producing better crops in warmer states like California.

Adventurous Activities

Celebrate National School Lunch Week by having students write journal entries every day of what they ate for lunch. Have students monitor how they feel (e.g., tired, energetic, etc.). Use the NutritionData® Custom Data Entry tool to complete a nutrient analysis of their lunches (www.nutritiondata.com). Compare journal entries between school lunches and lunches from home.

For more activities, visit:
www.harvestofthemonth.com

Home Grown Facts

- California leads the nation in total squash production (20%), followed by Florida (18%), Michigan (17%), and Georgia (15%).
- California ranks third behind Michigan and Oregon in production of squash for processing (15% of total squash acreage).
- Squash production takes place mostly in central San Joaquin Valley, with summer squash accounting for more acreage than winter squash.

For more information, visit:
www.cdfa.ca.gov

Adapted from: Hot as a Pepper, Cool as a Cucumber, Meredith Sayles Hughes, 1999. To download reproducible botanical images, visit the Educators’ Corner at www.harvestofthemonth.com.
Physical Activity Corner
California’s Physical Education Content Standards emphasize educating students on the importance of a healthy lifestyle that includes nutritious foods and regular physical activity. Help reinforce this message in the classroom. Demonstrate how being active is not limited to doing outdoor activities or organized sports.

Discussion:
■ Break students into small groups and have them discuss how they can be active for 60 minutes every day doing a variety of indoor and outdoor activities each day. Have each group share at least one answer and demonstrate to the class.
■ Discuss ways students can increase their physical activity in everyday activities such as while grocery shopping, doing household chores, etc.

For physical activity ideas, visit:
www.ncpe4me.com

Cafeteria Connections
Winter squash are available in many varieties. Butternut, acorn, and spaghetti are most common, but students may not be as familiar with others like banana and kabocha. Help students taste and learn about different varieties.
■ Work with your school nutrition staff to set up a “Winter Squash” display in the cafeteria. Label each variety and provide the nutrition information.*
■ Invite school nutrition staff to help with the Exploring California Winter Squash activity (page 1).
■ Organize a “Squash Naming” contest. Display a number of winter squash and post the variety names above in scrambled order. Ask students to match the name with the correct variety.


Just the Facts
■ Referred to as a vegetable in cooking, squash are actually fruits of vines of the Cucurbita genus.
■ Native Americans believed squash seeds increased fertility and called squash “the apple of God.”
■ In Native American, the word “squash” means “eaten raw” but winter squash are almost never eaten raw.
■ Besides the fruit, other edible parts of squash plants include the seeds (eaten whole, toasted, ground into paste, or pressed for oil); shoots, leaves, and tendrils (eaten as greens); and blossoms (used for cooking and decoration).

For more information, visit: www.vegparadise.com

School Garden: Plant Parts We Eat
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.

Squash plants have many edible parts including the fruits, leaves, flowers, and seeds. Many other plants have multiple edible parts, like beets, strawberries, and pumpkins. Some plants have edible fruit but poisonous leaves, like tomatoes. Use the CDE Fruit and Vegetable Photo Cards and/or school garden to help students learn the plant parts we eat — roots, stems, leaves, fruits, flowers, and seeds.
■ Assign a plant part to groups of students
■ Have groups research and report on assigned part, including examples
■ Visit school garden and have students identify plants and their edible parts

Adapted from: Nutrition to Grow On, CDE, 2001, pp. 10-17.

Student Champions
■ Invite older students to work with younger students to plant a “Three Sisters” garden plot (squash, corn, beans) at school or in a community garden. Enlist help of neighbors, family, and friends.
■ Using the knowledge they have gained about nutrition, have students find healthy recipes featuring winter squash. Encourage students to visit local grocery stores and provide them with these recipes to promote as “school specials.” Students can offer to include special artwork to help the store show patrons how they are supporting a local school.

For more ideas, visit: www.schoolnutrition.org

Literature Links
■ Elementary: Carlos and the Squash Planet (bilingual) by Jan Romero Stevens, Plant Plumbing: A Book About Roots and Stems by Susan Blackaby, and Pumpkin Soup by Helen Cooper.

For more ideas, visit: www.cfaitc.org/trg/pdf/trg2009.pdf

This material was produced by the California Department of Public Health’s Network for a Healthy California with funding from USDA SNAP, known in California as CalFresh (formerly Food Stamps). These institutions are equal opportunity providers and employers. CalFresh provides assistance to low-income households and can help buy nutritious foods for better health. For CalFresh information, call 1-877-847-3663. For important nutrition information, visit www.cachampionsforchange.net. © 2011
Winter Squash

**Primary**

- *Carlos and the Squash Plant* (bilingual) by Jan Romero Stevens (Luna Rising, 1999)
- *Delicious: A Pumpkin Soup Story* by Helen Cooper (Doubleday, 2006)
- *Vegetables (Good for Me)* by Sally Hewitt (Powerkids Press, 2008)

**Secondary**

- *Squashed* by Joan Bauer (Speak, 2005)
- *The Legend of Sleepy Hollow* by Washington Irving (Filiquarian, 2007)

Please note that *Harvest of the Month* book lists are a compilation of books recommended by our partners, including the California Department of Education, California Foundation for Agriculture in the Classroom, and local agencies. These books are neither endorsed nor reviewed by the *Network for a Healthy California*.

Updated: September 2011
Winter Squash

Adapted from: *Hot as a Pepper, Cool as a Cucumber*, Meredith Sayles Hughes, 1999.
Acorn Squash

Nutrition Facts

Serving Size: ½ cup cooked acorn squash, cubed (103g)

|       | Calories 57 | Calories from Fat 0
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>% Daily Value</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Fat 0g</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Saturated Fat 0g</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Trans Fat 0g</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cholesterol 0mg</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Sodium 4mg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Carbohydrate 15g</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Dietary Fiber 5g</td>
<td>18%</td>
<td></td>
</tr>
<tr>
<td>Sugars</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protein 1g</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Vitamin A 9%  Calcium 5%
Vitamin C 19%  Iron 5%

Other nutrients: Potassium (13%), Magnesium (11%), Thiamin (11%), Vitamin B6 (10%), Folate (5%), Niacin (5%)

NDB No: 11483
# Butternut Squash

## Nutrition Facts

<table>
<thead>
<tr>
<th>Serving Size: ½ cup cooked butternut squash, cubed (103g)</th>
<th>Calories from Fat 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calories 41</td>
<td>% Daily Value</td>
</tr>
<tr>
<td>Total Fat 0g</td>
<td>0%</td>
</tr>
<tr>
<td>Saturated Fat 0g</td>
<td>0%</td>
</tr>
<tr>
<td>Trans Fat 0g</td>
<td></td>
</tr>
<tr>
<td>Cholesterol 0mg</td>
<td>0%</td>
</tr>
<tr>
<td>Sodium 4mg</td>
<td>0%</td>
</tr>
<tr>
<td>Total Carbohydrate 11g</td>
<td>4%</td>
</tr>
<tr>
<td>Dietary Fiber 3g</td>
<td>12%</td>
</tr>
<tr>
<td>Sugars 2g</td>
<td></td>
</tr>
<tr>
<td>Protein 1g</td>
<td></td>
</tr>
<tr>
<td>Vitamin A 229%</td>
<td>Calcium 4%</td>
</tr>
<tr>
<td>Vitamin C 26%</td>
<td>Iron 3%</td>
</tr>
<tr>
<td>Other nutrients: Magnesium (8%), Potassium (8%), Vitamin B6 (6%), Folate (5%), Thiamin (5%), Niacin (5%), Beta-carotene (4,684mcg), Alpha-carotene (1,158mcg)</td>
<td></td>
</tr>
</tbody>
</table>

NDB No: 11486
Hubbard Squash

Nutrition Facts

<table>
<thead>
<tr>
<th>Serving Size: ½ cup cooked hubbard squash, cubed (103g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calories 51</td>
</tr>
<tr>
<td>Calories from Fat 0</td>
</tr>
<tr>
<td>% Daily Value</td>
</tr>
<tr>
<td>Total Fat 1g</td>
</tr>
<tr>
<td>1%</td>
</tr>
<tr>
<td>Saturated Fat 0g</td>
</tr>
<tr>
<td>0%</td>
</tr>
<tr>
<td>Trans Fat 0g</td>
</tr>
<tr>
<td>Cholesterol 0mg</td>
</tr>
<tr>
<td>0%</td>
</tr>
<tr>
<td>Sodium 8mg</td>
</tr>
<tr>
<td>0%</td>
</tr>
<tr>
<td>Total Carbohydrate 11g</td>
</tr>
<tr>
<td>4%</td>
</tr>
<tr>
<td>Dietary Fiber 3g</td>
</tr>
<tr>
<td>12%</td>
</tr>
<tr>
<td>Sugars</td>
</tr>
<tr>
<td>Protein 3g</td>
</tr>
<tr>
<td>Vitamin A 124%</td>
</tr>
<tr>
<td>Calcium 2%</td>
</tr>
<tr>
<td>Vitamin C 16%</td>
</tr>
<tr>
<td>Iron 3%</td>
</tr>
<tr>
<td>Other nutrients: Potassium (10%), Vitamin B6 (9%), Magnesium (6%), Thiamin (5%)</td>
</tr>
</tbody>
</table>

Source: [www.nal.usda.gov/fnic/foodcomp/search](http://www.nal.usda.gov/fnic/foodcomp/search/)
NDB No: 11490
# Pumpkin

## Nutrition Facts

<table>
<thead>
<tr>
<th>Serving Size: ½ cup cooked pumpkin (123g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calories 24</td>
</tr>
<tr>
<td>% Daily Value</td>
</tr>
<tr>
<td>Total Fat 0g</td>
</tr>
<tr>
<td>Saturated Fat 0g</td>
</tr>
<tr>
<td>Trans Fat 0g</td>
</tr>
<tr>
<td>Cholesterol 0mg</td>
</tr>
<tr>
<td>Sodium 1mg</td>
</tr>
<tr>
<td>Total Carbohydrate 6g</td>
</tr>
<tr>
<td>Dietary Fiber 1g</td>
</tr>
<tr>
<td>Sugars 1g</td>
</tr>
<tr>
<td>Protein 1g</td>
</tr>
<tr>
<td>Vitamin A 122%</td>
</tr>
<tr>
<td>Vitamin C 10%</td>
</tr>
</tbody>
</table>

Other nutrients: Potassium (8%), Riboflavin (6%)


NDB No: 11423
Pumpkin

Nutrition Facts

Serving Size: ½ cup canned pumpkin (123g)

<table>
<thead>
<tr>
<th>Nutrition</th>
<th>Value</th>
<th>% Daily Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calories</td>
<td>42</td>
<td></td>
</tr>
<tr>
<td>Calories from Fat</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Total Fat</td>
<td>0g</td>
<td>1%</td>
</tr>
<tr>
<td>Saturated Fat</td>
<td>0g</td>
<td>0%</td>
</tr>
<tr>
<td>Trans Fat</td>
<td>0g</td>
<td></td>
</tr>
<tr>
<td>Cholesterol</td>
<td>0mg</td>
<td>0%</td>
</tr>
<tr>
<td>Sodium</td>
<td>6mg</td>
<td>0%</td>
</tr>
<tr>
<td>Total Carbohydrate</td>
<td>10g</td>
<td>3%</td>
</tr>
<tr>
<td>Dietary Fiber</td>
<td>4g</td>
<td>14%</td>
</tr>
<tr>
<td>Sugars</td>
<td>4g</td>
<td></td>
</tr>
<tr>
<td>Protein</td>
<td>1g</td>
<td></td>
</tr>
<tr>
<td>Vitamin A</td>
<td>381%</td>
<td></td>
</tr>
<tr>
<td>Calcium</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td>Vitamin C</td>
<td>9%</td>
<td></td>
</tr>
<tr>
<td>Iron</td>
<td>9%</td>
<td></td>
</tr>
</tbody>
</table>

Other nutrients: Vitamin K (25%), Potassium (7%), Magnesium (7%)

NDB No: 11424
# Spaghetti Squash

## Nutrition Facts

<table>
<thead>
<tr>
<th>Serving Size: ½ cup cooked spaghetti squash, cubed (78g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calories: 21</td>
</tr>
<tr>
<td>% Daily Value</td>
</tr>
<tr>
<td>Total Fat: 0g</td>
</tr>
<tr>
<td>0%</td>
</tr>
<tr>
<td>Saturated Fat: 0g</td>
</tr>
<tr>
<td>0%</td>
</tr>
<tr>
<td>Trans Fat: 0g</td>
</tr>
<tr>
<td>0%</td>
</tr>
<tr>
<td>Cholesterol: 0mg</td>
</tr>
<tr>
<td>0%</td>
</tr>
<tr>
<td>Sodium: 14mg</td>
</tr>
<tr>
<td>1%</td>
</tr>
<tr>
<td>Total Carbohydrate: 5g</td>
</tr>
<tr>
<td>2%</td>
</tr>
<tr>
<td>Dietary Fiber: 1g</td>
</tr>
<tr>
<td>4%</td>
</tr>
<tr>
<td>Sugars: 2g</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Protein: 1g</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Vitamin A: 2%</td>
</tr>
<tr>
<td>2%</td>
</tr>
<tr>
<td>Calcium: 2%</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Vitamin C: 5%</td>
</tr>
<tr>
<td>1%</td>
</tr>
<tr>
<td>Iron: 1%</td>
</tr>
</tbody>
</table>

NDB No: 11493
Winter Squash

Cucurbitaceae *Cucurbita maxima*

(analysis based on baked *spaghetti* squash)

Pictured from top: spaghetti, butternut, acorn winter squashes
CUCURBITS: SQUASH, PUMPKINS, AND GOURDS Science Page

**DID YOU KNOW?**
The largest fruits in the plant kingdom are pumpkins. The biggest pumpkin ever grown weighed 606.7 kilograms (about 1,338 lb)!

**ORIGINS**
Most of the cucurbits are native to the Americas. They were among the first plants to be domesticated in the New World.

Squash is one of the three sisters (corn, beans, and squash) in the Native American cropping system.

**CLASSIFYING CUCURBITS**

<table>
<thead>
<tr>
<th>FAMILY</th>
<th>Cucurbitaceae</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECIES</td>
<td>Cucurbita</td>
</tr>
</tbody>
</table>

There are about 800 species in this family.

- **squash**
- **cucumber**
- **gourds**
- **melon**
- **pumpkin**

**GENUS**
Cucurbita
In Latin, this means gourd

There are 14 species in this genus.

- **gourds**
- **squashes**
- **pumpkin**

**SPECIES**
Scientists have grouped cucurbits into different species based on differences in the structure of the flowers and other plant parts. Three species commonly grown in gardens are:

- **Cucurbita maxima**
- **Cucurbita moschata**
- **Cucurbita pepo**

- **big max pumpkin**
- **hubbard squash**
- **buttercup squash**
- **acorn squash**
- **spaghetti squash**
- **cucurbita pepo**

**CUCURBIT PLANTS**
Summer squash, such as zucchini and yellow squash, grows like a bush. Winter squash and pumpkins have long running vines.

Cucurbit plants have large leaves.

On a single plant, male and female flowers look like large, yellow, flaring funnels.

The female flower has a swelling, which becomes the fruit.

**GROWING AND HARVESTING CUCURBITS**
Cucurbits are warm-season crops. Plant in full sun at least one week after the last frost date. Summer squash can grow close together, but the vines of pumpkins and winter squash need more space to grow. Add lots of organic matter to the soil. Cucurbits have deep roots and need lots of water, so water deeply and slowly.

**USES**
Summer squash can be eaten—rind, seeds, and flesh. Winter squashes must be cooked. They are usually baked or steamed. You can also use them in breads, pies, cakes, cookies, and casseroles.

**I pick summer squashes when their fruits are young, small, and tender. Pumpkins and winter squash won’t be ready until later in the fall when they have a hard shell.**

You can store winter squash and pumpkins in a dry, cool, airy place for winter use.

Garden Mosaics is funded by the National Science Foundation Informal Science Education program, and by the College of Agriculture and Life Sciences at Cornell University.
**Ingredients**

- 4 small summer squash, such as zucchini or yellow crookneck
- 2 tablespoons olive oil
- 1 clove garlic, pressed
- 4 medium tomatoes, diced
- 1 teaspoon dried oregano, or 1 tablespoon fresh oregano, chopped
- salt and pepper
- 1 bunch fresh basil, chopped
- 1/2 cup grated parmesan cheese

**Variation:** Substitute spaghetti squash, cut in half and baked for 1 1/2 to 2 hours at 350°F.

**Instructions**

1. Slice clean, unpeeled squash into ribbons, using a vegetable peeler and turning the squash as you go.
2. Warm 1 tablespoon of olive oil in a saucepan on medium heat.
3. Saute the garlic briefly, and add tomatoes and oregano.
4. Simmer uncovered for a few minutes.
5. Heat the remaining oil in a large skillet.
6. Add the squash
7. Stir for several minutes while cooking, until squash is soft.
8. Add salt and pepper to taste, then mix in the sauce.
9. Stir in basil, and transfer to a serving dish.
10. Top with parmesan cheese.

**CROSSWORD PUZZLE**

**Across**

4. A type of summer squash.
7. Cucurbits are native to the ______.
8. Squash, corn, and beans are part of the Native American three ______ cropping system.

**Down**

1. Pumpkins and squash are all ______.
2. Winter squash should be picked when the rind is hard.
3. Winter squash have long ______.
5. Summer squash should be picked when they are young and tender.
6. The flowers of cucurbits are either ______ or female.
4. 
5. 
6. 

---

**SUMMER SQUASH PASTA**

**Yield:** 4 servings

**Ingredients**

* 4 small summer squash, such as zucchini or yellow crookneck*
* 2 tablespoons olive oil
* 1 clove garlic, pressed
* 4 medium tomatoes, diced
* 1 teaspoon dried oregano, or 1 tablespoon fresh oregano, chopped
* salt and pepper
* 1 bunch fresh basil, chopped
* 1/2 cup grated parmesan cheese

**Variation:** Substitute spaghetti squash, cut in half and baked for 1 1/2 to 2 hours at 350°F.

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